Transporting Bedford 2020 26/03/2019

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FULL BUSINESS CASE (STRATEGIC CASE)

BEDFORD BOROUGH COUNCIL

SYSTRA

TRANSPORTING BEDFORD 2020

FULL BUSINESS CASE

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1. INTRODUCTION

1.1 Overview

1.1.1 This report forms part of the Final Transport Business Case for the proposed Bedford Town Centre Transport Strategy. The overarching business case sets out the evidence base in favour of the scheme, following the Department for Transport's (DfT) guidance on The Transport Business Cases by considering each of the five business cases in turn:

- Strategic Case;
- Economic Case;
- Financial Case;
- Commercial Case; and
- Management Case.

1.1.2 Bedford Borough Council has been awarded two funding packages from the Local Growth Fund for separate but co-located projects, the Bedford Town Centre Study and the Bedford Southern Gateway. The purpose of the Business Case is to explain how and why the Council is seeking to combine these two Local Growth Fund streams into one single project.

1.1.3 This report focuses specifically upon the **Strategic Case** and sets out how the original rationale for both projects developed and the additional benefits which will result from a combined approach .

1.2 Background to Bedford and the Transport Strategy

1.2.1 Bedford is the largest settlement within the Borough of Bedford with a population of around 80,000 out of a total of around 160,000.

1.2.2 The River Great Ouse passes through the town centre and is lined with public greenspace known as the Embankment and St Mary's Gardens. Bedford Castle Mound is the remnant of Bedford's medieval castle, located off the Embankment and close to the centre of the modern town, less than a hundred metres from the High Street. St Paul's Church sits within the square of the same name at the southern end of the High Street, providing a link between the River and Castle and the main pedestrianised retail core.

1.2.3 The recently completed Riverside Bedford development provides another connection from St Paul's Square through to the river, with a range of new leisure facilities, including a cinema. This also connects in to the established Harpur Centre Shopping Centre across Horne Lane.

1.2.4 Bedford has a legacy of previous trunk roads passing through the town. In recent years de-trunking and the completion of the Western bypass have removed all primary routes from the urban area, and there is no longer a need to cater for long-distance traffic through the town.

1.2.5 At the same time the constraints of the road network, in particular a river and rail lines with limited crossing points, continues to lead to traffic congestion arising a concentration of traffic on key junctions and particular routes.

1.2.6 The core town centre highway network operates on a one-way system, with southbound traffic along the High Street, westbound traffic along the south side of St. Paul's Square

and Horne Lane, and northbound traffic up River Street. The High Street and St. Paul's Square are both two lanes, creating a significant barrier to pedestrian movements across these routes. This has the impact of dissecting the town, reducing permeability between the retail quarter, the cultural quarter and the river.

1.2.7 Economic data indicates this is having a significant impact upon the value of property in different parts of the town centre. Business rate data indicates that equivalent rateable values on the High Street are around 40% of those within the heart of the pedestrianised area on Silver Street and Midland Road.

1.2.8 The Borough Council has been undertaking a Transport Strategy Development process over the last three years to support enhancements to the town centre, as well as to integrate with wider issues, such as the Local Plan Process, the One Public Estate programme, the Oxford to Cambridge Corridor (including the Expressway and East West Rail) and enhancement to the Midland Mainline (these are discussed in more detail in section 2.2.10).

1.2.9 A wide range of transport policy, strategy and scheme options has been considered for Bedford town centre, using the data collected in 2014, and a set of measures focused upon enhancing accessibility to and within the core town centre and extending out to the key A6 corridors to the north and south of the town has been developed. These measures represent the project.

1.3 The need for change

1.3.1 Public realm and transport and traffic management projects are highway authority matters. Unless infrastructure improvements are associated with a particular development, there is no mechanism (and little incentive) for the private sector to deliver traffic management improvements.

1.3.2 Within this restricted context, the Borough Council has been seeking to continually enhance the public realm within the town centre and to minimise the impact of traffic on pedestrian and cycling movements. The town centre retail offer faces an increasingly competitive market against not only other town centres, but out-of-town retail offers, and on-line shopping.

1.3.3 The draft Local Plan identified considerable development growth across the borough up to 2035, with up to 8,500 new dwellings. In addition to this, there is the potential for considerable higher growth up to 2045. Establishing an effective traffic management system in advance of higher demand will provide the Borough Council with a mechanism with which effectively influence travel choices going forward and mitigate against the impacts of growth.

1.3.4 Parts of the former A6 corridor are specifically identified as potential risks for future constraint, recognising the importance of the connectivity this corridor provides for Bedford. Furthermore, reducing the impact of traffic on local communities, such as through the removal of traffic from town centres and the increasing the provision of alternatives to the car, is also recognised as key to creating conditions conducive to growth and in attracting investors to the area.

1.3.5 This is, therefore, a critical time to maximise the natural strengths of the town, including the River and Cultural Quarter, and ensure the on-going economic viability of the town. This Strategic Case sets out to demonstrate that the combined scheme offers benefits over and above those of the separate schemes.

2. THE STRATEGIC CASE

2.1 Introduction

2.1.1 Any new publicly funded major infrastructure project should be set within the context of, and measured against, local (and national) objectives. For this project, The South East Midlands Local Enterprise Partnership (SEMLEP) provides the context to development and is committed to supporting business investment, driving economic success and to creating the necessary infrastructure to develop new homes and jobs for the South East Midlands. The LEP will contribute to this through the delivery of a Strategic Economic Plan (SEP), which has eight strategic objectives designed to enhance:

- Business productivity
- Skills
- Markets
- Infrastructure

2.1.2 The SEP identified four principle areas for intervention to deliver growth:

- Transport
- Housing
- Jobs
- Growth and Skills

2.1.3 While this Strategic Case conforms to the DfT guidance, there is a particular focus on the strategic objectives of SEMLEP. As a project based around infrastructure provision and increased economic activity, it is well placed to create conditions conducive to growth and to attract inward investment. The opportunities resulting from reduced congestion and enhanced transport connectivity are recognised in providing a competitive advantage to firms and local authorities. In relation to delivering sustainable transport, the challenge is identified of managing congestion to ensure that it is not detrimental to local economic growth.

2.1.4 Within this context, this section provides an assessment of the strategic case for the scheme by setting out the following,

- The history of the project: two schemes into one
- The impact of 'do nothing'
- A description of the project; what will be delivered
- The evolution of the project from concept to objectives
- How the project meets the strategic aims of the delivery and funding partners
- How the project will be assessed and measured

2.2 History of the project: two schemes into one

2.2.1 Bedford Borough Council (BBC) submitted a Local Growth Fund Round 2 (LGF2) bid to SEMLEP at the end of 2014. This original project bid centred on a new town centre road bridge at Batts Ford to the west of the town centre, as well as a range of public realm enhancement to the town centre.

2.2.2 The main objectives were to reduce traffic congestion within the town centre and enable the High Street to achieve traffic relief and improve the attractiveness of this part of town, thus supporting regeneration. The overall cost of the infrastructure

needed was estimated at the time to be circa £30 million (£25 million LGF2 and £5 million local contributions).

2.2.3 Within the overall grant awarded to SEMLEP for LGF2 of £46.7 million, £11m was allocated towards the Bedford Town Centre Transport Strategy. This was significantly short of the resources need to deliver the promoted scheme. Subsequent informal advice suggested that it would not be prudent to submit a further bid for the shortfall.

2.2.4 As well as the original project being unaffordable, further evaluation since then has concluded that the original strategy might not provide the best value for money. Concerns have also been raised over its deliverability. Further technical assessment indicated that the transport benefits would be localised and that there were potential negative environmental impacts within the immediate area.

2.2.5 At the time of the LGF2 allocation, DfT indicated that this project would be included in their national programme of transport projects as a 'Portfolio' scheme and managed directly by them. Quarterly reports on the project to DfT since the allocation have simply indicated that the project details remain to be agreed.

2.2.6 The need for improvements to Bedford town centre traffic remains as pressing as ever and since the original decision in 2014 by the Borough Council to develop and deliver a new transport strategy for the centre of Bedford, the following key actions have been undertaken:

- Procurement of external consultant support to assist with technical aspects
- Commissioning comprehensive travel surveys of the town centre area
- Developing the tools needed to enable transport strategy options and schemes to be tested, including an update to the Borough-wide SATURN traffic model and a VISSIM micro-simulation model of the core town centre area
- Testing a variety of alternative transport strategy options
- Supplementary work on transport issues to inform the Local Plan review

2.2.7 Bedford Borough Council recognised that further funds were required if all the objectives of the Town Centre Strategy which were originally included in the LGF2 scheme were to be delivered, and a bid was made to LGF3 in June 2016. This was for enhancements to a critical corridor between Bedford Town Centre and the strategic road network at the A421 junction with the A6. The proposal was referred to as Bedford Southern Gateway in recognition of its importance to economic activity within the town. The bid for LGF3 was successful and the Council received £4.5m from the Local Enterprise Partnership to be topped up by £0.6m from local funds. The main objectives of the proposal include deliverables to,

- Improve journey time reliability
- Improve technology and integration between systems and signals to provide a linked signal solution which responds to demand pressures
- Improve capacity at key junctions for all users
- Minimise the impact of traffic on residents and communities
- Reduce the number, frequency and severity of accidents
- Enable development opportunities to come forward
- Safeguard existing employment opportunities and encourage new ones
- Develop a prototype technology corridor for wider roll out

2.2.8 The Council was in the position of having two funding streams for projects with similar aims in co-located areas, one managed directly by DfT and the other by the LEP. Given that the strategy being suggested for the town centre described above is conceptually

similar to that for the Southern Gateway, it has been agreed with SEMLEP that the sensible approach to project governance and management would be to merge the two projects into one overall coordinated programme.

2.2.9 Through discussions with DfT and SEMLEP it was agreed that as the total value of both LGF projects will not exceed £20 million, the DfT would support moving responsibility for the LGF2 scheme to SEMLEP for combination with the LEP managed LGF3 scheme. This would require a profile for the £11 million to be agreed and for DfT and DCLG to arrange for these sums to be added to the existing LGF3 allocation for SEMLEP.

2.2.10 In addition, the emergence of other town centre issues has helped to develop the context and opportunity for a change in emphasis from these two separate but co-located projects into one scheme. These include,

- Electrification of the Midland Main Line – the relevance of this programme of works centred on the fact that the Prebend Street corridor is one of the key pinch points in Bedford's network, and the potential rebuilding of Ford End Road Bridge to accommodate new wires and pantographs looked for a while like it had the potential for bringing quantum change to Bedford's transport systems.
  At the time the Council was awarded the LGF2 money, both the bridges in Bedford had yet to be modified to accommodate the new wiring, and so the Council entered discussions with Network Rail to try and secure a joint approach which would enable the Ford End Road Railway Bridge to be completely reconstructed and thus provide a road bridge over the railway which would accommodate the requirements of a renewed Bedford traffic system.
  However, because of the time constraints of the electrification programme, there has been insufficient time to develop a proposal which could accommodate the requirements of both parties. Also, Network Rail has been able to accommodate its own essential works by the lifting of just one arch which reduces the economic viability of a rebuild.
- One Public Estate (OPE) - BBC in partnership with other public authorities is participating in the OPE programme to ensure best use is made of land and property within public sector ownership within the town. A number of sites are being progressed around the town centre; these are the land around the railway station, the land to the west of the town centred on FER, and land to the south of the town centre (centred round Kingsway).
  Some of the transport improvements which are required to release the growth potential and facilitate town centre traffic movement are of a scale which would be unviable within the normal redevelopment process. Rebuilding Ford End Road railway bridge for example to provide a relief road of Prebend Street and improved access into the Queens Park area would be outside the scope of regular development plans, and as such a wider contextual process is required.
  The town centre programme of works can be developed independently of any One Public Estate programme. However, as it is anticipated that the potential development areas will require transport and highway improvements to improve accessibility, the public realm, and increase the economic uplift of these areas, the Council will continue to develop the two schemes in parallel and improve synergies between them.
- The emerging Local Plan – In addition to land use policy, there will be a need to incorporate the adopted transport strategy into the Local Plan framework for the town centre including whether to,

  - Review the current policy support for Batts Ford Bridge and the existing safeguarding scheme

- Review the policy for the St John's Relief Road and the existing safeguarding policy
- Retain policy support and safeguarding for Prebend Street Link Road and review the safeguarding alignment in light of agreements made with Network Rail and the context of One Public Estate
- Review general policies about principles to be adopted in delivering transport, access and parking management in the town centre

- National Infrastructure Commission (NIC) and the Oxford Cambridge Corridor, including East West Rail – whilst Bedford is expected to play an important role in the growth plan for the Oxford – Cambridge corridor, and will be influenced by the strategic road and rail schemes already being progressed, these are not expected to undermine the town centre growth strategy. Rather, the strategic agenda points towards an increasing need to deliver a Bedford Town Centre offer which supports the overall growth plan. This is reinforced by the recognised need to consider 'first mile / last mile transport issues in strategic transport policy.
  Approval has been given for Network Rail to progress the East West Rail Central Section and preliminary options for routes will be available by Autumn 2018. The emerging results from the route evaluation work, particularly around the station and Ford End Road, will influence and inform decisions and options for the future development of the whole area.

2.2.11 Within this evolving context, a revised approach to delivery was required. Given the indicative allocations of LGF2 and LGF3, the availability of other resources and on the basis of the current position on deliverability and strategy testing, a suggested overall approach to the town centre transport strategy was developed to include:

1. Improvements in the town centre highway/public realm quality to discourage unnecessary through traffic and improve the quality of the environment for users of the town centre;
2. A widespread programme of small/medium infrastructure improvements focussed on key junction pinch-points where worthwhile increases in capacity and reliability that assist all road users are justified and deliverable
3. A major upgrade to existing traffic management systems across the whole Town Centre and Southern Gateway area to provide the maximum delay reductions possible, provide real-time information to drivers to support their decision-making, and to be ready to incorporate emerging/future technology on Cooperative Intelligent Transport Systems (C-ITS), Expressway driver information systems, autonomous vehicles and mobility as a service technology.

2.3 Impact of Do Nothing

2.3.1 Without investment at this time, there is a perception that Bedford Town Centre will not be able to benefit from the potential growth which the sub-national area expects to be delivered. The High Street will continue to underperform within the local economy, exacerbated by the narrow pavements and poor environment which will discourage higher value retail organisations from locating within the street.

2.3.2 East-west connectivity across the High Street and St. Paul's Square will remain poor and will limited the ability to maximise the exiting historic and cultural assets of the town.

2.3.3 There is significant housing growth planned across the wider borough, with 8,500 dwellings by 2035 and a potential further 12,500 by 2045. This will have a significant impact upon the travel patterns across the borough and into the town centre and there

is a risk that, without intervention in the High Street, the levels of traffic will gradually increase, negating the benefits achieved through completion of the Western Bypass.

2.3.4 More generally traffic conditions and journey time reliability are likely to remain poor and deteriorate further over time, reducing the attractiveness of Bedford as a business and employment location. The limited functionality of the current Urban Traffic Management Control (UTMC) will soon be completed obsolete and so the Borough Council will be unable to manage the highway network effectively.

2.3.5 The scheme aims to remove unnecessary traffic from the town centre and to manage the network in response to demand so that access to the public realm can be enhanced. Alternative schemes have been considered but were discounted because they did not give the same level of benefit. An examination of these alternatives in included in the table below,

Table 1. Consideration of alternatives

ALTERNATIVE MEASURE	REASON FOR REJECTION
Focusing infrastructure and investment in one corridor (e.g. Batts Ford Bridge to the west of the town centre, Prebend Street)	Benefits were not considered to be widespread enough, or deliver mode choice
A new link road between Ampthill Road and Mile Road	High cost and only localised benefits
Widening Ampthill Road	High cost, localised benefits and environmental disbenefits (loss of mature trees).
Incremental junction and capacity improvements (dependent on development or Council resources)	No joined up programme so phased approach would be difficult. The chosen 'modular' approach allows for planned progress and minimal disruption

2.3.6 Although some elements of the scheme are included in the CIL Reg123 list (Batts Ford Bridge, Bedford Urban Traffic Control System, High Street and other public realm improvement) the contributions received to date equate to less than £1m (since 2014). Highways and public realm works are just two elements of the infrastructure list which have to be considered against other priorities, including new schools. It is therefore unlikely that there will be a reliable and sufficient source of income to deliver the Town Centre Strategy (TCS) within the desired timeframe.

2.3.7 The Integrated Transport Programme and Structure Maintenance Programme are used to deliver Council highway priorities and stem from the strategies and actions in the Local Transport Plan. However, the combined annual value of these programmes is less than half the value of the Town Centre Strategy. While there is some allocation from these programmes as the Council's contribution to the TCS, it is not feasible to fund the scheme this way. The Council has to consider interventions Borough wide rather than concentrated in one location.

2.4 Description of the Scheme: who is affected and what are their needs.

2.4.1 The focus of the measures is around the heart of the town centre, alongside the northern and southern corridors (the former A6 corridors). Within this area there are five targeted elements of scheme delivery, with the High Street and St. Paul's Square forming the primary focus. The UTMC and technology measures will encompass the whole area, but with a specific focus upon the Southern Gateway corridor, linking with the existing Park & Ride site. Elements of the central technology infrastructure will also facilitate wider traffic management controls across the whole town in the future. See figure 1. A description of the three themes is set out in section 2.5 below.

2.4.2 Appendix A (Workshop report) of the Public Realm Framework Technical note provides a detailed analysis of the stakeholder workshop, and identifies where the outputs of the workshop have informed the development of the Public Realm element. Appendix B of the Public Framework Technical note sets out the findings of a PERS (Pedestrian Environment Review System) Audit of the town centre, identifying where improvements to the walking environment should be made.

2.4.3 Retailers / businesses – retailers and local businesses will benefit from increased footfall, reduced congestion and reliable journey time. High Street detrafficking may be of concern re deliveries as some businesses only have access from the High Street, but facilities will be designed into the scheme in the form of laybys, and managed through TROs.

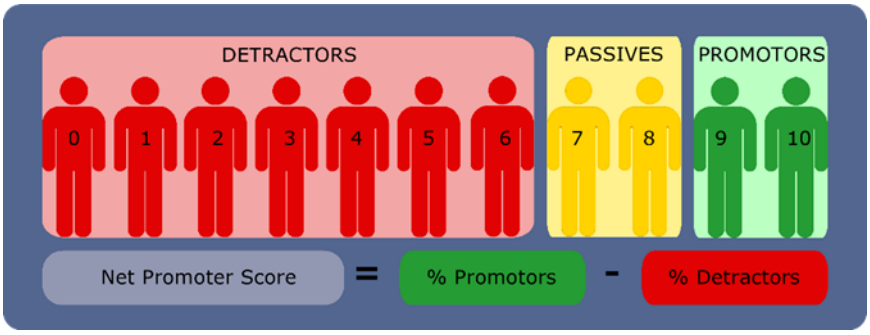
2.4.4 Town centre visitors – visitors will benefits from increased accessibility and permeability through improved public realm and better signage. Increased use of technology will provide the potential for app development to give visitors (and residents) more control of their travel choices.

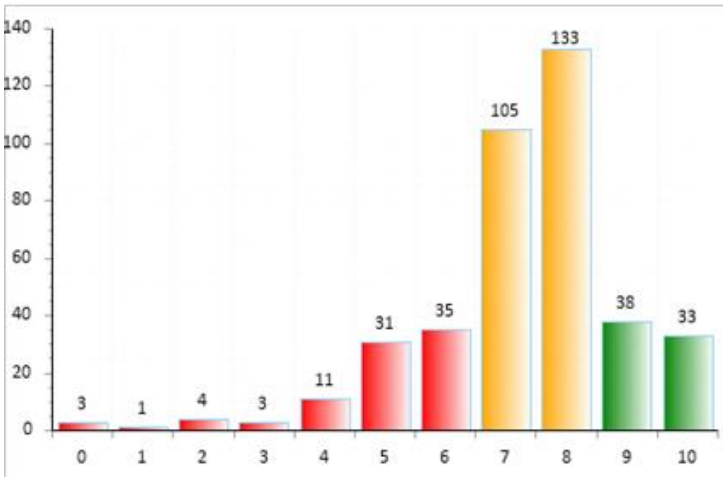
2.4.5 In 2017 Bedford BID engaged consultants Shoppers Anonymous to study Bedford Town Centre and gain an up to date clearer understanding of visitor profiles, behaviours and attitudes amongst users of the BID zone town centre and Harpur Centre, changes in demographics, dwell time, spend, expansion of catchment, together with current perception of the town centre.

2.4.6 This piece of work included establishing Net Promoter scores for the town centre environment. The results as shown on table 2 below indicated a NPS score of -21 for the town centre in December 2017 – with the score declining since the initial survey carried out in June 2017.

Table 2. Net promotor scores

Survey	Detractors	Var June	Passives	Var June	Promoters	Var June	NPS	Var June
Harpur Centre	34.69%	-2.72%	53.40%	9.80%	11.90%	-7.09%	-23	-5
Town Centre	33.50%	1.30%	53.90%	5.43%	12.59%	-6.73%	-21	-8
Riverside	42.09%		43.77%		14.14%		-28	
Total	36.44%	0.68%	50.71%	5.56%	12.85%	-6.24%	-24	-7





2.4.7 The supporting analysis carried out by Bedford BID supported the PERS assessment work referenced in Appendix A (Workshop report) of the Public Realm Framework Technical note and demonstrates that there are environment challenges for users of Bedford Town Centre that will be addressed by the proposed Public Realm improvement works to be delivered as part of the Transporting Bedford 2020 proposals.

2.4.8 Car drivers – motorised vehicle users will benefit by more reliable journey time, and fewer delays at key junctions. Table 1 of the Technical note Pinch point Schemes (copied below) shows some of the delays currently experienced by motorised vehicle users at some key junctions.

LOCATION	APPROACH	AM DELAY (MINS:SECS)	PM DELAY (MINS:SECS)
Bromham Road / Greyfriars / Union St	Greyfriars (NB) Bromham Road (EB) Bromham Road (WB)	- 4:00* -	5:20* - 8:40*
Ampthill Road – Elstow Road Junction to W End Junction (SB)		2:00	2.40
Britannia Road and Cauldwell Street (NB)		3:20	2:40
Shakespeare Road / Clapham Road / Manton Lane Roundabout	Shakespeare Road (NB)	2:30	2:10
Bromham Rd / Shakespeare Rd / Ashburnham Rd Double Roundabout	Bromham Road (WB) Shakespeare Road (SB)	- 6:20*	4:30* 6:00*
Clapham Road / Tavistock Street	Union St (NB)	-	5:00*
Bromham Road – Hassett Street to Shakespeare Road double roundabout	Westbound	-	12:00*

2.4.9 Public transport – bus users will benefit from more reliable journey times and fewer delays. Technology will help to manage demand in favour of buses if required.

2.4.10 Data submitted by the Council under National Performance Indicator NI 178 (Bus Services running on time) shows that the percentage of services running on time consistently falls below the target level of 80%.

2.4.11 Service delivery vehicles – freight and servicing will benefit from more reliable journey times and clearly marked bays for servicing difficult to access facilities (e.g. on High Street).

2.4.12 Cyclists / pedestrians – non motorised users will benefit from improved access at key junctions, increased permeability and reduced traffic on key routes (High Street).

2.4.13 Residents – residents will benefit from improved air quality, reduced congestion, increased economic activity and improved road safety.

2.5 Theme 1: Town Centre Public Realm Scheme

2.5.1 The focus of the public realm scheme is within the core town centre, encompassing the length of the High Street, St. Paul's Square and the Town Bridge/St Mary's Street. It builds upon and compliments smaller scale public realm works already completed and / or planned in areas, such as the Riverside Bedford development.

2.5.2 Key features of the Public Realm scheme are:

- **High Street decluttering**: Removal of all unnecessary guardrail, signals and lines to reduce vehicle prominence and create an environment where all transport modes feel welcome.

- **High Street repaving and resurfacing:** Introduction of a cohesive materials palette to provide a visual uplift to the town and encourage walking and wider exploration. This includes both carriageway and footway surfaces, to ensure an improvement to visual amenity, the setting of heritage assets, and the introduction of features that will provide greater pedestrian priority.

- **High Street pavement widening to accommodate and encourage increased footfall and also café spill out in some locations:** To help reduce vehicle speeds and provide greater control over servicing, the High Street carriageway will be narrowed to accommodate wider pavements and spill-out spaces for businesses.

- **High Street and St Paul's Square introduction of high quality street furniture (including seating) and soft landscape, including trees:** Introduction of a consistent street furniture palette to reduce visual clutter. This would be complemented by a soft landscape scheme designed with full consideration of CCTV requirements. Fastigiate tree varieties can be used to add an element of green and verticality without hindering CCTV provision. The considered use of street furniture and tree planting will also prevent/discourage drivers from entering pedestrian-only areas in places where vehicle and pedestrian priority are deliberately blurred to promote walking and cycling.

- **High Street improvement to on-street servicing:** On-pavement service bays are proposed so that when not in use, the space given over to pedestrians is maximised. It is imperative that restrictions on loading and servicing are actively enforced.

- **St Pauls Square decluttering:** The Square is at the heart of Bedford, yet is currently overwhelmed by wide vehicle carriageways and high volumes of traffic. The important views of the Church and surrounding buildings are lost amidst the signals, guardrailing and other street clutter. Removing these elements will open up the space, and enable the statue of John Howard and Church – both Grade I Listed – to be fully appreciated. The setting of these assets will be further enhanced through minimising road markings and changes to materials that will soften the space and tie the east and west sides of the town together.

- **St Paul's Square repaving and resurfacing:** The current paving would benefit from the introduction of natural stone over the concrete paving currently used. The area occupied by the market is currently surfaced with stone setts which provide a more appropriate setting to the buildings in this area. Carriageways will similarly be treated with paviours to help reduce traffic speeds and reduce the visual prominence of vehicle routes.

- **St Paul's Square pavement widening:** There are opportunities as part of wider traffic management initiatives to widen pavements on each side of the Square:

  - North: The carriageway could be reduced slightly make more efficient use of the land available and reduce the impact of junctions.
  - East: The carriageway could be reduced to one lane – providing an enhanced setting to the statue of John Howard – with a small flare to enable vehicles to enter the southern section.
  - South and west: the carriageway could remain as two lanes; however, additional tracking has identified where elements of the carriageway can be reclaimed for pedestrian use, and reduce what in some locations are currently very wide crossing widths.

- **Town Bridge pavement widening:** to help reduce vehicles speeds and enhance east-west pedestrian and cyclist connections to the River Path, the carriageway over the bridge can be narrowed.

- **Rearrangement of junction layout of Cauldwell Street/St. Marys Street/St. John's Street:** to enhance the flow of traffic from Cauldwell Street into St. John's Street and tie-in with reduced carriageway width over the Town Bridge.

- **Wayfinding:** Introduction of a more consistent style of wayfinding infrastructure that matches other elements of street furniture. The addition of distance information, in terms of walk-times, will support aspirations to encourage walking and exploration of different parts of the town.

2.5.3 A full discussion of the public realm scheme development process is set out within the accompanying document '***Bedford High Street - Public Realm Framework***'.

2.6 Theme 2: Alleviating Pinch-points Schemes

2.6.1 Four key areas have been identified for highway mitigation measures to facilitate improvements to the operation of the highway network and complement both the proposed changes within the town centre and the package of technology measures.

2.6.2 Features of the schemes within the Pinch-point theme are:

- Area 1: A6 Northern Gateway

- Signalisation of Clapham Road/Manton Lane/Shakespeare Road
- Enhancement to the operation of the Paula Radcliffe Way/Great Ouse Way roundabout
- Enhancement to the operation of the Manton Lane/Brickhill Drive Junction

- Area 2: Bromham Road Eastern Gateway

  - Realignment and signalisation of Bromham Road/Shakespeare Road/Ashburnham Road double mini roundabout

- Area 3: Around Hospital

  - Additional lane on northbound approach to Britannia Road/Cauldwell Street/Kempston Road junction
  - Rearrangement of junction layout of Britannia Road/Ampthill Road

- Area 4: Ampthill Road Southern Gateway

  - Additional lane capacity at Cowbridge
  - New pedestrian footbridges

2.6.3 A full discussion of the pinch-point scheme development process is set out within the accompanying document '***Bedford Town Centre Pinch-point Schemes***'.

2.7 Theme 3: Urban Traffic Management Control & Technology measures

2.7.1 The Urban Traffic Management Control (UTMC) theme incorporates a package of measures to manage the flow of vehicular traffic across the core town centre and former A6 corridor, as well as promote enhanced information provision to enable travellers to make informed choices about how and when they travel.

2.7.2 The key features of the schemes are

- UTMC Common Database
- UTMC system encompassing the extent of scheme measures (see Figure 1)
- Remote Monitoring System
- CCTV / data integration for Journey Time Management
- Traffic Data Base and Control Room Equipment
- Traffic Signal Upgrades across the extent of scheme measures (see Figure 1)
- Signing, Information and Publicity Systems
- Extended coverage of ANPR cameras for enforcement of Bus Lanes

2.7.3 The UTMC and Technology package provides an opportunity for the following:

- Improving the capability of the urban transportation infrastructure to assist with incident management, traffic advisory to network users and long-term investment planning, including use of public and 3rd party data sources;
- Improving the performance of infrastructure, and ensuring the benefits of new infrastructure are maintained, by improving the coherence of regional and corridor traffic management systems;
- Improving the awareness of network users of performance, the availability of public transport, improved trip planning, and promotion of sustainable modes through an area-wide open data strategy
- Enhanced visibility of the performance of transport service providers, ensuring compliance with existing agreed service levels and providing a basis for dialogue on

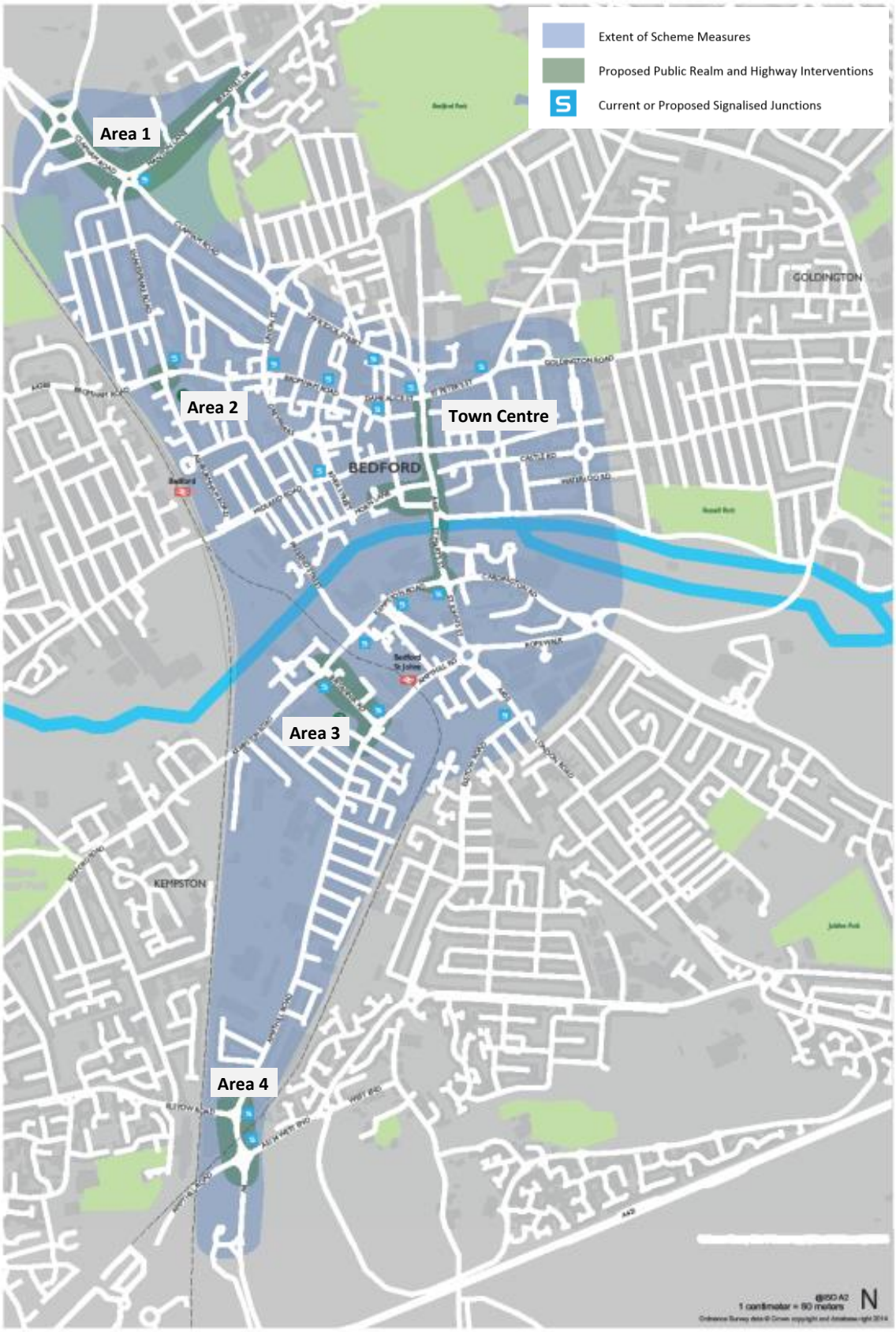
service improvements, for example to support improved connectivity with MML upgrades and sufficient capacity for the One Public Estate programme;

- Improve access for commuters and visitors by:
- increasing knowledge of parking availability: whether on-street, off-street public or privately owned, through roadside variable message signs and enabling 3rd party app development
- providing enhanced methods of payment for transport, through use of interoperable fare media
- Improved data exchange with local and regional transport operators, and adjacent regional economic hubs, including Cambridge, Milton Keynes and Northampton to advise on HazMat vehicles, other Vehicles Of Special Interest (VOSI), regional road closures, failures of the rail network or other man-made or natural events that could impact Bedford; and
- Encouraging and part-funding local innovation to improve accessibility, mobility and the sustainability of the transport network as a whole, such as establishing defined corridors for pilots of Advanced Traffic Management, including the use of Vehicle to Infrastructure (V2).

2.7.4 A full discussion of the traffic manage scheme development process is set out within the accompanying document '***Bedford Town Centre – a vision for Intelligent Mobility'***.

2.7.5 An overview of the geographic location of these scheme elements within the town centre strategy is provided in **Figure 1.**

Figure 1. Scheme Overview



2.7.6 In summary, the overarching aims of the combined package of scheme measures are to:

- Enhance the permeability of the core town centre, creating better connections between the retail quarter, the cultural quarter, and the Great River Ouse

- Enhance the management of traffic movements into and across the town to improve journey time reliability

- Provide travellers with real-time information about traffic and travel conditions to allow them to make informed decisions about the travel behaviour

2.7.7 Overall, the enhancements aim to facilitate accessibility to Bedford, improvements in road network performance and improved regional connectivity, with a specific focus upon new or upgraded infrastructure. This includes scheme measures within both the 'Town Centre Public Realm ' and the 'Alleviating Pinch-point' themes ensuring an integrated approach.

2.8 The evolution of the scheme: from concept to objectives

2.8.1 Any assessment of a scheme's value and potential effectiveness has to take account of how decisions were made. This section sets out how the evidence was collected and used, and what other influences were considered in arriving at the scheme details described above. It will consider the following,

- Data gathering
- Best practice from elsewhere
- Stakeholder involvement
- Strategic alignment

2.8.2 Table 3 below links the strategic objectives of the project with the Council's key policy documents, which are then tied in to the specific scheme objectives.

Table 3. Alignment of objectives with organisational aims

	Strategic objectives	Reflecting BBC policies within key documents	Scheme objectives
TSO1	Support the heritage, cultural and economic regeneration in the town centre through enhanced access and improved town centre permeability	Local Plan Local Transport Plan (LTP) Corporate Plan Bedford Masterplan (One Public Estate)	Detraffic High Street Improve public realm Improve accessibility and connectivity Retain existing businesses Improve journey time reliability
TSO2	Manage vehicular activity in the core town centre, in particular through movements, to enhance the pedestrian retail, night-time, and visitor economy experience, whilst ensuring adequate town centre access for traders, freight, public transport and taxis and to car parks	Town Centre Area Action Plan (TCAAP) LTP High Street Strategy	Manage congestion Improve journey time Retain existing businesses Remove constraints to developments
TSO3	Facilitate efficient cross town and end-to-end corridor movements, for all transport modes, through strategic routings, reduced congestion at network pinch-points and improved infrastructure provision	LTP (Network Management Strategy (NMS))	Improve key junctions Improve technology and integration between signals

TSO4	Enhance strategic links to the town to secure the long term position of Bedford as a regional centre, whilst reducing the volume and impact of through vehicular traffic movements that could otherwise utilise the town ring road	Economic Development Strategy NMS	Improve access to the Strategic Road Network (SRN) Improve technology and integration between signals
TSO5	Provide network resilience, across all modes, that accommodates forecast growth associated with future development aspirations of the town and changes to population demographics	Network Management Strategy Bedford Masterplan	Improve key junctions for all users Respond to demand pressures
TSO6	Create a safe and secure environment for all transport users, taking particular account the needs of vulnerable users, and reduce conflicts between vehicular and non-vehicular transport movements	LTP Road Safety Strategy Local Plan Highway Design Guide	Encourage modal choice Improve air quality Reduce casualties
TSO7	Manage the environmental impacts of transport, in particular within the air quality management area, and promote sustainable modes of travel	Air Quality Management Area and Plan LTP Public Transport Strategy, Active Travel Strategy	Encourage modal choice Improve air quality Reduce casualties
TSO8	Proactively manage access to health and educational facilities, including hospital sites, schools, the college and the university, in order to make best use of transport network capacity	LTP Area wide travel planning	Improve key junctions Improve technology and integration between signals
TSO9	Create a coherent 'sense of place' across the town quarters, ensuring clear vehicular and non-vehicular way-finding leading into and around the town centre, with a particular focus on ensuring connectivity with the river and the rail station	LTP Active Travel Strategy TCAAP	Encourage pedestrian movement Improved signage
TSO10	Ensure inclusive, resilient, long-term, and low maintenance design of transport infrastructure and operational services	LTP Asset Management Strategy Highway Design Guide	

2.9 Data gathering

2.9.1 An extensive assessment of access and movement issues across Bedford Town Centre has been undertaken, encompassing all the major corridors leading into and out from the centre. This is documented within the technical reports referenced within Sections 2.4 – 2.7.

2.9.2 In addition to general assessment of levels of highway and public transport provision the evidence base includes:

- Automatic Number Plate Recognition (ANPR) cordon survey
- ANPR Car Park Survey
- Manual Classified Counts (MCC) at 27 junctions across the town
- Journey time survey on five routes across the town
- Pedestrian Environment Review System (PERS) audit within the town centre
- Cycle infrastructure audit within the town centre and routes leading into the centre
- Retail data assessment

2.9.3 In addition strategic, microsimulation and local junction model outputs have also been available with which to assess the performance of the transport network.

2.9.4 These varying sources of data and models have been analysed to identify the following key issues relating to access and movement in Bedford.

Traffic Model Outputs – Key Issues

- Peak period capacity constraints through the Prebend Street / Midland Road junction (both with current peak traffic flows and forecast to become more severe with future growth)
- Peak period capacity constraints through the Bromham Road / Ashburnham Road double roundabout both with current peak traffic flows and forecast to become more severe with future growth, even with the completion of the Western Bypass)
- Peak period delays along the Ampthill Road Corridor (both with current peak traffic flows current and forecast to become more severe with future growth)
- Peak periods capacity constraints through Wilmers Corner (both with current peak traffic flows and forecast to become more severe with future growth)

Travel Survey Data – Key Issues

- There is a high volume of through trips from south of river that use the Town Bridge / Horne Lane / River Street to access the north of the town (the area to the north of Bromham Road). This equates to over half of the northbound flow across the Town Bridge in the peak periods (between 325 to 375 vehicles movements per peak hour).
- There is a high volume of through trips from north-west of the town (Clapham Road / Bromham Road) that use the High Street / Town Bridge / St. John's Street to access the area to the south of the Kings Quarter. This equates to up to half of the southbound flow over the Town Bridge in the peak periods (between 350 to 375 vehicle movements per peak hour)
- There is a notable volume of trips travelling south along High Street that subsequently turn east along Embankment that add to southbound congestion

along the High Street. This trip movement account for up to 20% of southbound trips travelling down the High Street during the peak periods (between 150 to 175 vehicle movements per peak hour).

- There is considerable journey time variation across the network on key corridors leading into the town centre, in particular along the Ampthill Road Corridor with average speeds as low as 5mph on parts of the network

Car Parking Data – Key Issues

- The high volume of traffic circulating around the core town centre network to access the car parks at the Harpur Centre, River Street, and Allhallows.
- The extent of rail related traffic heading to Bedford Midland Station car park from the west of Bedford along the Bromham Road corridor

Walking & Cycling Audit Data – Key Issues

- The lack of connectivity to rail by all modes of transport, particularly in the context of rail likely to become a more prominent mode in the future.
- The current restricted role of buses within transport hierarchy, with services all highly focused on town centre, despite relatively high density of built up area.
- The dominance of motorised vehicles on corridors leading into the town centre creating adverse conditions for non-motorised modes. There is currently a 20% bus, walk, cycle mode share, whereas the benchmarking exercise indicates that a level of 25% or higher is achievable.
- Concerns around air quality in core town centre.
- The sub-optimal connection of different 'quarters' around the town for pedestrians and cyclists, and the opportunity to create a more coherent and integrated town centre.

Town Centre Public Realm – Key Issues

- The town suffers from poor 'sense of arrival' with few well defined 'gateway' points into the core town centre
- High quality streets and spaces contrast with vehicular dominated areas such as the High Street and St Paul's Square
- Important buildings "disappear" in a vehicle dominated setting
- Limited greenery in the High Street and main shopping area
- Event spaces are scattered throughout the town centre but could be used for more than markets
- Opportunities to foster a cafe culture and encourage businesses to spill out into the street
- The proliferation of A4 drinking establishments make some parts of the town feel unsafe to some users
- The High Street and Midland Road generally feel unsafe, pedestrianised streets lack overlooking and feel desolate after dark
- Some parts of the town are disorientating
- Lack of legible, visual connections between some key destinations

Retail Data – Key Issues

- Business rate data indicates significant variation in rateable values across the core town centre with values on the High Street only around 40% of those within the heart of the pedestrianised area on Silver Street and Midland Road.

2.9.5 A number of background technical reports have been published, comprising:

- Report of Survey
- Benchmarking Report
- Transport Model – Local Model Validation Report
- Transport Model – Microsimulation Model Development
- Forecasting Report
- Issues and Opportunities
- Scheme Option Development
- Options Screening and Assessment
- Scheme 'Long List' Appraisal

2.9.6 These are available via:

http://www.bedford.gov.uk/transport_and_streets/highways/schemes_and_projects/key_transport_projects.aspx

2.10 Best Practice and Evidence

2.10.1 As previously documented, the development of the package of town centre transport measures has been achieved through establishing a wide-ranging and robust evidence base, with multiple data sources. This included a benchmarking exercise (see link above) comparing Bedford to similar UK towns to understand comparable travel behaviours and learn lessons on how Bedford could achieve better provision.

2.10.2 As part of the work developing Theme 3 traffic management measures a comprehensive assessment of available technologies has been undertaken, engaging with suppliers and learning from world-wide examples. The technical note for Theme 3 provide a full summary of the best practice review and how this has influenced the development of the package of measures.

2.11 Stakeholders

2.11.1 Bedford Borough Council has engaged with necessary stakeholders throughout the option development process and will continue to do so throughout the development of the scheme. As with most projects affecting town centres, public highways and the public realm, the range of stakeholders is wide and varied. In a sense, all residents, employees and visitors have an interest in the scheme and most will be affected by the outputs, either directly or indirectly. Eliciting qualitative and meaningful responses to stakeholder consultations depends on how each event is managed.

2.11.2 The Town Centre has been subject to a range of different studies focused on retail, cultural as well as transport that have all involved engagement with key stakeholders to understand the key issues. In particular, the issue of what measures to take on the High Street has been the subject of local consultation for some years and various projects, in particular the Local Transport Plan, the Townscape Heritage and the Citizens Panel. While views have been split, in more recent years and particularly after the opening of

the bypass, the consensus has been moving towards support for detrafficking, a view supported by the Bedford Improvement District (Bedford BID).

2.11.3 The Southern Gateway Corridor has been the subject of concerns raised by local businesses, specifically the Interchange Retail Park and potential occupiers of the land adjacent to Morrisons on Ampthill Road. Community representatives have also called for further investigation into the issues along the route. The owners of the Interchange Retail Park and other potential developers adjacent to the site have expressed their intention to work with the Council to look for area wide solutions. Highways England have also been consulted in relation to the A421 corridor and interchange with the A6 at the southern end of the scheme.

2.11.4 The Northern Gateway Corridor has been subject to a specific assessment study to examine future capacity issues, which involved engagement with key stakeholders.

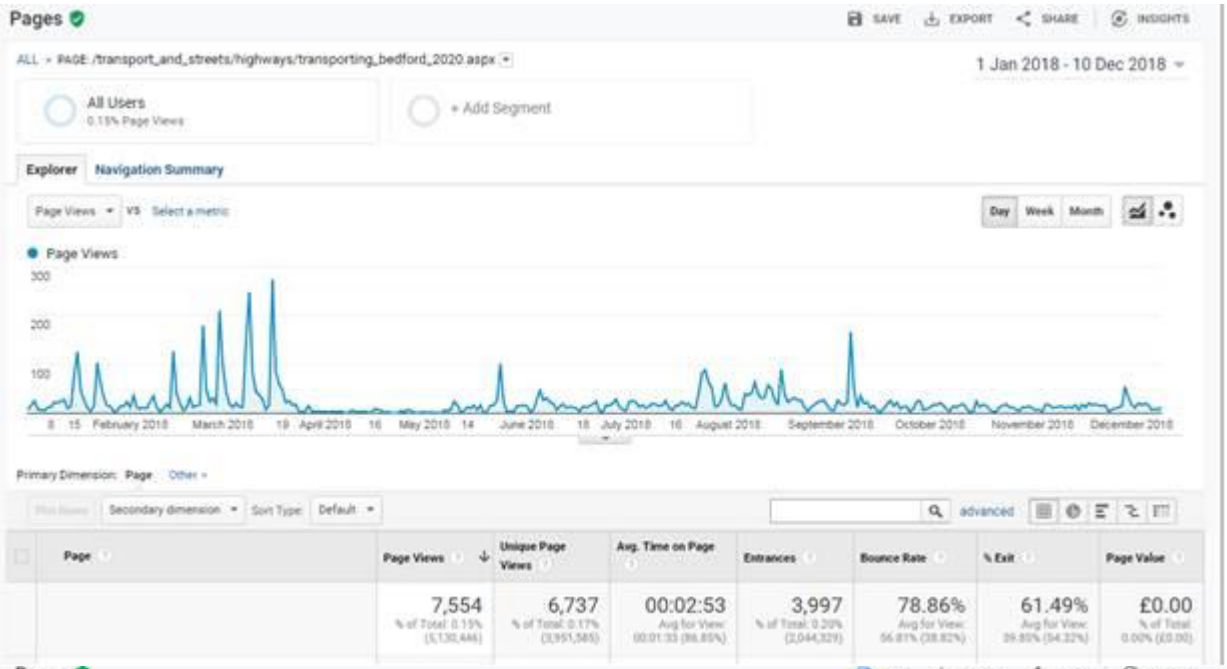
2.11.5 A supplementary Stakeholder Management Plan has been prepared to outline how stakeholder engagement will be established and taken forward as part of the proposals.

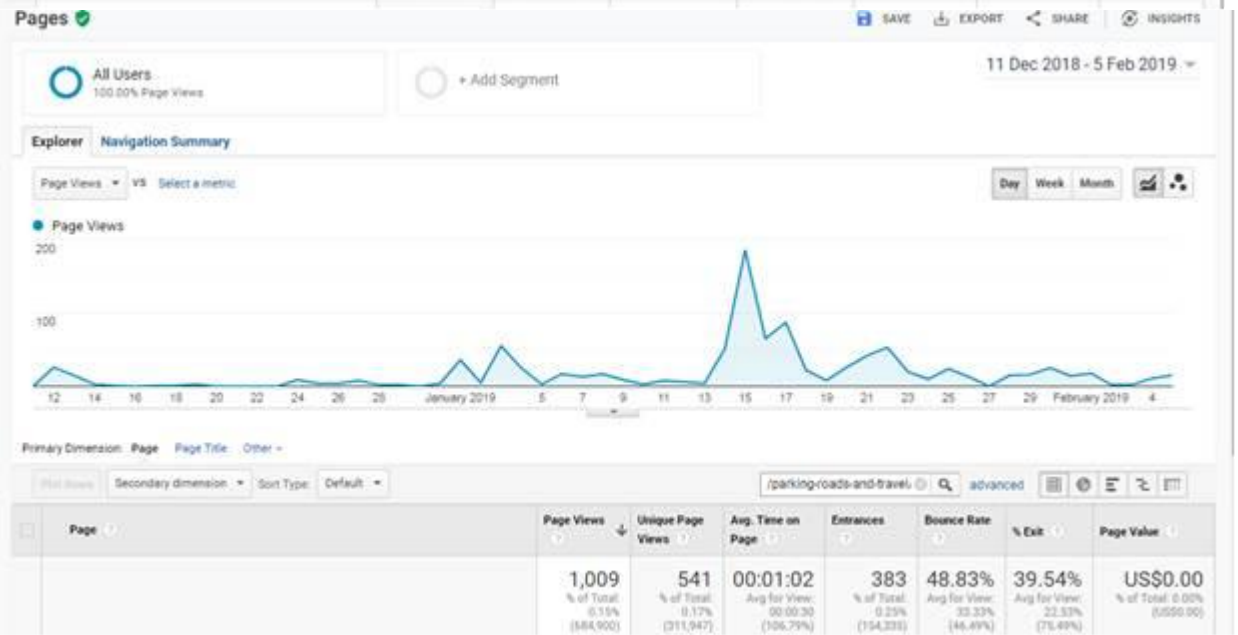
2.11.6 A summary of some of the highlights of stakeholder engagement activities completed since publication of the original business case are shown (in no particular order) below:

- Press release & information leaflet published December 2017
- Correspondence with individuals in response to initial website & leaflet publicity
- Stakeholder meetings with Bedford BID, Chamber of Commerce and Federation of Small Businesses
- Stakeholders meetings held with transport user groups from January 2018
- Discussions held with Public Transport Operators since January 2018
- Discussions held with Harpur Trust and Bedford Modern School about Manton Lane scheme
- Discussions held with Manton Lane Businesses on Manton Lane scheme
- Discussions held with Sainsbury's and Aldi regarding Manton Lane area scheme
- Information meetings held with Clapham, Elstow and Brickhill Parish Councils and Kempston TC
- Briefing meetings held with all political groups
- Discussions with industry about technology elements
- Discussions about technology elements including lessons learnt on similar schemes and exploring future opportunities with neighbouring authorities.
- An engagement with Transport Systems Catapult to develop technology theme.
- Public Exhibition held at Edith Cavell School for Manton Lane area scheme
- Second information leaflet published Jan 2019
- Stage 2 consultation carried out with businesses in Manton Lane and Ampthill Road areas
- Detailed discussions with Bedford Hospital about Britannia Road scheme..

2.11.7 In total the project team have met with over four hundred individuals at various meetings, presentations and exhibitions. Mailshots have reached over 80,000 households and over 200 emails, letters and online comment forms have been received.

2.11.8 As at the end of January 2019, 2676 people subscribed to the scheme email list and over 7000 unique visits have been made to the scheme webpages since January 2018 as shown below





2.11.9 To date the main emphasis of Stakeholder engagement has been to disseminate information about the project to confirm that the strategic fit and detailed proposals have the support of both local interest groups and the wider community. Responses have been encouraging with widespread agreement on the issues that the project seeks to address, and support for both the need for change and the methodology being used to implement change.

2.11.10 Consultation on detailed proposals has led to scheme designs being tailored to address issues raised and has highlighted several peripheral issues that have subsequently resulted in new transport schemes being included within the Councils own capital works programme.

2.11.11 We have a high degree of confidence that the Stakeholder Management Plan is proving an effective way to engage with the local community and more importantly providing a method to challenge and influence the proposals. All project communications are carried out in line with SEMLEP guidelines. All correspondence is documented and responded to. Trends and high profile issues are frequently reported to the Transporting Bedford in accordance with project governance methodology.

2.12 Alignment with Bedford Strategic Aims

2.12.1 Bedford Borough Council has three priority areas:

1. A Thriving Local Economy – providing the environment to ensure that Bedford Borough's economy can continue to grow
2. Empowering Communities – supporting our communities and neighbourhoods
3. Supporting People – safeguarding our vulnerable residents

2.12.2 The package of schemes will directly support the first two priorities and contribute to delivery of the third.

2.12.3 The enhancement to the public realm will create an environment that promotes higher retail and leisure activity and will support the whole town centre economy. The provision of a wider transport network which offers employers reliable journey times to suppliers and customers, and employees better access to jobs, will increase the likelihood of inward investment.

2.12.4 The Town Centre Air Quality Management Area encompasses a specific proportion of the focus for the measures proposed. This encompasses a set of objectives for a range of pollutants that the Borough Council monitors annually. The Public Realm measures, and wider traffic management, will directly support the reduction in pollutants related to vehicular traffic within the area. There will also be wider environmental benefits in terms of noise, townscape and protection of historic assets within the town centre.

2.12.5 The package of measures has also been designed with specific links to future outcomes of the Local Plan process and the One Public Estate programme. The growth outlined within the draft Local Plan will have specific focus on the former A6 corridors, in particular to the north of Bedford, and so the measures outlined within this Town Centre Strategy will deliver an initial level of provision to facilitate this future growth. More specifically the proposals around Area 1 A6 Northern Gateway link with a National Productivity Funding bid to enhance accessibility to the north of town.

2.12.6 Current planning policy documents look ahead to 2021. Following approval by Executive and Full Council on 5 December 2018, the Local Plan 2030 has been submitted to the Planning Inspectorate for Examination.

2.12.7 The emerging One Public Estate programme has a specific focus on development and associated infrastructure provision to the west and south of the town. Both elements would extend directly from the core measures proposed within this Town Centre Strategy, with potential public realm measures around Midland Road linking to the proposals for the High Street and St. Paul's Square in a holistic manner. Similarly potential enhancements around the Kingsway Gyratory would extend from the improvements to St. Mary's Street, providing a fully integrated package of measures.

2.12.8 The Southern gateway corridor is a mixed use linear routes with a range of uses including residential, employment, shops, leisure and community uses. The proposed improvements to the transport network will reduce the adverse impact of traffic bringing wider aspirational benefits to the cycling and walking network, as well as the local neighbourhood.

Summary of issues identified and development of the strategy objectives

2.12.9 Based on the evidence base, consideration of best practice, issues raised by stakeholders and an examination of Council priorities, the following four key overarching issues to address were identified as:

- High traffic flows along the High Street and narrow pavement widths creating an unwelcoming environment for pedestrians that has had a clear demonstrable impact upon the value of retail property along this street.
- Lack of connectivity, permeability and legibility on the western and south-western sides of the town centre between the retail quarter and cultural quarter and River.
- Identified pinch-points across the town highway network that create specific uncertainty in journey times
- An absence of a functional traffic management system for the town to respond to incidences and inform travellers of congestion and delays

2.12.10 In response to the identification of these overarching issues to address, the Town Centre Transport Strategy development process established a set of ten strategic objectives that encompass the combined aims of the strategy. These remain the objectives against which the package of measures has been developed:

- TSO1 Support the heritage, cultural and economic regeneration in the town centre through enhanced access and improved town centre permeability.
- TSO2 Manage vehicular activity in the core town centre, in particular through movements, to enhance the pedestrian retail, night-time, and visitor economy experience, whilst ensuring adequate town centre access for traders, freight, public transport and taxis and to car parks.
- TSO3 Facilitate efficient cross town and end-to-end corridor movements, for all transport modes, through strategic routings, reduced congestion at network pinch-points and improved infrastructure provision
- TSO4 Enhance strategic links to the town to secure the long term position of Bedford as a regional centre, whilst reducing the volume and impact of through vehicular traffic movements that could otherwise utilise the town ring road.
- TSO5 Provide network resilience, across all modes, that accommodates forecast growth associated with future development aspirations of the town and changes to population demographics.
- TSO6 Create a safe and secure environment for all transport users, taking particular account the needs of vulnerable users, and reduce conflicts between vehicular and non-vehicular transport movements.
- TSO7 Manage the environmental impacts of transport, in particular within the air quality management area, and promote sustainable modes of travel.
- TSO8 Proactively manage access to health and educational facilities, including hospital sites, schools, the college and the university, in order to make best use of transport network capacity.
- TSO9 Create a coherent 'sense of place' across the town quarters, ensuring clear vehicular and non-vehicular way-finding leading into and around the town centre, with a particular focus on ensuring connectivity with the river and the rail station.
- TSO10 Ensure inclusive, resilient, long-term, and low maintenance design of transport infrastructure and operational services.

2.12.11 These ten objectives form the basis against which the package of scheme measures are evaluated. To ensure an evidence-based approach an associated set of metrics have been developed for each objective and are presented in Table 3

2.13 Developing the objectives: from scope to options

2.13.1 The original project to build Batts Ford Bridge and supplement this with some public realm improvements was developed as a response to Bedford town centre's historic transport problems with an expectation that growth would continue at previously identified levels. The construction of Batts Ford Bridge was in a sense completing a transportation plan which had initially been proposed in the 1950s. However, four critical factors began to emerge as investigations continued,

- The affordability of the project given that the awarded funding was significantly lower than the bid
- The growth and development context shifted significantly (OPE, additional local plan growth)
- The use of technology regulate traffic movements and management on an area wider basis was becoming affordable and widespread
- Changing public expectations and behaviours leading to a requirement that infrastructure (highways and public spaces) is accessible and adaptable

2.13.2 These factors guided the project to look at a wider outcome based programme that could deliver benefits across the town and facilitate levels of growth and movement based on the changing context. The Council had to redesign the project away from a single (unaffordable) piece of infrastructure with supplementary small scale improvements to a scheme which could deliver a range of benefits across all user groups and enable the town to cater for increased future demand.

2.13.3 Similarly, benchmarking with similar towns suggested that investment in the town centre public realm would improve footfall and dwell time. Coupled with detrafficking of the core heritage area, this would encourage inward investment and retention of existing businesses.

2.13.4 The evolution of the (predominantly) single scheme into a three themed approach was considered to provide a solution which would cater for and manage demand at all stages of potential journeys and cater for current and future demand. Improvements for all modes and enhanced public realm has the potential to discourage car use, improved capacity at key pinch points will ease congestion for essential travellers, and use of technology in highway infrastructure will manage demand and minimise the adverse impacts of congestion on residents and visitors.

2.13.5 The focus of the full package of schemes measures encompasses the core town centre along with the former A6 corridors to the north and south of the town (as shown in Figure 1 in Section 2). In particular, this represents the initial focus for the enhanced UTMC and technology measures to optimise the operating of the network and provide real-time information.

2.13.6 The specific infrastructure measures are focussed around five sub-areas:

- Town Centre – High Street / St. Paul's Square / St. Mary's Street
- Area 1: A6 Northern Gateway – Clapham Road / Manton Lane
- Area 2: Bromham Road Eastern Gateway – Bromham Road / Shakespeare Road / Ashburnham Road
- Area 3: Around Hospital – Britannia Road / Ampthill Road

- Area 4: Southern Gateway – Ampthill Road

2.13.7 Taking account of local priorities, and available resources the scope aligns directly with the wider vision for Bedford encompassing development to the west, north and south of the town centre area.

2.14 Constraints

2.14.1 No specific constraints have been identified to delivering the scheme measures identified. As the highway authority, the Council has powers through various Highways Acts to deliver improvements to the highway. Other constraints such as the requirement for planning permission or railway possessions have been included in the risk register.

2.14.2 The potential constraints of the scheme are mostly related to its complexity and the multi strand nature of delivery. The three themed approach, the extent of the geographical locations, and the prolonged timeframe (3 years) require that planning and monitoring will be kept under constant review.

2.14.3 Other developments and works within the town will have to be integrated into the project plan. These include the major bridge works being carried out by Network Rail on the town's two railway bridges within the delivery timeframe of the project. These works will have an adverse impact on congestion in the town as bridges are closed for up to 20 weeks at a time, and as such, the works associated with the TCS will have to demonstrate the ability to be flexible if there are delays to the bridge works.

2.14.4 Most of the powers needed to deliver highway and public realm works are contained within the Highway Acts, and the approvals process is not expected to be problematic. However, where public consultation is required, this will have to be programmed in and delivered within the set timeframe.

2.14.5 Working within the town centre is a constraint in itself because of the multiplicity of uses, users and the built environment. Any construction disruption to the highway or public realm will have an impact on visitors, travellers and businesses, all of which will be set within a relatively long timeframe. Construction Management Plans will need to demonstrate that the adverse impacts of disruption have been taken into account.

2.14.6 The town centre is an historic environment and any works will have to demonstrate sensitivity and potential improvement to the urban fabric. It is also part of a designated Air Quality Management Area and any changes to the way traffic moves around will have to address this.

2.15 Interdependencies

2.15.1 The Transporting Bedford 2020 project is a stand-alone project which can be delivered independently of any other projects within the town. Its objectives and outcomes are strong enough to deliver benefits without further interventions. However, it is complemented by other initiatives which may come forward within or beyond the same timeframe, most notably, those mentioned in section 2.2 of the Strategic Case, which will continue to deliver the benefits set out in the Economic Case.

2.15.2 In addition to these ongoing context initiatives, the Council continues to seek funding and approvals for further developments to improve infrastructure and public realm in Bedford. For example, the Council is currently preparing a Business Case for the Housing Infrastructure Fund to fund a highways scheme that will enable the delivery of much needed homes to the Bedford Town Centre. The proposed scheme involves the construction of a

single lane carriageway connecting Prebend Street to Ashburnham Road passing under the existing Ford End Bridge, and is estimated to cost £5-10 million. The Business Case for the scheme will be submitted to the Ministry of Housing, Communities and Local Government (MHCLG) and Homes England by late March 2019, with a funding decision expected in mid-2019.

Should the application be successful, the scheme will be implemented by 2023/24 at the latest, and there will be interdependencies that will need to be managed, particularly in relation toprocurement and availability of contractors, requirements for design resource and timetabling of works so that appropriate diversionary routes are available when the highway improvements are under construction. These interdependencies have been considered for both TB2020 and HIF schemes with joint project working to review risk issues and commercial and management case for the two projects.

2.15.3 Consultation on the Masterplan stage of the OPE programme (One Public Estate) has recently closed. The OPE programme sets out the three areas in Bedford where major regeneration is proposed. All three areas are independent of the TCS but the benefits of both programmes are interlinked. The infrastructure associated with the OPE programme will deliver similar interventions as the TCS particularly at key pinch points (Midland Rd / Prebend Street, Wilmer's Corner, and the Station Quarter) and public realm improvements. The extent of the Area 1 – Northern Gateway scheme measures have been revised following the successful outcome of the Borough Councils National Productivity Infrastructure Fund bid as announced by DfT in October 2017. The successful NPIF bid permits the wider improvements across the Paula Radcliffe Way /Great Ouse Way and Manton Lane/Brickhill Drive junctions.

2.15.4 There is also the potential to tie in to any future improvement scheme promoted by Highways England at the A421 / A6 junction. In recognition of the potential movements between the Wixams / Wilstead and Bedford and the employment opportunities therein, Highways England is investigating the provision of signals at the A6/ A421 junction to aid non-motorised movements across the busy trunk / local slip road. Although there is no definitive proposal in place, investigations into the feasibility of a scheme have been carried out and are likely to move forward.

2.15.5 Future High Streets Fund. The Future High Streets Fund was launched on 28 December 2018 and is a £675 million fund that aims to help local areas make their high streets and town centres fit for the future. BBC will be submitting an Expression of Interest setting out the need for funding, nature of the challenge and the vision for the future of the town centre. The expression of interest bid is due to be submitted by 22 March 2019.

The objective of the Fund is to renew and reshape town centres and high streets in a way that improves experience, drives growth and ensures future sustainability.

The expression of interest does not include specific scheme proposals at this stage

The expression of interest requires local authorities to

- define the specific challenges faced by their high streets
- set out their overarching strategic ambition for what the high street or town centre should become
- what needs to be done to make this possible

- Any identified need for investment needs to fall under the following themes:
  - Investment in physical infrastructure
  - Acquisition and assembly of land including to support new housing, workspaces and public realm
  - Improvements to transport access, traffic flow and circulation in the area

- Supporting change of use including (where appropriate) housing delivery and densification
- Supporting adaptation of the high street in response to changing technology

Should the Council be successful with its expression of interest a Full Business Case will be prepared. This is expected to take between 6-12 months to complete. The Transporting Bedford 2020 project has been noted within the Future High Streets fund expression of interest. The status of the public realm elements of the project will be considered should the expression of interest bid be successful and progress to full business case submission. The two projects are consistent in delivering wider aspects of the Councils town centre strategy and there are no contradictory challenges or implementation issues. However the issue of interdependencies will be reviewed as the business cases for each project evolve and are reviewed.

2.15.5 2.15.6 Network Rail Midland Mainline Electrification Project. As part of the Midland Main Line Upgrade Network Rail need to reconstruct Bromham Road Bridge in Bedford

Bromham Road Bridge is a two span brick arch bridge that lies to the north of Bedford Central station and carries the 2-lane single carriageway Bromham Road over the Midland Main Line.

The bridge has insufficient clearance for overhead line equipment to safely pass beneath it, and therefore the bridge needs to be partially demolished and then reconstructed. Before work to demolish and reconstruct the bridge can take place, the utilities within the bridge deck need to be removed and relocated.

A programme of works has been agreed between Bedford Borough Council and Network Rail. Work commenced on 4 March 2019 and is due to be completed in Spring 2020. Works are being carried out under various traffic management methods including a One –Way closure; overnight working and (once the bridge deck is demolished) under a full road closure. Traffic diverting from Bromham Road will be directed to other suitable routes within the town centre, including Clapham Road.

The location, duration and traffic management requirements of the Network Rail project have created an interdependency on two specific elements of the TB2020 project a) The Manton Lance area scheme (part of which is on the Network Rail diversion route) and b) the Bromham Road / Shakespeare Road junction improvement which is immediately adjacent to the Network Rail works. Delivery of both these elements is constrained whilst Network Rail works are in progress.

The potential impact of the Network Rail works on Bromham Road programme has been considered a risk to the successful delivery of the Transporting Bedford 2020 scheme and has been fully assessed as part of the projects regular risk reviews . As part of the risk mitigation process In October 2018 the project board were asked to consider various options for the delivery of the Manton Lane area scheme, taking into account the need for the Council to enter into a contract for delivery of (all or part) of the scheme; the funding restrictions and requirements, the delivery programme for other elements of the TB2020 scheme and (at the time) the uncertainty surrounding the Network Rail works programme. The issue was considered by the TB2020 Project Board in October 2018. A decision was made to deliver the Manton Lane area works in phases. The first phase of works has been programmed for delivery in Spring / Summer 2019. Elements funded from the NPIF funding (see section 2.15.3 above) are programmed for delivery after the Network Rail works have been completed. Agreement to change the spend profile of the NPIF grant has been made with DfT.

Design work for the Bromham Road junction improvements has been brought forward within the Transporting Bedford 2020 programme with a view to overlapping deliver of this scheme with the last stages of the Network Rail works, making use of planned road closures to reduce the length of disruption to the road network.

Whilst a degree of interdependency and risk to delivery of the Manton Lance area scheme and Bromham Road junction improvements remains, the risk has been mitigated through confirmation and commencement of the Network Rail works and a re-programming of the TB2020 elements. A close and productive working relationship with the Network Rail project team will allow any further issues and opportunities to be identified quickly and facilitate appropriate action to be taken. .

2.16 Risks

2.16.1 Project risk have been managed as an ongoing process as part of the scheme governance structure, as set out in The Management Case Section of this business case. A scheme risk register has been established and is reviewed as a standing item at each of the two weekly Project Board meetings. Responsibility for the risk register being maintained is held by BBC's Technical Project Manager in conjunction with the Project Steering Group and is reported to the Project Board in the form of checkpoint reports.

2.16.2 Any high residual impact risks are then identified on the highlight report for discussion at the Project Board meeting. Required mitigation measures are discussed and agreed at the meeting and actioned by The Technical Project Manager and Steering Group as appropriate.

2.16.3 In the Commercial and Management Case Section of this business case report, the experience of BBC's staff has been highlighted in terms of delivering major transport schemes effectively and with little adverse effect. In order to achieve successful delivery of major schemes, management policies, processes and procedures are required to be followed accurately. An important aspect of the management process is identifying risks associated with scheme delivery and funding early in the process to allow mitigation to be identified.

2.16.4 Risk workshops are being held prior to each design, procurement, mobilisation and construction stage as identified in Appendix 1 (Project Plan) of the Commercial and Management Case Section.

2.16.5 Risks that are best managed by the contractor will be allocated to be priced by the contractor accordingly. Risks best managed by BBC will be retained, so will be excluded from the contract(s).

2.16.6 A series of Risk workshops will be undertaken over the course of the project, with results compiled into the Risk Register included in Appendix 2 of the Commercial and Management Case Section. Risks are assessed on their likelihood and their severity, both with and without mitigation.

2.16.7 An initial Risk Assessment that was carried out by the Steering Group and discussed by the Project Board to produce the Risk Register which was submitted as part of the original business case The initial Risk Assessment was used to develop a Quantitative Risk Assessment as part of the finalisation of the business case which will include an @risk mathematical model to produce a Monte Carlo simulation of the risk 'costs'.

2.16.8 At the time of the original business case submission l Risk Assessment work had identified a total of 99 general project related and theme specific risks. Through

development of the risk register a further 21 project related risks have been identified. An updated summary of the current risk assessment is shown in the table below:

Table 4. Summary of Initial Risk Assessments

Transporting Bedford 2020 -March 2019 Risk Register	High Risk	Medium Risk	Low Risk	Managed Risks	Total Number
Construction	0	5	21	3	29
Design	0	0	4	1	5
Design / Technical / Preparatory	2	1	18	4	25
Procurement	0	0	4	3	7
Environmental	1	3	2	0	6
Economic / Financial/ Management	0	1	8	6	15
Stakeholder Management / Consultation	0	4	10	1	15
Statutory / Legal	0	0	0	1	1
Benefits, Monitoring and Evaluation	0	0	10	2	12
Strategic / Political / Policy	0	1	3	1	5
Total	3	15	80	22	120
	3%	13%	67%	18%	

2.16.9 The three critical risks identified currently identified are as follows:

- An Environmental Risk relating to Ashburnham Road / Shakespeare Road and the felling of trees leading to public complaints and possible programme delays
- That the Technology elements not properly defined or that there are changes to design after construction has commenced due to changes in technology
- That the Travel demand / SMART mobility aspects are undefined leading to delays in programme delivery

2.16.10 Some of the previously identified critical risks relating to the Ampthill Road / Cowbridge scheme and the reliance on Network rails input have been mitigated through early engagement with network rail and an increase in specialist Structural Engineering resource at BBC.

Action plans are in place to address the currently identified critical risks as follows:

- Review of the design for the Ashburnham Road / Shakespeare Road junction to ensure that environmental impacts are minimised, early engagement with ward Councillors regarding the scheme and implementation of a “2 for 1” replanting policy for trees to allay public concerns about loss of amenity
- Engagement of specialist consultants (including Keir; Ian Routledge Consultancy and Transport Systems Catapult) to provide advice on and to define the Technology elements, regular industry engagement and engagement with neighbouring authorities to identify best practice and key deliverables.
- The Travel demand / SMART mobility aspects will be defined within the ‘technology roadmap’ (as set out in the Technology Element Technical note) in Spring / Summer 2019.

2.16.11 Other notable risks relating to the project are listed below and set out in more detail in the risk register.

- Network Rail works at Bromham Road delayed : Discussions have been ongoing throughout 2018 with Network Rail. A heads of terms for the delivery of the bridge works has been signed and a draft NR programme issued. Works at Manton Lane have been re-programmed to avoid any conflicts that may have caused unplanned delays. NR works are due to start in March 2019 – but the risk will remain 'open' until sufficient progress is observed.
- Scheme cost overrun : Cost profiles are maturing as various scheme elements are brought forward for delivery and actual costs are becoming known through procurement – this information is being used to refine and de-risk future scheme elements, as actual contract rates can be used to estimate costs and identify pressures and cost reductions.
- That project programming is optimistic: Throughout 2018 various scheme elements have slipped slightly from the originally intended programme. Whilst milestones have generally been met there is an overall risk to delivery and adherence to the anticipated spend profile. Some scheme elements have been reprogrammed to reflect experience on procurement and delivery and the programme reordered to bring forward some elements of the technology stand of work.
- Long lead in time for permanent service diversions delays the programme: A lack of engagement with certain utility companies has caused some concern in terms of programme delivery. A specialist utilities consultancy firm has been brought into the project team to provide expert knowledge.

2.16.11 .

- Phasing of delivery to ensure traffic management tools are in situ prior to implementation of public realm scheme;
- Coherent delivery with other town centre programmes; and
- Resilience of technology.

2.16.12 The risk management strategy presented within the 'Management Case', updated in March 2018, has been further updated.

2.16.13 A review and update of the QRA work (see 2.16.7 above) has also been completed.

2.17 Options

2.17.1 The whole town centre transport strategy development process has gone through a detailed optioneering and sifting process, leading to further scheme option development and appraisal, prior to a package development & appraisal process. This then led to the identification of a combined package of scheme measures. This whole process has been undertaken applying the set of objectives outlined in Section 2.8 above, which were identified at the outset of the strategy development process and have remained the key overarching objectives for enhancing access and movement across the town.

2.17.2 A total of 213 scheme measures were initially identified and subject to an initial sifting process. This is outlined within the 'Options Screening and Assessment' report. Subsequent high-performing scheme measures were developed and then combined into packages of measures. This process initially identified three high-level packages, including on based around the proposed bridge alignment at Batts Ford (included within the initial LGF2 bid).

2.17.3 As detailed earlier, the Batt's Ford bridge scheme was subsequently identified as being unaffordable; however, the public realm elements in the town centre were still recognised as a strongly performing measures. Combined with the best-performing pinch-point schemes and the measures from the LGF3 bid, these elements have been identified as the preferred package of measures that deliver against the original town centre transport strategy objectives and offer both high value for money and are deliverable.

2.18 Fit with SEMLEP strategic objectives and wider Government objectives

2.18.1 In section 2.1, the report made reference to the fact that SEMLEP objectives were a crucial measure for the scheme's key deliverables and outcomes. As an additional measure of the scheme's strategic fit, it has been assessed against SEMLEP's strategic objectives, and national initiatives and policy direction. The overarching SEMLEP Strategic Objectives are set out in Table 5 below.

Table 5. SEMLEP Objectives

OBJECTIVE	DESCRIPTION
Objective 1	Stimulating enterprise and enhancing the competitiveness of SMEs.
Objective 2	Strengthening and exploiting our innovation and knowledge assets.
Objective 3	Support new and existing businesses to export their goods and services.
Objective 4	Attracting domestic and international investments.
Objective 5	Developing a skilled and adaptable workforce.
Objective 6	Addressing barriers to the labour market for disadvantaged groups.
Objective 7	Delivering infrastructure to accelerate sustainable growth in jobs, housing and investment in town centres.
Objective 8	Securing long term and on-going funding to deliver the infrastructure plan.
Objective 9	Unlock and accelerate the delivery of housing

2.18.2 The set of measures promoted by this project supports the following SEMLEP strategic objectives.

Objective 1: Stimulating enterprise and enhancing the competitiveness of SMEs

2.18.3 Enhancing the town centre public realm will increase pedestrian footfall creating additional opportunities for enterprising retailers

2.18.4 Reliable journey times can lead to increased confidence for local businesses. Similarly, the local shopping environment can become more attractive if the adverse impact of stacking traffic is removed.

Objective 4: Attracting domestic and international investments

2.18.5 Enhancing the town centre public realm will increase the attractiveness of the centre for investment

2.18.6 Reliability of journey time into Bedford from the strategic road network, and clear and effective information are critical for business visitors.

Objective 7: Delivering infrastructure to accelerate sustainable growth in jobs, housing and investment in town centres

2.18.7 Enhancing the town centre public realm will create an environment that will increase confidence in investing within the town centre.

2.18.8 Improved infrastructure at local pinch points will increase confidence in the business and commercial sector, and allow planned and future developments to come forward sooner rather than later because of increased viability of planned and future developments. The corridor leads directly into the town centre but is currently categorised as a local centre in its own right.

Objective 8: Securing long term and on-going funding to deliver the infrastructure plan

2.18.9 The scheme supports the delivery of the Infrastructure Investment Plan by improving links to major residential development areas, including Wixams, and major employment areas such as Medbury Farm, Bell Farm, Wixams and west of B530 Kempston.

Objective 9: unlock and accelerate the delivery of housing

2.18.10 Planning permission for housing exists along the Southern Gateway corridor but has not yet come forward for development. The scheme will increase the viability of the outstanding site by removing the requirement for highway improvements. In terms of the wider Government policies and strategies the scheme supports the growth agenda and fits within the initiatives described below

- National Infrastructure Commission (NIC) Growth Corridor. This strategy aims to maximise the potential of the Cambridge – Milton Keynes – Oxford corridor as a single, knowledge-intensive cluster that competes on a global stage, protecting the area's high quality environment, and securing the homes and jobs that the area needs. Bedford sits at the heart of this corridor and the scheme will facilitate growth across the town to facilitate access and movement.
- Oxford – Cambridge expressway. As part of the NIC Growth Corridor, the Oxford – Cambridge Expressway has been identified as a key major new transport requirement. The Bedford Southern Gateway scheme provides a direct link from the proposed Expressway into Bedford town centre, fulfilling a key Highways England route strategy objective.
- Improvements to cycling and walking infrastructure. The above scheme ties in with the Government's Cycling and Walking Investment Strategy which sets out a long term vision for walking and cycling to 2040, the aim being to make cycling and walking the norm for short journeys. The strategy will be progressed through a series of 5 year strategies.

- Development of technology and innovation. Intelligent Mobility is a key objective of the Government's Transport Catapult. The concept is about taking a different approach to transport challenges by using technology to enable the smarter and more efficient movement of people and goods.

2.18.11 As an additional test of local policy fit, Table 6**Error! Reference source not found.** demonstrates the additional benefits as a result of combining both schemes. In addition to benefits for greater numbers of residents and visitors, the combined project has more wide reaching benefits, for example, technological opportunities, and environmental enhancements. The potential for additional investment is greater because more service areas are included within the project scope.

Table 6. Enhanced Benefits of Combined Schemes

ORIGINAL SCHEME OBJECTIVES		ENHANCED BENEFITS
Local Growth Fund 2	**Local Growth Fund 3**	**Combined project**
Decongestion for Bedford Town Centre	Improve journey time reliability Respond to demand pressure	Three themed approach targets interrelated issues rather than a single focus Potential for additionality is greater because project includes more spheres of influence for public and private sector investment
Improve other pinch points New river crossing Gateway treatments, improved signage	Improve key junction for all users	Focus on key pinch points, and development of technology infrastructure allows benefits to be spread over a wider geographical area, potentially benefiting more users Increased number of roads and junctions are improved than with individual schemes
	Improve technology and integration between signals and junctions to provide a linked signalled route	Provides the opportunity to build a digital platform and accommodate future technology developments Enables development of 'Mobility as a Service'
De-traffic High Street Improve public realm Provide new public spaces Enhance THI project and historic character		Builds on benefits provided by other initiatives (e.g. Bedford Western Bypass, Townscape Heritage Initiative, Riverside Bedford, Harpur Centre upgrade, local improvements) Provide new focal point to encourage dwell time and inward investment
Retention of existing businesses	Improve access to the SRN Enable development opportunities to be brought forward Improve access and reduce delays at key retail areas Remove constraints to development	Improves access more retail, employment and residential land within and adjacent to the key project areas Loses none of the benefits of the single schemes in terms of indirect and direct benefits to jobs and housing
Encourage pedestrian movement	Minimise impact of traffic on communities Improve air quality Reduce casualty	Increased benefits for non-vehicular transport modes COX/ NOX improvements are spread over a wider area particularly in relation to the designated Air Quality Management Area
Improve accessibility and connectivity	Encourage modal choice	Improved facilities for all transport modes Alleviate real and perceived blockages at pinch points

2.19 Measures of Success

2.19.1 In addition, the Pedestrian Environmental Review System (PERS) audit work, and associated valuing of the urban realm, along with the outputs from the strategic and local junction modelling exercises, have identified that the package of scheme measures will deliver significant enhancements to the value of the town centre, as well as improvements to journey time reliability across the wider A6 corridors.

2.19.2 In order to measure whether the scheme objectives set out above have been met, a series of specific; measurable; achievable; realistic and time-bound targets have been derived. Possible metrics are set out in Table 7 while Table 8 shows how these can be measured.

Table 7. Metrics

OBJECTIVE	METRICS
TS01	Journey times (all modes); accessibility and permeability (PERs audit); rateable values of retail properties
TS02	Town centre vehicle kms, town centre vehicles speeds
TS03	Journey times
TS04	strategic public transport services (rail routes/services; bus network kms); through traffic vehicle-trips within town centre cordon
TS05	Transport network capacity
TS06	Accident levels; security (PERS audit)
TS07	Town centre vehicle-kms;
TS08	accessibility contours to sites
TS09	qualitative assessment of design and signage (PERS audit)
TS10	qualitative assessment of design

Table 8. Measures of Success

OBJECTIVE	TARGETS
TS01 (Regeneration)	5% reduction in peak hour journey times (all modes) +2 points for PERS rating for Permeability 25% increase in rateable values
TS02 (Town Centre Traffic)	5% reduction in town centre vehicle kms 15% reduction in High Street average speeds
TS03 (Cross-town movements)	5% reduction in peak hour journey times (all modes)
TS04 (Strategic links)	5% increase in bus service levels 5% reduction in through traffic
TS05 (Network resilience)	10% increase in transport operating capacity
TS06 (Safety & Security)	10% reduction in accident levels +2 points for PERS rating for Security
TS07 (Environment)	5% reduction in town centre vehicle kms
TS08 (Access to health & education)	5% reduction in access times

TS09 (Sense of Place)	+2 points for PERS rating for Quality of Environment
TS10 (Design)	Design review

2.19.3 A full monitoring and evaluation plan which encompasses SEMLEP's requirements in is included within 'The Management Case'.

C14 (NI 178) Bus Services Running on Time - Bedford 2017/18

TARGET 80%

ORIGIN	APR	MAY	JUN	QTR 1	JUL	AUG	SEP	QTR2	QTR1 & 2 Cumulative	OCT	NOV	DEC	QTR 3	QTR 1,2,3 Cumulative	JAN	FEB	MAR	QTR 4	ANNUAL TOTAL
Early	66	145	178	389	81		120	201	590	0	0	0	0	590	0	0	0	0	590
On Time	5,260	7,813	8,385	21,458	6,845		8,072	14,917	36,375	0	0	0	0	36,375	0	0	0	0	36,375
Late	613	1,156	1,177	2,946	731		1,796	2,527	5,473	0	0	0	0	5,473	0	0	0	0	5,473
Compliance	88.57%	85.73%	86.09%	86.55%	89.40%		80.82%	84.54%	85.71%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	85.71%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	85.71%

TIMING POINT	APR	MAY	JUN	QTR 1	JUL	AUG	SEP	QTR2	QTR1 & 2 Cumulative	OCT	NOV	DEC	QTR 3	QTR 1,2,3 Cumulative	JAN	FEB	MAR	QTR 4	ANNUAL TOTAL
Early	361	555	533	1,449	484		445	929	2,378	0	0	0	0	2,378	0	0	0	0	2,378
On Time	7,709	11,626	12,619	31,954	10,349		12,455	22,804	54,758	0	0	0	0	54,758	0	0	0	0	54,758
Late	1,834	3,491	3,705	9,030	2,500		4,824	7,324	16,354	0	0	0	0	16,354	0	0	0	0	16,354
Compliance	77.84%	74.18%	74.86%	75.30%	77.62%		70.27%	73.43%	74.51%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	74.51%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	74.51%

NI 178	APR	MAY	JUN	QTR 1	JUL	AUG	SEP	QTR2	QTR1 & 2 Cumulative	OCT	NOV	DEC	QTR 3	QTR 1,2,3 Cumulative	JAN	FEB	MAR	QTR 4	ANNUAL TOTAL
Total	15,843	24,786	26,597	67,226	20,990	0	27,712	48,702	115,928	0	0	0	0	115,928	0	0	0	0	115,928
On Time	12,969	19,439	21,004	53,412	17,194	0	20,527	37,721	91,133	0	0	0	0	91,133	0	0	0	0	91,133
2017/18	81.86%	78.43%	78.97%	79.45%	81.92%		74.07%	77.45%	78.61%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	78.61%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	78.61%
2016/17	77.99%	77.38%	78.70%	78.00%	81.78%		71.53%	76.98%	77.62%	78.56%	71.43%	70.28%	73.39%	76.04%	79.00%	78.95%	79.51%	79.19%	77.04%
Year on Year % Change	3.87%	1.05%	0.27%	1.45%	0.14%		2.54%	0.48%	0.99%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	2.57%	#DIV/0!	#DIV/0!	#DIV/0!	#DIV/0!	1.57%

NOTES: A

A No data for August as NI is measured during term time only

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SYSTRA

Transporting Bedford 2020 26/03/2019

Reference number 105251/GB01T14A88

FULL BUSINESS CASE (FINANCIAL CASE)

BEDFORD BOROUGH COUNCIL

SYSTRA

TRANSPORTING BEDFORD 2020

FULL BUSINESS CASE

IDENTIFICATION TABLE	
Client/Project owner	Bedford Borough Council
Project	Transporting Bedford 2020
Study	Full Business Case
Type of document	Report
Date	26/03/2019
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APPROVAL

Version	Name		Position	Date	Modifications
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2	Author	B Hayward	PM	16/10/17	a) Table 1 individual elements costs changed b) Section 1.7.2 BBC funds c) Table 3 amended d) 1.2.6 NPIF e) 1.4.2 signpost to risk register f) 1.5.1 optimism bias
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6	Author	B Hayward	PM	26/03/19	
	Checked by	B Hayward	PM		
	Approved by	M MacLeod	MfTP		

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1. THE FINANCIAL CASE

1.1 Introduction

1.1.1 This section of the report presents the Financial Case for the Bedford Town Centre Strategy package of measures. It concentrates on the affordability of the proposals, the funding arrangements and technical accounting issues. The total outturn costs and expenditure profile are presented, along with an assessment of the impact on public accounts.

1.1.2 The Financial Case for the identified package of measures is based on long-standing and significant levels of scheme optioneering and development. This has led to the identification, and costing, of a preferred package of measures as part of an on-going vision to develop the accessibility and attractiveness of the town centre. The proposed funding arrangements are set out and described, including the Local Growth Fund allocation and local contributions.

1.1.3 The full scheme cost was last updated in September 2017.

1.2 Base Costs

1.2.1 Table 8 shows that the base cost estimate for the package of measures is just over £15m. The overall cost estimate is based on individual assessments of scheme costs undertaken since Spring 2018 using tendered figures where appropriate and applying contractual rates to outline scheme designs. They are considered by both SYSTRA and BBC to be up-to-date, robust and complete.

1.2.2 The public realm surfacing costs have been developed by understanding the physical scale of the overall measures and applying outturn unit cost rates based upon an understanding of the palette of materials to be applied. Additional assessments of cost to declutter the street environment and replace with high quality street furniture have been undertaken, alongside the provision of way-finding infrastructure.

1.2.3 Outline scheme costings have been produced for each of the 'Alleviating Pinch-point schemes' based upon a detailed bill of quantities and applying a set of standard construction rates (SCAPE and BBC contract), covering:

- Site clearance;
- Fencing;
- Drainage and service ducts;
- Earthworks;
- Pavement construction;
- Kerbs footways and blocked paved areas;
- Signs signals and road markings;
- Lighting;
- Electrical work for road lighting and traffic signals;
- Landscaping & ecology;
- Retaining walls;
- Street furniture; and

- Pedestrian footbridge

1.2.4 The UTMC and Technology scheme elements have been developed in partnership with external suppliers to determine the costings for:

- UTC;
- UTMC system including common database
- Remote Monitoring System;
- Journey Time Management;
- Traffic Signal Upgrades across the extent of scheme measures;
- Signing, Information and Publicity Systems;
- Extended coverage of ANPR cameras for enforcement of Bus Lanes; and
- Travel demand support initiative and SMART mobility roadmap.

1.2.5 An overall summary of the basic cost elements, including allowance for preliminaries, traffic management and utilities, is presented within Table 1. The table shows cost estimates from July 2018 and updated costs from February 2019

1.2.6 The Public Realm schemes have been largely combined into a single package as a single design and procurement package will be provided for these works.

1.2.7 Utilities costs previously unallocated against individual schemes have been included in individual scheme costs. This is as a result of design work progressing along with utility searches and discussions with utility companies about diversionary works, resulting in a greater degree of certainty about these cost elements.

1.2.8 as these costs have now been assessed and allowed for in scheme designs. An unallocated amount for utilities works is included to allow for any changes to scheme designs arising from stakeholder engagement etc.

1.2.9 Figures are based upon a combination of known elements from commissioned works and estimates based upon rates derived from scheme elements that have been procured.

1.2.9.1 ***It should be noted that individual scheme elements have changed since the submission of the business case in summer 2018. This is largely due to the change in how utility costs are shown (see section 1.2.7 above). Reasoning for cost changes can be summarised as follows:***Public Realm Schemes. Scheme area coverage remains unchanged. Initial design work and stakeholder engagement has been completed and has confirmed a palette of materials, areas of new footway construction and street furniture. The estimate of costs is therefore based upon the use of York Stone paving materials and granite kerbs in line with the original cost assumptions, however a more traditional approach is being taken with the use of carriageway surfacing materials which has reduced cost elements. For street furniture the approach is to reduce street clutter and use or reuse street furniture that matches existing provision. The scheme design has been based upon data from GRP surveys and utility records to avoid significant disruption to utility equipment and cellar locations. No major changes are planned to the operation of traffic signal junctions along the High Street or St Pauls which has also minimised the need for ducting work and additional signal equipment.

1.2.9.2 Pinch point Schemes. The proposals for both Manton Lane and Britannia Road have developed considerably since the original business case. Based upon detailed modelling assessments to test various design options the Manton Lane scheme has evolved from a signalised crossroads junction arrangement at Manton Lane/Clapham Road to an enlarged signalised roundabout with associated road widening. Whilst the scheme is now anticipated to deliver a greater level of journey time improvements than the original business case proposal the changes have increased the cost estimate. Costs shown in the table below are based upon prices provided through the SCAPE framework by the principal contractor. Similarly works at Britannia Road now include further signalisation and additional road widening – again based upon contractor prices with a high degree of certainty. Design work on other schemes is progressing with general scope and anticipated utility works having been identified for all remaining schemes. The SCAPE framework process (see Commercial Case Section 1.8.5) includes provision of a feasibility works stage that enables scheme costs to be established early on in the design / procurement process through early contractor involvement. This will enable any cost pressures to be 'designed out' of schemes where appropriate and for costs to be reviewed at an early stage.

1.2.9.3 Technology Theme – Scheme elements have been refined and confirmed with little deviation from the original business case. Some early elements have already been procured through the CCS TMT2 framework contract and remain broadly in line with the original business case aspirations.

Table 1. Components of Investment

COST ELEMENT	£JULY 2018	£FEBRUARY 2019
Public Realm Combined	5,160,875	3,889,755
St Mary's Street / Cauldwell Street	437,308	333,000
THEME 1 SUB TOTAL	***5,598,182***	***4,222,755***
Area 1 Clapham Road / Manton Lane*	1,083,538	2,200,000
Area 2 Bromham Road / Shakespeare Road	780,025	1,362,095
Area 3 Britannia Road (around Hospital)	1,417,166	2,509,743
Area 4 Cowbridge (Ampthill Road)	1,410,839	2,204.034
THEME 2 SUB TOTAL	***4,691,568***	***8,275,873***
UTMC, Traffic Signals and Monitoring Systems	932,000	1,250,000
Signage, Information, and ANPR enforcement	1,208,684	1,050,000
TDM support initiative and SMART Mobility	135,000	250,000

Roadmap		
THEME 3 SUB TOTAL	***2,347,684***	***2,550,000***
Utilities	**2,649,358**	**300,000**
BASIC SCHEME COSTS	**15,286,792**	**£15,348,628**
***Without NPIF funding**		

1.2.10 BBC have been awarded funding under the DfT National Productivity Investment Fund (NPIF) for the 'Bedford Northern Gateway' . This additional funding will facilitate further capacity improvements at and around the Clapham Rd / Manton Lane; Great Ouse Way /Paula Radcliffe Way & the Manton Lane/Brickhill Drive junction in a more comprehensive traffic management scheme. Benefits of the wider NPIF bid aren't included in the analysis for this scheme and the interdependency of the two projects is reflected in the strategic case rather than here in the Financial Case. The delivery of the NPIF project is referenced in the Risk Strategy and the project programme contained within the Business Case (Management Case) section.

1.3 Inflation

1.3.1 An allowance for inflation has been applied to adjust the costs of works where procurement route is not yet finalised from February 2019 prices to April 2020 prices of @ 2.5% £170,206

1.4 Contingencies & Risk

1.4.1 An allowance of£2,536,000based on the P80 outputs from the Quantitative Risk Assessment has been applied to cover contingencies and risk across all elements of the project delivery.

1.4.2 The QRA has been developed to consider, manage and mitigate risks associated with delivery of the project, including a number of financial risks. LGF funding allocations are time limited to March 2021, which does create a risk if there are delays in delivery of the project. The Business case management case section outlines the robust approach to risk mitigation, delivery programming and monitoring to ensure spend of LFG funds before end of the programme.

1.4.3 An initial risk management strategy was presented within the 'Management Case', the risk management strategy was updated in March 2018, with the publication of a briefing note. The risk register has been frequently updated throughout the project, most recently in March 2019. The January 2019 risk register (Version 'P') has been used to update the QRA.

1.5 Optimism Bias

1.5.1 Optimism bias refers to the tendency for scheme promoters to be overly optimistic about scheme costs. DfT WebTAG unit A1.2 sets out the recommended contingency which should be added to the scheme costs. However, in line with HM Treasury guidance document "Early financial cost estimates of infrastructure programmes and projects and the treatment of uncertainty and risk- March 2015" optimism bias should not be included in project funding. The risk-adjusted scheme cost estimate is, therefore, considered robust but will be reviewed as the scheme proceeds. It is applied at 44% (which is obviously high for this stage of a project) but this is considered appropriate as the risk assessment is developed, and the UTMC technology elements of the works package are refined.

1.6 Final Scheme Costs

1.6.1 Table 9 below indicates the costs associated with the proposed scheme including inflation and contingency & risk allowance.

Table 2. Summary of Final Scheme Costs (2018 Q2)

COST ELEMENT	COST (£) (2018 Q2)	COST (£) (2019 Q3)
Estimated Basic Scheme Costs	15,286,792	£15,348,628
Inflation adjustment to 2019/20	221,155	£170,206
Contingency & Risk	2,910,000	£2,536,000
Total	**18,417,947**	**18,054,834**

1.7 Budgets and Funding Cover

1.7.1 The Bedford Town Centre Transport Strategy Scheme is being delivered by BBC as part of the South East Midlands Local Enterprise Partnership (SEMLEP) Growth Deal originally agreed between SEMLEP and Government in 2014. A total of £15.5m is currently allocated to the scheme.

1.7.2 An additional £ 2,920,000 has already been provided by a combination of BBC Capital budgets and CIL funding held by BBC to delivery the aims of the project. The timing of this funding will be reviewed throughout the programme in accordance with BBC Medium term financial strategy. Funding will continue after 2021 if required. A further £200,000 of funding in 2017/18 was been provided by BBC to allow design work, traffic surveys, baseline monitoring and modelling work to be undertaken.

1.7.3 The total current funding for the Bedford Town Centre Transport Strategy scheme is £18,420,000. The total cost including risk allowance as at February 2019 is £18,054,834.

1.7.4 At its meeting on 24 January 2017 Bedford Borough Councils Executive resolved to approve the Councils Capital Investment Programme 2017/18 to 2020/21, Draft Prudential Indicators and Minimum Revenue Provision. The Capital Programme included funding to the Transporting Bedford 2020 project in accordance with the business case as submitted to SEMLEP. The full report can be viewed on the Councils website at http://www.councillorsupport.bedford.gov.uk/ieListDocuments.aspx?CId=116&MId=4518&Ver=4

1.7.5 The Councils Assistant Chief Executive (Enabling Services) & S151 Officer has confirmed the Councils funding contribution in writing to SEMLEP. A copy of the letter is shown in Appendix 1

1.7.6 The spend profile for the project is shown below in Table 3.

1.7.7 BBC recognises that the contingency and risk cost elements have changed since the submission of the business case . It is understood that LGF contributions are fixed and that increases in project costs must be managed and funded by BBC, which may require BBC to increase its total financial contribution. Many of the high risk items giving rise to

a projected increase in costs relate to possible delays to the delivery programme. These potential delays include delaying some elements of scheme delivery in order to accommodate Network Rail bridge routes adjacent to some of the pinch point schemes and potential delays relating to utility works delivery. BBC engaged the services of a consultant who specialises in coordinating utility works and positive progress has been made in both quantifying and programming utility works, and as this work continues the risk of disruption and increases in costs will reduce. Similarly discussions have been ongoing with Network Rail regarding their planned works, and a delivery programme is expected to be confirmed in the near future. Whilst the Network Rail works will disrupt the Transporting Bedford 2020 programme at least the level of disruption will be known and project planning for Transporting Bedford 2020 can be adjusted accordingly.

1.7.8 BBC will carry out a mid year review of its medium term capital financial strategy in May / June 2019. This review will take into account the current assessment of project costs on Transporting Bedford 2020 and make the required adjustments to the capital programme. As shown in table 3 below some BBC funding has already been re-profiled to allow for changes to the delivery programme, and to allow the LGF funding profile to remain unchanged.

1.7.9 LGF funding is covered by a legal agreement which was finalised in July 2018 and is subject to annual review by SEMLEP.

Table 3. Spend Profile

	Total	2018/19	2019/20	2020/21	2021/22
Total	**£ 18,420,000**	£2,800,000	£6,200,000	£8,320,000	£1,100,000
LGF Funding	**£ 15,500,000**	£2,800,000	£6,200,000	£6,500,000	
Breakdown of LGF Funding					
LGF3	**£ 4,500,000**	£1,500,000	£1,300,000	£1,700,000	
LGF2	**£ 11,000,000**	£1,300,000	£4,900,000	£4,800,000	
BBC Funding	**£ 2,920,000**	£ -	£ -	£ 1,820,000	£1,100,000

1.7.10

1.8 Whole Life Costs

1.8.1 Future maintenance works associated with the scheme will be added to the maintenance inventory and funded from BBCs maintenance budgets.

1.8.2 Increased revenue costs arising mainly from the technology theme of the Transporting Bedford 2020 project (eg software licences, comms costs, ongoing professional services etc) have been assessed and quantified at £139,170 pa. from 2021/22. As part of the Councils medium term financial strategy review this cost pressure will be considered by the Councils Executive in March 2019

1.9 Financial Risks

1.9.1 The project is conditional on the allocation of LGF monies.

1.9.2 Funding from BBC has been included in the Councils Revised Capital Programme 2017/2018 to 2020/2021, and agreed by the Councils Executive on 20 Sept 2017. Funding allocation will be reviewed as part of the Councils mid term financial review in May / June 2019.

1.10 Accounting Implications

1.10.1 The following implications on public accounts are expected:

- Devolved LEP funding of £15.5m of the scheme costs is requested with expenditure starting in the 2018/19 financial year;
- Maintenance costs will be added to the maintenance inventory and funded from BBC's maintenance budgets; and
- There are no state aid issues to address

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Transporting Bedford 2020 **19/03/2019**

Reference number 105251/GB01T14A88

FULL BUSINESS CASE

BEDFORD BOROUGH COUNCIL

SYSTRA

TRANSPORTING BEDFORD 2020

FULL BUSINESS CASE

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1.1 Introduction

1.1.1 The economic assessment is undertaken to ensure that the full extent of the impact of the scheme on the public account is understood and to ensure that the scheme offers value for money.

1.1.2 The overall package of scheme measures is anticipated to derive a wide range of benefits. Whilst some of the measures will engender traditional transport user benefits (such as junction infrastructure improvements), other elements (such as the High Street enhancements) are being developed to specifically enhance the town centre urban realm, so as to directly benefit the town economy, rather than purely focussing on improving overall journey times. Indeed, for certain parts of the core town centre network the proposed reduction in highway capacity may have some marginal negative impacts upon vehicular traffic, whilst at the same time improving accessibility and journey times for pedestrians.

1.1.3 Furthermore, whilst some of the benefits from the 'UTMC and Technology' package will significantly reduce journey times through enhanced network management, the package is also specifically aimed at enhancing the reliability of the transport network and improve the choices individuals have to travel, without always specifically improving overall journey times on some parts of the network.

1.1.4 This combination of benefits makes this package of measures challenging to appraise and, as such, requires a flexible approach to develop an accurate analysis of the overall impact of the scheme measures. The principles for the assessment are fundamentally based upon the DfT criteria, set out within WebTAG. Standard approaches to assessing transport user impacts have been undertaken applying the outputs from a traditional transport model. Whilst providing valuable insights into the performance of specific infrastructure measures, the modelling software has a variety of limitations for analysing some of the other key impacts of the overall package of measures. To assess some of these other impacts a range of other approaches have been adopted. These specifically include:

- Case study evidence of the impact of UTMC technology upon the efficient use of network capacity, including the potential reduction in congestion and delay
- Adaptation of Transport for London's Valuing Urban Realm Toolkit (VURT) to assess the pedestrian user benefits from enhanced public realm
- Bedford property market assessment of rateable values and the rental market for retail units to determine the current variation in values across the town centre and the potential impact of the public realm scheme.

1.1.5 Each element of the benefits assessments process is set out in the sections below.

1.2 Direct Transport User Impacts

1.2.1 A range of elements within the overall package of measures will have a direct impact upon the operation of the transport network and result in potential changes to journey times and the user costs of travel. The 'Theme 2 Pinch-point' schemes are designed to have a positive impact upon available highway capacity to reduce congestion on key parts of the network. The 'Theme 1 Public Realm' measures include variations to the highway network within the core town centre, specifically the High Street, that will also directly impact upon the operation of the highway network. These elements of the overall package of measures have been evaluated within a traditional strategic highway network model.

1.3 Modelling Approach

1.3.1 The direct transport modelling analysis has been undertaken using Bedford Borough Councils Strategic SATURN model. This model offers the capability to assess the network wide impact of the proposed physical infrastructure elements and to determine the impact on the overall operation of the highway network.

SATURN Model

1.3.2 The baseline SATURN model has the following characteristics:

- 240 zones, including 43 'dummy' zones built into the model for the purpose of forecasting in relation to proposed development locations
- The model represents the AM peak hour (0730-0830), Inter Peak hour (1000-1600 average) and PM peak hour (1700-1800).
- It includes two user classes: light vehicles (cars and light goods vehicles) and heavy goods vehicles

1.3.3 The full network coverage of the SATURN model is provided in **Figure 1 and 2**.

Figure 1. Bedford SATURN Model Full Model and Simulation Area

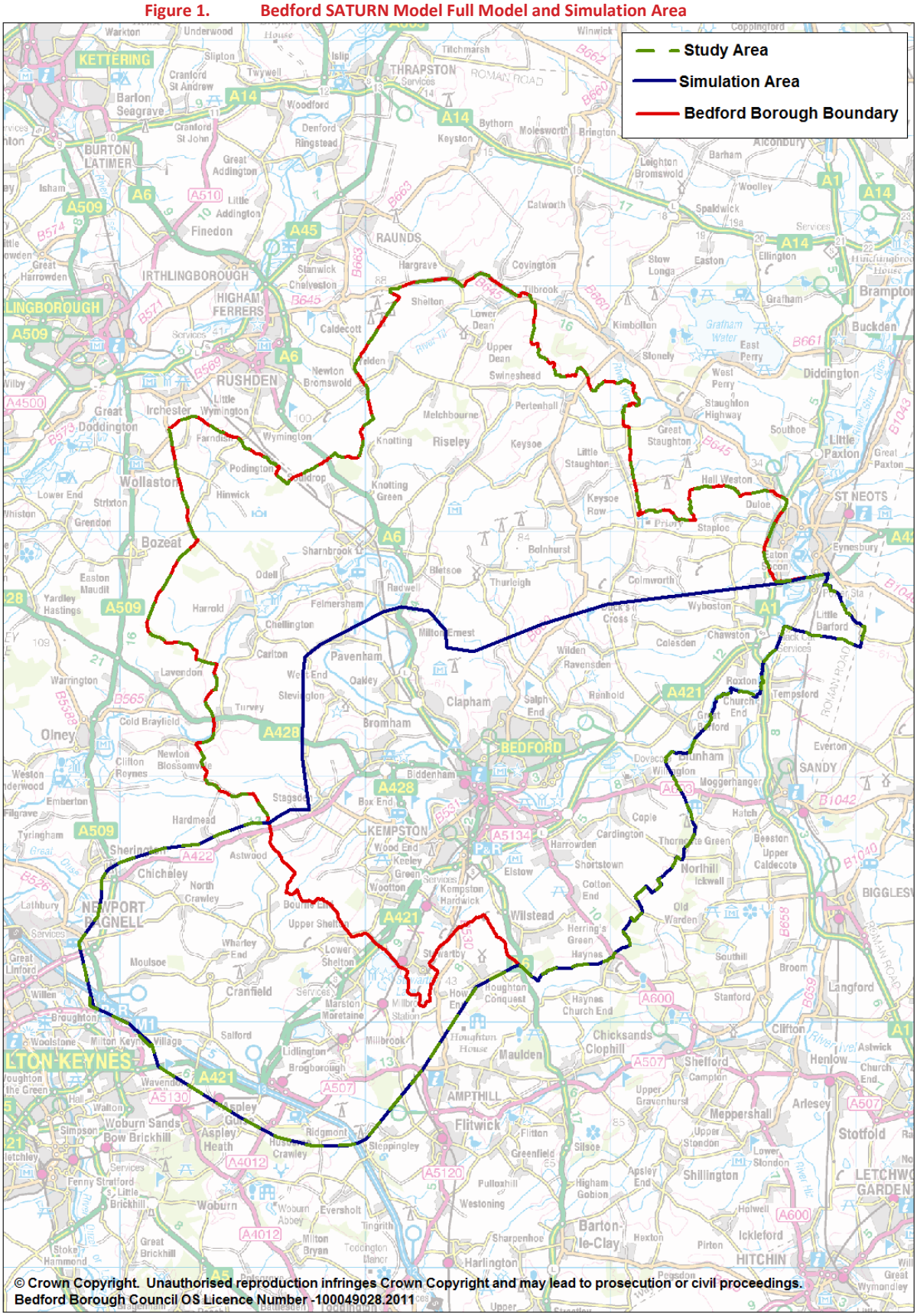


Figure 2. Bedford SATURN Main Study Area Network Coverage

1.3.4 The highway assignment model has been calibrated and validated following DMRB's and latest WebTAG guidance. This is fully documented in a Local Model Validation Report (LMVR) produced on behalf of Bedford Borough Council by JMP Consultants Ltd.

1.3.5 The original 2011 Bedford Base Year SATURN model was developed and validated in 2012 and covered the urban area of Bedford and the rural area in the north of the Borough. The matrices were created using the existing A421 forecast year 2011 model matrix, St. Neots base year model matrix, the 2001 Census and RSI data. The base year model was validated against 2011 observed traffic flow and journey time data.

1.3.6 Additional data was collected and collated in 2014/15 with which to update the model and re-calibrate and re-validate. This data included Manual Classified Counts, Traffic Master Journey Time Data, National Census Journey to Work Data from the 2011 Census, and Bus Route and Timetable Information.

1.3.7 Updates to the network structure were made, including node types, capacities, link distances and speed, signal timings, and zone connectors.

Calibration

1.3.8 Table 1 provides a summary of the high level of overall calibration achieved for the AM and PM peak models when assessed in 2017.

Table 1. Overall Calibration Statistics of the Model

MODEL	CORDON	DIRECTION	GEH <5 CALIBRATION	FLOW CALIBRATION
AM	Cordon 1	IN	✓	✓
		OUT	✓	✓
	Cordon 2	IN	✓	✓
		OUT	✓	✓
	A421	IN	✓	✓
		OUT	✓	✓
IP	Cordon 1	IN	✓	✓
		OUT	✓	✓
	Cordon 2	IN	✓	✓
		OUT	x	x
	A421	IN	✓	✓
		OUT	✓	✓
PM	Cordon 1	IN	✓	✓
		OUT	✓	✓
	Cordon 2	IN	✓	✓
		OUT	✓	x
	A421	IN	✓	✓
		OUT	✓	✓

1.3.9 The AM peak calibration shows that the matrix estimation ensured that the post ME matrix met the DMRB criteria for both the cordons/A421 and individual links.

1.3.10 The Inter peak and PM peak calibration shows that the matrix estimation ensured that the post ME matrix met the DMRB criteria for individual links. The total of the cordons/A421 is just below the 85% criteria, noting that this equates to one of the six values not quite meeting the criteria.

Validation

1.3.11 Table 2 presents the outputs of the validation process in 2017.

Table 2. Overall Calibration Statistics of the Model

MODEL	SCREENLINE	DIRECTION	GEH <5 CALIBRATION	FLOW CALIBRATION
AM	Screenline 1	NB	X	✓
		SB	✓	✓
	Screenline 2	NB	✓	✓
		SB	✓	✓
IP	Screenline 1	NB	x	X
		SB	✓	✓
	Screenline 2	NB	x	x
		SB	✓	✓
PM	Screenline 1	NB	✓	✓
		SB	x	✓
	Screenline 2	NB	✓	✓
		SB	✓	✓

1.3.12 The AM peak validation results shows that the model meets the GEH criteria overall, almost meeting the criteria for individual links. Conversely the model meets flow criteria for individual links, however the river screenline northbound falls just short of the 5% criteria. Overall it is considered that the AM peak model validates satisfactorily.

1.3.13 The PM peak validation results shows that the model has achieved DMRB flow and GEH criteria for individual links. GEH criteria are satisfied for all screenlines, however the river screenline does not quite meet the 5% flow criteria. Overall it is considered that the PM peak model validates satisfactorily.

1.3.14 The Inter peak validation results show that the model does not perform as well as the AM and PM models. This is considered to be due to the prior matrix construction as an average of AM and PM models, and the reduced traffic data available to inform the model. As such it was concluded that more weight be given to the AM and PM models.

1.3.15 Modelled journey times were compared with the observed journey time data across the 10 routes. Summaries of the overall modelled and observed journey time comparisons for each route are provided in Tables 5.13 to 5.15 for all the time periods. The results are summarised as

- in the AM peak 19 out of 20 routes (95%) satisfy the DMRB journey time validation criteria;
- in the Inter peak all the routes (100%) satisfy the DRMB criteria for journey time validation; and
- in the PM peak 17 out of 20 routes (85%) satisfy the DMRB journey time validation criteria

1.3.16 The LMVR report is provided in support of this submission.

Proportionality of Modelling Approach

1.3.17 The Guidance for Technical Project Managers in WebTAG discusses the concept of proportionality in relation to model design. Below is a summary of the salient points in that section that need to be considered.

1.3.18 WebTAG sets out appropriate scheme modelling approaches taking into account the circumstances, objectives, and the stage of an appraisal and decision-making process. It discusses the trade-offs between model complexity and constraints on resource, data requirements and expertise. In general, the model design will depend on: the nature of the problem and likely solutions; the size of the study area; the number of options to be tested; data availability; the need to update models and conduct new surveys; timescales for model development; and finally the required accuracy of the recommendations. The previous section has demonstrated the capabilities and robustness of the SATURN model and its appropriateness for use in appraising the scheme.

1.3.19 For a standard highway schemes, WebTAG recommends that the potential effects of variable demand (resulting through induced or suppressed demand) are considered. Whilst the package of measures incorporates a range of interventions that impact upon the operation of the highway network, it does not specifically seek to increase physical capacity, rather there is a balance of physical measures, some increasing and some reducing overall highway capacity. Alongside this the 'UTMC and Technology' package seeks to improve the efficiency and reliability of the network, whilst providing the information for people to make informed decisions about the way that they travel. This could engender some changes in mode of travel with the potential for lower levels of private car trips. Due to the intricacies and interrelationships of the physical and technology measures it is challenging to predict the scale of these changes, so for the purposes of the appraisal a conservative approach has been adopted with a fixed highway matrix applied.

1.3.20 Whilst the SATURN model covers the AM peak, inter-peak, and PM peak periods, the LMVR highlights that the inter-peak model is, effectively, a hybrid of the AM and PM peak models. Its overall performance is not as strong as either the AM or PM peak models. Given the focus of the proposed highway measures is to mitigate against peak levels of congestion on the network, the impact of the scheme will be less significant in the inter-peak period. It is anticipated that the impact of the reduction of capacity on the High Street and St. Paul's Square will have limited impact with the lower traffic flows during the inter-peak and, similarly, the benefits from the Pinchpoint and UTMC & Technology schemes will also have limited impact. Given the limitations of the inter-peak model it has therefore been concluded that there was limit benefit from utilising this time period and that the direct user impacts of the measures, whilst likely to deliver some benefits, could broadly be considered neutral. This is considered to be a conservative approach.

Adopted Modelling Approach

1.3.21 The adopted modelling approach incorporates a fixed highway matrix. Two forecast years have been utilised (2021 and 2032) with the modelling work carried out for two time periods (AM and PM peaks).

1.3.22 Model user distance, journey time and cost and costs skims have been exported from the DM and DS models to be fed into DfT's TUBA appraisal software.

1.4 UTMC and Technology Benefits

1.4.1 The technology package is considered to be dealing with a greenfield scheme on the basis that the current ITS equipment is fragmented and there has been limited integration to date which has rendered the provision less effective at managing the transport network than it could have been. Furthermore, the equipment has now reached end of life.

1.4.2 The benefits of this package of measures will cover a range of outputs and outcomes, including but not limited to: reduced congestion, long-term capacity planning, incident management, improved public transport (reduced delay), improved road safety, reduced fuel consumption and emissions, better assets management and more choice for the general public.

1.4.3 For the purpose of this benefit analysis we have assessed one metric, the total level of delay at each of the junctions listed below in the AM and PM peak (junction delay in seconds) in the 2021 baseline model. Local Plan growth rates have been applied to the delay savings to account for underlying growth in vehicle trips across the network.

1.4.4 The following junctions will be signalised, or current provision reviewed and upgraded to feed into the Urban Traffic Management and Control (UTMC) system:

- Clapham Road / Manton Lane / Shakespeare Road;
- Bromham Road / Shakespeare Road / Ashburnham Road;
- Midland Road / River Street;
- Bromham Road / Union Street / Greyfriars;
- Bromham Road / Hassett Street;
- Dame Alice Street / The Broadway / St Peter's Street / High Street;
- St Peter's Street / St Cuthbert's Street;
- St Mary's Street / Cardington Road / St John's Street / Cauldwell Street;
- Cauldwell Street / Kingsway;
- Cauldwell Street / Prebend Street;
- Kempston Road / Britannia Road / Cauldwell Street;
- Britannia Road / Ampthill Road;
- Elstow Road / London Road;
- Elstow Road / Ampthill Road;
- Ampthill Road / West End / A6;
- Dame Alice Street / Harpur Street;
- Tavistock Street / Harpur Street;
- Ampthill Road (North of Cowbridge) ; and
- Ampthill Road (South of Cowbridge)

1.4.5 The model shows 519 and 413 AM and PM peak hours of delay each weekday.

1.4.6 The associated 'Bedford UTMC and Technology Package Note' (submitted in support of this Business Case) sets out a range of benchmarking case studies that establish a range of benefits derived from these types of schemes. Whilst there is relatively limited recent evidence, there are some useful examples that are directly relevant to Bedford, given the

underlying basis that the current traffic management systems in the town are obsolete and so the scheme is, effectively, starting from a position with no underling system. The evidence base indicates a range of delay reductions between 12% and 30%, with an average of 23%.

1.4.7 This evidence base has been utilised to determine the potential impact of the scheme in reducing delay across the junctions outlined above. A relatively conservative approach has been adopted as follow:

- 17.3% Central Case (75% of the average delay reduction benefits from case study schemes of 23%)
- 23% High (100% of the average delay reduction benefits)
- 11.5% Low (50% of the average delay reduction benefits)

1.4.8 The Central Case represented three quarters of the average benefits derived within the case study examples. In reality, with the continued progression of technological systems, it would be anticipated that much higher benefits are likely to derived up to or exceeding the 30% benefits observed in the scheme in Southampton.

1.4.9 The Central Case journey time savings are forecast to be equivalent to 241 hours across a typical weekday, incorporating two 90 minute peak periods. In reality, the systems should also deliver additional benefits across other time periods in the week through better routing of traffic and phasing of traffic signals.

1.5 VURT Benefits

1.5.1 The package of transport improvements proposed for Bedford includes significant improvements to the public realm in the town centre focused on, but not exclusive to, the High Street. Although not a traditional methodology in transport appraisal, the consideration of wider benefits brought by urban realm improvements is becoming an integral part of the process. Urban realm assessment allows the monetisation of benefits associated with improved journey ambience experienced by pedestrians moving through the area.

1.5.2 This economic benefit can be quantified using the Valuing Urban Realm Toolkit (VURT) methodology developed by Transport for London (TfL). In order to capture the intrinsic value of how users assess enhanced urban realm TfL completed stated preference research to estimate respondents' willingness to pay for improvements to spaces they use. The results of this study have been applied to the Pedestrian Environment Review System (PERS) to allocate a monetary value to individual PERS scores. By completing a PERS audit before and after a scheme is implemented, and using the values proposed by TfL, it is possible to estimate the benefits derived from urban realm improvements.

1.5.3 The TfL methodology is applicable to the Bedford with some modification to accommodate the socio-economic differences between the study area and London. This approach has been chosen because through being based on PERS scores VURT allows an assessment in change in quality of a range of different factors which contribute to the perception of urban realm. This is a more nuanced approach than the simple values per

km of the introduction of seven specific aspects that are listed in the March 2017 WebTAG release.

1.5.4 The VURT methodology relies upon breaking a given area into a section of links and public spaces that can be scored using the PERS. PERS aims to be 'a systematic process designed to assess the quality of the pedestrian environment within a framework that promotes objectivity'[1]. Areas used by pedestrians are assessed on a number of criteria for which a score is generated on scale of -3 to 3. Different criteria are used to assess pedestrian environments, with environments classified as links or spaces being utilised by VURT. Any footway, footpath or highway can be classified as a link, whilst a public space is seen as an area primarily for the public to rest in and enjoy.

1.5.5 The process of using the VURT is as follows:

- Identify links and spaces within study area;
- Complete PERS audit of links and spaces under current conditions;
- Estimate likely PERS scores for each link and space for future scenario on completion of urban realm improvements;
- Establish volumes of pedestrians using each link and space currently;
- Forecast future scenario pedestrian volumes;
- Estimate time spent by pedestrians in study area by estimating average dwell time for spaces or calculating using link length and average walking speed for links;
- Enter current and future PERS scores and pedestrian counts into VURT spreadsheet, which establishes value of change in PERS scores and multiplies by number of pedestrians and time spent in environment to estimate total journey ambience benefit.

1.5.6 To take account of the difference in socio-economic conditions of the study area in comparison to London, the willingness to pay values within the VURT have been adjusted. Gross Disposable Household Income (GDHI) has been used to factor these values. The latest ONS data for 2015, estimates GDHI for London at £25,293 and for Bedford at £19,092[2]. Therefore the forecast benefits have been reduced by 0.75 as per the ratio between these two values.

Pedestrian Environment Reviews System (PERS) Audits

1.5.7 PERS audits were originally conducted across Bedford Town Centre in 2014 by a team of three trained auditors. In 2017, a Principal Urban Designer went back out on site to review and verify the audits specifically for the High Street and St. Paul's Square. The audit area was broken into four designated 'links' and one designated 'space'. A PERS Audit was completed for each link and space

1.5.8 The Principal Urban Designer subsequently evaluated the proposed public realm scheme enhancements. This concluded that it will deliver an increase in PERS scores by +2 in all aspects for all links, excluding lighting as the maximum benefits attributable to lighting

[1] *PERS Handbook Version 2, May 2006, TfL*

[2] https://www.ons.gov.uk/economy/regionalaccounts/grossdisposablehouseholdincome/bulletins/regionalgrossdisposablehouseholdincomegdhi/2015

have already been achieved through completion of a DfT Challenge Fund Project to modernise street lighting across Bedford.

Pedestrian Counts

1.5.9 The Pedestrian counts were broken up into three sites, with each site breaking the counts up into a number of links and crossing points. These links and crossing points took counts of pedestrians travelling in North and South bound directions, as wells as East and West directions, which depends on the orientation of the crossing.

1.5.10 The Pedestrian counts took place over a four day period, starting on a Wednesday and ending on a Saturday.

1.5.11 Future pedestrian numbers have been estimated by applying the underlying profile of housing growth across the whole of Bedford as a proxy for growth in retail and leisure activity within the town centre. No specific allowance for induced pedestrian trips has been included, albeit that the scheme is envisaged to encourage much higher levels of footfall across the High Street and St. Paul's Square. As such, the pedestrian numbers applied are considered to be conservative in nature.

VURT Method and Assumptions

1.5.12 To attain the average daily footfall through a PERS link, the weekly average was first calculated. The method to calculate this was as follows:

- The first two days of the pedestrian counts, were totalled together and divided by two to provide an average. This average is assumed to represent the average daily footfall on any day Monday to Thursday.
- The third day of pedestrian counts were then totalled and this represented the Friday average footfall.
- The last day of pedestrian counts that took place on a Saturday, was then totalled and is assumed to also be the Sunday average.
- Finally, to attain a weekly average, the average footfall for a day Monday to Thursday was multiplied by four to give the four day average footfall. The average for Friday was then combined with this, as is the Saturday and Sunday figure. This gave the weekly average footfall, this was then divided by seven to provide an average daily footfall through a PERS link.

1.5.13 For PERS Link 1, the North and Southbound pedestrian counts from Site 1 were used.

1.5.14 For PERS Link 2, the North and Southbound pedestrian counts from Site 3 were used.

1.5.15 For PERS Link 3, the pedestrian counts from Crossing point 2 in Site 3 were used and then multiplied by 2. This was done as Crossing point 2 is not capturing all of the footfall through Link 3, because many pedestrians may not use Crossing point 2 to enter and exit the square.

1.5.16 For PERS Link 5, the pedestrian counts from Crossing point 2 and 3 in Site 2 were used.

1.5.17 For PERS Space 2, the Northbound and Southbound count on the western side of the High Street in Site 3 was used. However, when calculating the benefits of a space VURT needs the number of static users and their dwell times within the space. So, the assumption was made that only half of the daily footfall were used to represent static users within the space, with the average dwell time being set to 10 mins.

VURT Appraisal Outputs

1.5.18 The TfL VURT 2016 has been updated with July 2017 WebTAG Value of Time Multipliers, GDP Deflators and Discount Factors[3]. Through combining the PERS scores and estimates of pedestrian footfall, the following user benefits from journey ambience have been estimated from the urban realm in Bedford.

Table 3. Urban Realm Pedestrian Journey Ambience Benefits (2021 in 2010 Prices)

AREA	SINGLE YEAR SCHEME OPENING YEAR BENEFITS
Link 1	£16,475
Link 2	£9,606
Link 3	£18,122
Link 5	£5,563
Space 2	£5,452
Total	**£55,219**

1.6 Retail Market Benefits

1.6.1 A primary aim of the proposed 'Theme 1 Public Realm' package of measures is to re-balance functional space within the heart of the town centre along the High Street and St. Paul's Square, to provide improved permeability for pedestrians and create an enhanced retail and leisure environment, with wider pavements and high quality, safe and secure, urban realm.

1.6.2 Some of the direct benefits from this scheme have been measured through the VURT assessment (described in Section 1.5); however, the benefits will extend far beyond these to the underlying value of retail properties within the area. Whilst the VURT tool also provides a mechanism for assessing property values, a set of Bedford specific data is available that provides a direct assessment of the impact of different urban realm context upon the subsequent value for property in the town centre. This is considered to provide a significantly more robust assessment of the impacts in Bedford than the VURT tool.

1.6.3 The stakeholder engagement process put forward a hypothesis that there are significant variations in the rateable values for retail outlet across the core town centre. More

[3] https://www.gov.uk/government/publications/webtag-tag-data-book-july-2017

specifically, the anecdotal evidence indicated that rateable values, and hence rental values, are considerably higher within the heart of the core pedestrianised town centre, than they are on the heavily trafficked High Street.

1.6.4 To test this hypothesis data was obtained from the Business Rate Valuation (https://www.tax.service.gov.uk/business-rates-find/search) service. This allows a search of rateable values by categories for different locations. Two separate searches were undertaken for 'Shop & Premises' specifically examining 'Retail Zone A' rates. One search focused upon five properties on the High Street, the other for five properties within the heart of the pedestrianised retail area in Bedford, e.g. at the junction of Silver Street, Harpur Street, Midland Road. The full set of data is presented within the Appendices, with the average rateable value for 'Retail Zone A' were as follows:

- High Street = £305/sqm
- Pedestrianised Core = £772/sqm

1.6.5 This demonstrates a significant variation in rateable values, with the average for the 'Pedestrianised Core' over 250% higher. There will clearly be a number of influences over this variation in value; however, fundamentally these areas are very closely, geographically located and the divergence in value can only, ultimately, be driven off the fact that Silver Street, Midland Road, and Harpur Street became part of the core pedestrianised area, and the focus for retail, whereas the High Street has remained primarily a vehicular thoroughfare, with retail a secondary function. Were this dynamic to change, there is no logical reason why the High Street could not develop into a similarly important retail centre over time. Such a change would not be immediate; rather it would develop over time as the High Street became a more prominent locality.

1.6.6 The proposed 'Theme 1 Public Realm' package, whilst not delivering full pedestrianisation, will result in a significant enhancement to the retail environment. As an example, the overall Pedestrian Environmental Review Survey (PERS) scores for the north of the High Street are currently rated at 7. The proposed improvements are forecast to increase this to a score of around 30. This compares to a maximum score for full pedestrianisation of 36. The proposed scheme is, therefore, predicted to improvement the standard of the urban realm to a level the equivalent of 83% of full pedestrianisation.

1.6.7 Applying this factor to differential in rateable values between the High Street and the 'Pedestrianised Core' would suggest the scheme could increase rateable values by up to 211%.

1.6.8 The subsequent challenge is to determine how important a factor the 'quality of the urban realm' is in terms of value placed upon a retail locality, and hence its rateable value. Putting aside the actual quality of the retail property itself (which can clearly vary whatever the locality of the premises), there are undoubtedly a range of other influences upon the rateable value, such as proximity to other retail outlets and facilities that are in the core of the pedestrianised area. It can be argued, however, that all of these could change over time if the central 'gravity' of the town retail core was extended eastwards towards the High Street. The quality of urban realm in creating attractive locations for shoppers to dwell, therefore, becomes a key element. Even so, without any specific

qualitative data with which to determine the importance of public realm, a conservative approach has been undertaken, with the following assumed proportional impact:

- Central Case = 25% of differential impact attributed to Urban Realm
- High Case = 30%
- Low Case = 20%

1.6.9 On the basis of these assumed proportional impacts, the overall assessment of the benefit generated as a result of the 'Theme 1 Public Realm' scheme would be:

- Central Case = 53% uplift in rateable value (211% * 25%)
- High Case = 63% (211% * 30%)
- Low Case = 42% (211% * 20%)

1.6.10 These uplifts have been applied to current average rateable value as follows:

- Central Case = £305/sqm * 53% = £160.89 uplift
- High Case = £305/sqm * 63% = £193.07 uplift
- Low Case = £305/sqm * 42% = £128.71 uplift

1.6.11 These uplifts in rateable value have then been applied to the estimated retail floorspace located in direct contact with the proposed public realm enhancements on the High Street and St. Paul's Square, of around 28,500 sqm. This would generate the following total uplift in rateable values:

- Central Case = £160.89 * 28,500 = £55,023,525
- High Case = £193.07 * 28,500 = £66,028,230
- Low Case = £128.71 * 28,500 = £44,018,820

1.6.12 As discussed above, it is acknowledged that these benefits are unlikely to be engendered immediately as it will both take time for the dynamic of the town centre to change but also there will be existing rental contracts in place. To account for these factors, it has been assumed that the benefits will be realised over the first 5 years, as per the following profile:

- Year 1 Benefits = 10%
- Year 2 = 25%
- Year 3 = 50%
- Year 4 = 75%
- Year 5 = 100%

1.6.13 Evidence suggests that there is strong potential for these uplifts to be achieved, with demand for retail space and evidence of pedestrian growth in the town centre. Although, following growth in previous years, there has been a decline in footfall in Bedford town centre in 2018, over 70 new businesses have opened throughout the year, and demand for retail space remains strong, as outlined in the Retail Demand Addendum Note to this business case.

1.7 Appraisal Assumptions

1.7.1 The direct transport user benefits related to infrastructure measures have been assessed within the SATURN model, with the outputs extracted into TUBA. The latest 2017 version of TUBA has been applied, with the standard economic factors. This includes the latest Values of Time from the July 2017 WebTAG databook.

1.7.2 An annualisation factor of 253 has been applied, capturing the benefits across the standard number of weekdays across a year (52*5 minus 7 bank holidays).

1.7.3 All AM and PM benefits and disbenefits have been factored by 1.5 to reflect the observed 90 minute peak periods of traffic flow across Bedford, as documented within the 'Bedford Town Centre Transport Strategy – Report of Surveys (2015)'.

1.7.4 All of the measures have been appraised across a 30 year period, reflecting the range of some scheme elements in terms of technology and urban realm improvements. All benefits are discounted to 2010 prices, in line with DfT WebTAG guidance.

1.7.5 Development growth forecasting data is available up to 2032 and is set out within 'Bedford Forecasting Report (2015)'. This has been applied within the analysis. Absolute levels of traffic, and journey times, and hence benefits, are assumed to remain constant from 2032 onwards.

1.7.6 Public Transport impacts have not been quantified within the appraisal. The package of scheme measures will benefit bus services operating along the former A6 northern and southern gateway corridors, both in the potential to reduce journey times, but explicitly in terms of improving journey time reliability. In the absence of a multi-modal model, it has not been feasible to explicitly examine the impact upon public transport; however, given the improvements will impact both bus passengers and car drivers/passengers, it is not anticipated that there will be any significant mode shift resulting from the package of measures. An assessment of the impact of the measures on public transport provision is included within the qualitative assessment.

1.8 Options Appraised

Reference Scenario

1.8.1 A Reference Scenario has been created for both 2021 and 2032 that reflects committed development and the transport highway schemes that will be delivered in isolation of the delivery of the proposed town centre transport strategy package of measures.

1.8.2 Details of the future year forecasting are set out within the 'Bedford Forecasting Report (2015)', which sets out the profile of development growth to 2021 and 2032, alongside details of the TRICS-based trip generation process.

Core Scenario

1.8.3 The Core Scenario reflects the Reference Scenario but includes the all three elements of the proposed package of scheme measures.

High and Low Scenarios

1.8.4 High and low sensitivity tests have been undertaken to understand the impact of different underlying growth assumptions on the Core Scenario. The details of these sensitivity tests have been described in some of the sections previously but are summarised within Section 1.1. They include:

- a high and low growth assessment (+/- 7.9% for 2021 and +/- 11.5% for 2032)
- a high and low 'UTMC and Technology' impact
- a high and low 'public realm' impact

Construction Impacts

1.8.5 The public realm and highway infrastructure elements of the package of measures will require temporary traffic management measures during the construction phase; however, major works will be timed to co-inside with low levels of traffic or will be very short-term in nature. The implementation of the UTMC and Technology measures will have limited disruption to the operation of the transport network.

1.8.6 The delivery of the package of measures has been phased to ensure the implementation of some UTMC and Technology measures in advance of the highway infrastructure works to ensure the benefits of these systems are in place before major roadworks commence. Furthermore, the infrastructure schemes will be delivered in a manner that minimises the level of disruption to general traffic movements. In regards to the public realm works on the High Street and St. Paul's Square, whilst the works will require reduction in highway capacity, this will be no greater than the final scheme itself.

1.8.7 Overall, any significant negative impact during the construction phase will be very short-term in nature. By phasing the implementation of UTMC measures, the benefits of these schemes will be delivered in advance of any general disruption from highway infrastructure works. Whilst the impacts have not been quantified, there are considered to be very small in nature.

1.9 Appraisal Summary Table

1.9.1 This section sets out the qualitative and quantitative impacts of the transport scheme which will then be used to inform the Value for Money Statement (Section 1.10). The competed Appraisal Summary Table is provided in the Appendices.

Economy

Direct User Benefits

1.9.2 The direct user benefits have been forecast through a combination of the outputs from the TUBA model assessment, as well as the separate 'UTMC and Technology' benefits. A summary is provided in the following table.

Table 4. Transport User Benefits (£,000s) Discounted to 2010 prices

USER BENEFIT	TUBA (INFRASTRUCTURE) BENEFIT (£,000)	UTMC & TECHNOLOGY BENEFIT (£,000)	TOTAL BENEFIT (£,000)
Consumer Users (Commuting)	188	17,592	17,789
Consumer Users (Other)	421		
Business Users and Providers	-411		

1.9.3 The direct user benefits show the overall impact of the package of scheme measures is forecast to have a positive benefit in terms of reducing journey times and vehicle operating costs across the town centre network.

1.9.4 There are, however, a variety of impacts from individual elements of the overall package of measures. The reduction in highway capacity along the High Street and St. Paul's Square is forecast to result in some increases in journey times for certain trip movements. This, though, is part of the wider strategy to minimise the impact of vehicular traffic upon the retail centre, so whilst acting as a disbenefit to private car and freight movements, it offers significant enhancements to pedestrians within the town centre.

1.9.5 The additional 'Alleviating of Pinch-point' and 'UTMC and Technology' packages of measures has been designed to off-set the negative impact of the capacity reduction in the highway and provide more efficient movement of vehicles around the core town centre. The results demonstrate these benefits outweigh the disbenefits to private car and freight movements on the High Street. Further refinement of the Manton Lane / Clapham Road roundabout pinch point scheme through more detailed design has also resulted in an increase in user benefits derived from increased capacity and modest reduction in delay at these junctions.

1.9.6 The VISSIM microsimulation model for the Manton Lane scheme has been compared to the Bedford Saturn model to ensure an appropriate assessment to transport unit benefits in this Business Case. The comparison showed the results to be very similar, and the Saturn model is therefore still considered appropriate for the assessment of transport user benefits.

1.9.7 As has been noted in the Strategic Case, the Council is currently preparing a Business Case for the Housing Infrastructure Fund to fund a highways scheme that will enable the delivery of much needed homes to the Bedford town centre. It should be noted that if this application is successful, the introduction of this scheme may impact the transport user benefits from the TB2020 package of works.

Reliability

1.9.8 Journey time reliability is acknowledged as a key issue currently with parts of the Bedford transport network during peak periods. There is very limited contingency within the

network meaning it is susceptible to significant delays as a result of relatively minor incidents.

1.9.9 Journey time reliability has been identified as a particularly key issue along the Ampthill Road corridor. Journey time surveys along the corridor indicate significant variation in times. Within the core 1.5km stretch from Cowbridge to Britannia Road, free-flow journey times are around 2.5 minutes. This increases to around 5 minutes on average, but with peak journey times reaching above 7.5 minutes.

1.9.10 In addition, the completion of the Western Bypass has resulted is a change in vehicle movements around the Clapham Road and Manton Lane area, resulting in perceived significant variability in journey times in this area, albeit detailed journey time data is not yet available.

1.9.11 The UTMC and Technology package of measures are aimed not specifically at just reducing journey times but also ensuring a more consistent journey time along the north and south former A6 corridor leading into the town centre during peak periods. The UTMC system will aim to regulate traffic to provide more consistency, both across the peak periods but also on a day-to-day basis, increasing the resilience of the network. The benefits will accrue not just on the northern and southern approach corridors, but also within the town centre, where traffic flows into the centre can be regulated to avoid peak network congestion.

1.9.12 Whilst WebTAG provides a range of mechanisms to quantify these potential benefits, insufficient data on current journey time variability was available to provide a robust assessment of the current standard deviation of journey times across the corridor. No quantified assessment of benefits is, therefore, presented; however, this is considered to be a strong, positive benefit of the package of measures.

Wider Economic Impacts

1.9.13 Whilst that the package of measures is focused around transport provision, one of the primary objective is to engender wider economic benefits to the local town economy, focusing upon the retail core, as well as providing wider efficiencies to businesses across the town, including the former A6 northern and southern corridors.

1.9.14 The public realm enhancements along the High Street and St. Paul's Square are designed to significantly enhance the pedestrian environment to encourage footfall and enhance the retail economy in this part of the town. Section 1.6 sets out the scale of current differential in retail value between the High Street and the core pedestrianised retail centre of the town. The package of improvements is forecast to deliver equivalent uplifts in rental values within the High Street and St. Paul's Square of around £2.1m pa.

1.9.15 These are only the direct benefits to the retail properties on the High Street and St. Paul's Square. In addition, there are likely to be uplifts to other commercial properties in close proximity, such as office premises, albeit the impacts are considered likely to be significantly lower. A key element of the public realm package of measures is to increase permeability and connectivity between the current core retail area and the Cultural Quarter to the south east of the town, as well as connections to the River. This is predicted to deliver multiplier benefits to the economy by creating a more coherent town centre for visitors and so attract greater footfall, and hence economic activity.

1.9.16 The direct retail market benefits are, therefore, considered to be a relatively conservative quantitative estimate of the ultimate overall benefits that will be delivered to the town centre economy.

1.9.17 The combined package of measures will also directly support a range of short, medium and long-term developments opportunities within the former A6 northern and southern corridors leading into the town centre, as well as at sites at either ends of these corridors. Both corridors are already congested during peak period restricting access to employment and retail sites along the corridor, as well as affecting arterial travel to and from the town centre.

1.9.18 The proposed measures will provide some additional capacity but also enhance the efficiency of the network and manage traffic flows to make the most of the existing capacity.

1.9.19 Development opportunities that will indirectly benefit within the corridors themselves include:

- The development of an Aldi, DIY Store, light industrial, residential dwellings at the Morrisons and Technology House sites
- 24,500 sqm GFA of employment at Interchange Retail Park
- At the northern end of the corridor there are a wide range of potential development opportunities to the south of the River Great Ouse around Bedford Hospital and the Kingsway Gyratory. This includes a range of public assets that are subject to a One Public Estate bid to regenerate land in this area, with opportunities for residential and commercial development
- At the southern end of the corridor there, along the A6 / B530, there are a number of long-standing residential and commercial development proposals including:
- 16,000 (all by 2021) sqm GFA employment at Coronation Business Park
- 124,000 (80,000 by 2021) sqm GFA employment at Medbury Farm
- Around 7,000 (3,000 by 2021) Residential Dwellings across five sites and over 12,000 (all by 2021) sqm GFA employment at Wixams
- Access to a new supermarket development off the Great Ouse Way / Paula Radcliffe Way Roundabout

1.9.20 It is also possible that the development of a new settlement north of Bedford, with access from the A6, will have commenced by 2027.

Scheme Revenues

1.9.21 There are no specific revenue streams associated with the package of measures, although the 'Technology' package offers the potential for increased public transport patronage and, hence, associated fare revenue. For the purposes of the appraisal this has been assumed to be neutral.

Social and Distributional Impacts

1.9.22 The social and distributional impacts of the scheme have been considered using guidance set out in WebTAG Unit 4.1. An initial screen process was undertaken to identify the potential impacts of both individual scheme elements, as well as the overall package of measures. This identified the following social impacts that could be affected by the proposed transport scheme, these are:

- Physical Activity;
- Accidents;
- Severance;
- Journey Quality;
- Security;
- Access to services; and
- Option and non-use values.

1.9.23 WebTAG worksheets to assess the social impacts of the transport scheme have been completed for the following impacts:

- Physical Activity;
- Security;
- Severance; and
- Journey Quality.

Physical Activity

1.9.24 The urban realm improvement elements of Transporting Bedford 2020 have been specifically designed to improve pedestrian permeability through the town centre. However, the overall impact on journey times has not been quantified and is unlikely to have a significant impact.

1.9.25 The overall impact of the scheme on Physical Activity has therefore been scored as Neutral. The completed WebTAG worksheet can be found attached as an Appendix.

Accidents

1.9.26 The package of measures will offer a range of potential benefits, in terms of accidents savings, through targeted enhancements to the pedestrian with reductions in traffic speeds, as well as improvement management of the wider highway network.

1.9.27 The 'Theme 1 Public Realm' package of measures in the High Street and St. Paul's Square will create a greater balance in priorities between vehicular traffic and pedestrian movements. The scheme will reduce the High Street to a single lane, with wider pavements and lower traffic speeds. This is anticipated to engender notable benefits in reducing long term levels of accidents, albeit there is likely to be a period of adjustment to the new highway arrangements where the affects may be neutral in the short term.

1.9.28 The public realm scheme will also result in some diversion of traffic onto other routes, potentially increasing the risk of accidents on those routes.

1.9.29 Within the original assessment of issues and opportunities, as part of the Bedford Transport Strategy development process, the Ampthill Road corridor was identified as a having the highest level of accidents, As such a number of measures within the package are aimed specifically at reducing the level of accidents across this corridor. These include the Ampthill Road / Britannia Road Junction Enhancement providing, access to Bedford Hospital from the Ampthill Road, as well as the dedicated cycle facilities along the Ampthill Road Corridor.

1.9.30 Over the last five years, two serious accidents and 10 slight accidents have been recorded around the Ampthill Road entrance to the Hospital and at least one accident involving a cyclist has occurred along that corridor[4], giving an average annual accident rate of 3.4 in the area directly impacted by this scheme.

1.9.31 Using DfT WebTAG values for serious and slight accident savings (WebTAG databook Table A1.1.3, July 2017), prevention of these accidents through the scheme improvements would translate to an annual benefit of £157,152, in 2010 prices.

1.9.32 Overall, the package of measures is forecast to deliver a Present Value of Accident Benefits of £4.198m over 30 years. These results are fed into the Analysis of Monetised Benefits (AMCB) Table as part of the Value for Money Statement (Section 3.6).

1.9.33 This analysis has focused on one area of the scheme proposals and has not accounted for any re-distribution in traffic flows across the town centre as a result of the wider highway/UTMC proposals. On some links where additional traffic will occur this may have modest safety disbenefits that have not been calculated.

Severance

1.9.34 Community severance is defined as "the separation of residents from facilities and services they use within their community". Severance primarily concerns those using non-motorised modes, particularly pedestrians. The WebTAG guidance advices that to ensure a consistent approach, classification should be based on pedestrians only.

1.9.35 The 'Theme 1 Public Realm' scheme will offer significant reduction in east-west severance for pedestrians across the town centre form the east of the town into the heart of the retail area. It will also reduce severance to and from the River, ensuring much greater connectivity across the town.

1.9.36 The 'Theme 2 Alleviating Pinch-point schemes' and 'Theme 3 UTMC and Technology' measures will also provide benefits to pedestrians along the former A6 northern and southern corridors. Enhanced crossing facilities will be incorporated into a number of enhanced junction layouts, as well a SMART technology for pedestrian crossing facilities along the southern gateway corridor.

1.9.37 Due to an absence of specific footfall data in some of these locations the direct impact has not be monetised and is presented as a qualitative assessment in the Appraisal Summary Table and the WebTAG worksheet has been attached as an Appendix.

[4] www.crashmap.co.uk

Journey Quality

1.9.38 The package of scheme measures will embody two elements of improvement to journey quality:

- Value of Urban Realm Enhancements
- Traveller stress

1.9.39 Section 1.5 has set out the Valuing Urban Realm Toolkit (VURT) assessment that has been undertaken to demonstrate that positive impact of the Theme 1 Public Realm scheme upon the urban environment. The analysis concluded that total pedestrian journey quality benefits associated with the urban realm improvements that will accompany the scheme will be £1,381,383 in discounted 2010 prices.

1.9.40 Journey quality is defined within WebTAG Unit 4.1 as "*a measure of the real and perceived physical and social environment experienced while travelling*". Many of these aspects relate to information provision and perceptions of safety but it also includes aspects relating to traveller stress, defined as "the frustration, fear of accidents and route uncertainty".

1.9.41 The reductions in journey times and improved reliability will contribute a positive benefit for journey quality, by all modes, across the former A6 northern and southern corridor. As has been highlighted within Section 1.4 and 1.9.6 the impacts are anticipated to be significant in terms of reducing uncertainty and so will have a moderate positive impact upon traveller stress. The absence of quantifiable data for these benefits measure they have not been monetised.

1.9.42 The completed WebTAG worksheet for journey quality has been attached as an Appendix, and the qualitative comment can be found in the appraisal summary table.

Security

1.9.43 The Public Realm enhancements will improve levels of safety and security for pedestrians within the High Street and St. Paul's Square, with wider pavements and improved natural surveillance. The scheme is estimated to provide a slight beneficial impact to social impact metric of security.

1.9.44 The WebTAG worksheet for Security is attached as an Appendix, and the qualitative summary can be found in the appraisal summary table.

Access to services

1.9.45 The Public Realm enhancements will improve the permeability of the core town centre enhancing accessibility to town centre services. In particular, it will improve connections from the east of the town, including the residential areas, into the core pedestrianised centre.

1.9.46 The wider package of measures will improve accessibility to services throughout the former A6 northern and southern corridors. This includes the Hospital located at the northern end of the Ampthill Road corridor. The technology package will deliver a range of information and travel demand support initiatives to make it easier for individuals to travel by a range of different modes to access services.

1.9.47 These impact area forecast to deliver a moderate beneficial impact for this metric.

Option and non-use values

1.9.48 The whole package of measures will deliver improvements to all modes of travel along the former A6 northern and southern corridors. The UTMC and Technology package will include a variety of measures to enhance information provision for travellers helping them to make informed decisions about which travel options to utilise. This is forecast to deliver a small beneficial impact for this metric.

Environmental Impacts

1.9.49 To assess the potential Environmental impacts of the transport scheme an assessment has been done in line with WebTAG Unit A3 and the Assessment Matrix from the Design Manual for Roads and Bridges (Volume 11 Section 2 Park 5). The results of these assessments can be found in the Appraisal Summary Table and the completed WebTAG worksheets can be found attached as appendices.

Noise

1.9.50 An initial scoping exercise has been undertaken to establish an appreciation of the likely noise and vibration consequences associated with the proposed scheme. DMRB Volume 11, Section 3, Part 7 – Noise and Vibration 2011 HD213/11 Revision 1 provides threshold values against which changes in noise due to the project should be compared, and assessed.

1.9.51 The assessment considers the impact of changes in traffic flow and speed may have upon noise levels, as well as the extent to which the study area includes noise sensitive receptors, such as dwelling, schools and community facilities. If there is clear evidence that any threshold limits are likely to be exceeded then a detailed assessment will follow.

1.9.52 The package of scheme measures encompasses the majority of the core town centre and so potentially affects a wide range of noise sensitive receptors; however, the impacts of the scheme measures will incorporate some reductions and some increases in traffic flows across the town.

1.9.53 A key component of the 'Public Realm' and 'UTMC and Technology' package is to control vehicular speeds both in the core town centre but also the former A6 northern and southern corridors. Whilst the scheme should deliver reduced journey times, this will be through reduced congestion at junctions, without inducing higher speeds on links between junctions.

1.9.54 Understanding the potential changes in flows across the town is challenging, as it has not been feasible to model many of the UTMC and Technology measures. The outputs from the SATURN model do demonstrate that the Public Realm scheme along the High Street and St. Paul's Square will discourage traffic volumes along these routes. This, along with reduced speeds, will provide positive benefits in terms of noise reduction to properties all along the High Street and St. Paul's Square.

1.9.55 The reduced flows on the High Street will result in diverted traffic on other routes. The model outputs indicate that some of the traffic will instead utilise more strategic routes, such as the Western Bypass and the A421, which is precisely the aim to remove through traffic from the town centre and encourage it to us the bypass routes. The noise implication for these routes is minimal as they are designed to take this form of traffic and are in much less sensitive areas than the core town centre.

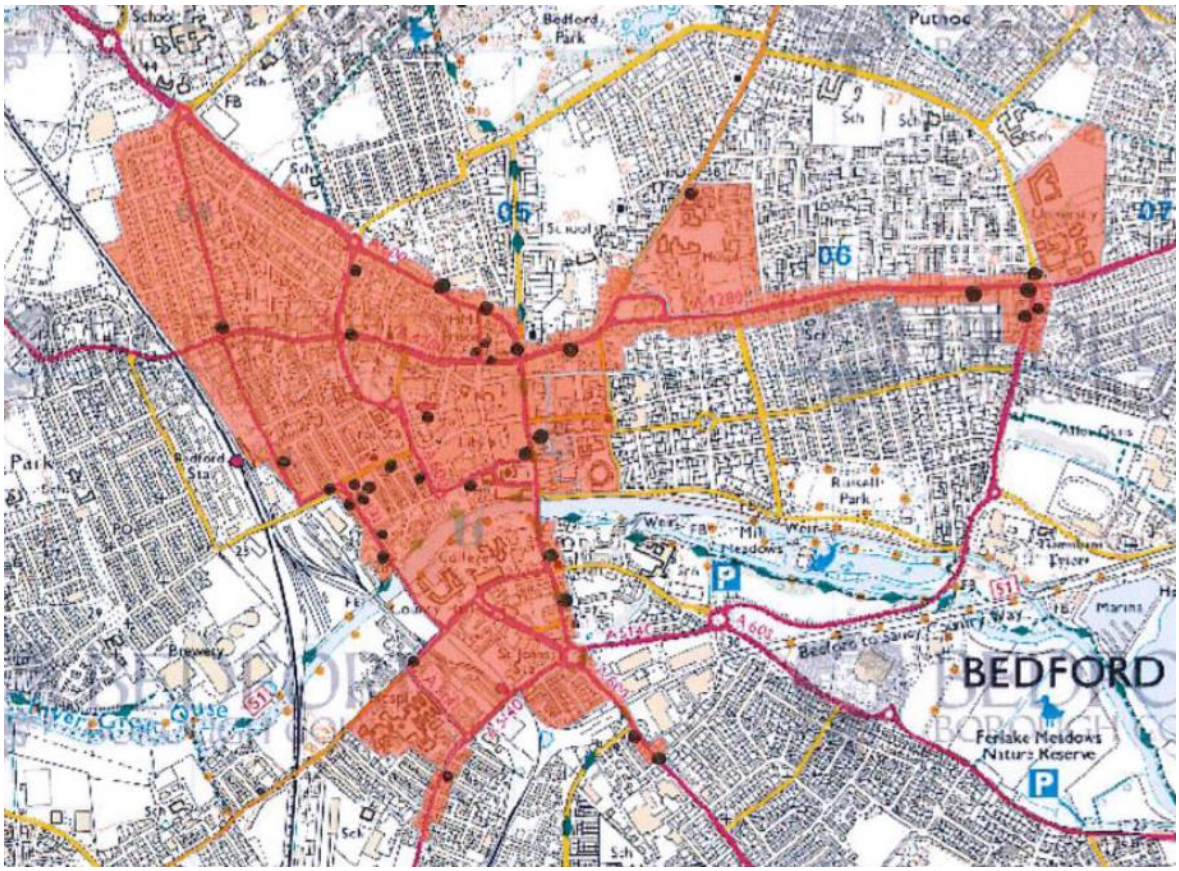
1.9.56 Some additional traffic is also forecast to utilise Greyfriars and Midland Road as an alternative route. Whilst this is clearly within the built up area of the town centre, in effect, the potential negative impacts on these roads are a direct off-set of the positive benefits engendered by the High Street and St. Paul's Square. Significantly none of the speeds on these routes will exceed the 40km/hr, the level at which the DMRB guidance states that speed has a direct influence upon noise.

1.9.57 Given the absence of a complete dataset on future traffic movements, a detailed noise assessment has not been undertaken at this stage; however, the individual scheme elements will be designed with any necessary mitigation measures to minimise the impact upon noise or vibration resulting from the scheme, utilising natural barriers, purpose built environmental barriers and low-noise surfaces, as required.

Air Quality

1.9.58 The town centre encompasses an Air Quality Management Area (AQMA), detailed within the figure below.

Figure 3. Bedford Air Quality Management Area



1.9.59 The Town Centre AQMA 5 was declared on 6th November 2009. The Environmental Health department carry out air quality monitoring around the Borough to assess the air quality. This includes the use of diffusion tubes, small plastic tubes that absorb pollutants, which are then sent to a laboratory for analysis. The results obtained are monthly averages and are used to give long term trends in levels of pollutants in an area. Real time analysers are also used that accurately measure levels of pollutants in the air constantly. Bedford currently uses 65 diffusion tubes to monitor nitrogen dioxide and two real time analysers to monitor nitrogen dioxide, located on the Prebend Street and Lurke Street.

1.9.60 The Council produces annual status report providing an overview of air quality in Bedford Borough during the previous year, fulfilling the requirements of Local Air Quality Management (LAQM) as set out in Part IV of the Environment Act (1995) and the relevant Policy and Technical Guidance documents. The authority also has an Air Quality Action Plan (AQAP) setting out measures it intends to put in place in pursuit of improving air quality within the AQMA.

1.9.61 Much of the area that is the focus of the proposed package of scheme measures falls within the AQMA. As such, it is a critical objective that the overall outcomes of the implemented measures will support the requirements of the AQP. The scheme measures have been developed with this firmly in mind. As such, the package does not simply seek to build additional highway capacity that could induce additional vehicular trips into the

town centre, and the AQMA, rather is seeks to provide a balance of improvements to both motorised and non-motorised modes of transport and seeks to encourage sustainable travel through enhanced information and technology provision.

1.9.62 The package of measures will clearly deliver specific benefits to individual geographic locations within the town centre, in terms of reduced vehicular traffic and improved air quality. This includes the High Street and St. Paul's Square. Other roads within the AQMA will have increased levels of traffic, such as Greyfriars and Midland Road, off-setting some of the benefits; however, the model outputs indicate that some diverted traffic will utilise more strategic routes, including the Western Bypass and the A421, outside of the AQMA, and so there could be some overall positive air quality impacts within the critical AQMA.

1.9.63 The specific requirement for an air quality assessment is determined in accordance with traffic change criteria set out in HA207/07 DMRB Volume 11 Section 3 Part 1. The traffic change criteria are:

- road alignment will change by 5m or more, or
- daily traffic flows will change by 1,000 annual average daily traffic (AADT) or more, or
- HGV flows will change by 200 AADT or more, or
- daily average speed will change by 10 km/hr or more, or
- peak hour speed will change by 20 km/hr or more

1.9.64 Whilst the traffic model outputs do not provide a definitive assessment of these changes, due to the inability to model many of the UTMC and Technology measures, it is not anticipate that any of these criteria will be exceeded.

1.9.65 This will be reviewed as and when further evidence is available during the detailed design of the UTMC and Technology measures.

Greenhouse Gases

1.9.66 The requirement to conduct a detailed assessment of the impact of greenhouse gases applies the same criteria as for the air quality assessment and so is challenging to undertake with the available data but is broadly considered unlikely.

1.9.67 The outputs from the TUBA model assessment and the UTMC and Technology benefits have been utilised to provide an assessment of potential impacts. This indicates a potential small disbenefit of £30,000 over the 30 year appraisal period, discounted to 2010 prices.

Landscape

1.9.68 The cumulative impact of the transport scheme on Bedford's landscape is deemed to be neutral. This summary assessment score is based on the fact that the only features of the landscape that will see substantive impacts either beneficial or adverse is the tranquillity and cultural features of Bedford's landscape. As the transport scheme is mostly confined to existing areas of the road network, it was concluded that there would be a neutral impact on the pattern and landcover of Bedford's landscape. Although the scheme is predicted to produce slightly adverse impacts on the already low quality tranquillity of parts to Bedford's landscape. This slightly adverse impact is driven by the increased road

capacity that the scheme provides, which will no doubt increase the flows of traffic through some parts of Bedford; the adverse impact on tranquillity is deemed to be slight because the tranquillity of Bedford's landscape, particularly around the road network, is already subjectively quite low, with this scheme unlikely to worsen this with the additional capacity. This slightly adverse impact has been balanced out by the slight benefit that the urban realm scheme will have on the cultural features of Bedford's landscape and on reduced traffic flow on the High Street.

1.9.69 More details on the impact the scheme is projected to have on Bedford's Landscape can be found in the WebTAG worksheet attached as an Appendix.

Townscape

1.9.70 One of the key objectives of the transport scheme is to enhance the town centres public realm to increase pedestrian footfall and create additional opportunities for enterprise.

1.9.71 To encourage increased footfall through Bedford's town centre the layout of Bedford's townscape will see modification to increase pedestrian permeability through the High Street and in St Paul's Square. It has been determined that the impact of the scheme on Bedford's Townscape will be moderately beneficial overall. More details on the projected impact of the scheme on Bedford's Townscape can be found in the WebTAG worksheet attached as an Appendix.

Historic Environment

1.9.72 The urban realm improvement package of the transport scheme is focused on improving St Paul's Square by increasing permeability for pedestrians, generally improving the retail environment and making it more pedestrian friendly. These urban realm improvements are designed to increase the sense of place of St Paul's Square, which will likely have similar impacts on St Paul's Church due to the relationship between the two. It has been determined that the impact on the Historic Environment is 'slight beneficial', more detail on which can be found in the WebTAG worksheet attached as an Appendix.

Biodiversity

1.9.73 There are no Wetlands of International Importance (Ramsar), Special Protection Areas (SPA), Special Area of Conservation (SAC), Sites of Special Scientific Interest (SSSI) within the immediate vicinity of the proposed works. The package of scheme measures will have no impact upon this criteria.

1.9.74 WebTAG Unit A3 provides guidance on how to appraise the impact that a transport scheme can have on biodiversity; the Biodiversity Appraisal Worksheet details the appraised biodiversity impacts of the scheme and this can be found in the Appendices.

1.9.75 The qualitative summary of WebTAG appraisal can be found in the Appraisal Summary Table.

Water Environment

1.9.76 The package of scheme measures may impact upon drainage and water run-off as a result of the reconfiguration of junctions and highway links.

1.9.77 The highway engineering has been designed to mitigate against any impact upon drainage, with culverts replaced, and replicating existing run-off. The scheme does not impact upon any existing water courses.

1.9.78 .Using the WebTAG A3 appraisal guidance, the Water Environment Impact Worksheet has been completed, with an assessment score of 'slight adverse'. The WebTAG worksheet table can be found in the Appendices.

Public Accounts

Cost to Broad Transport Budget

1.9.79 The capital costs of the scheme implementation are set out in detail within the Financial Case.

1.9.80 The base costs of implementing the package of scheme measures has been identified at £15.348m and are broken down as follows:

- Theme 1 – Public Realm = 4.473m
- Theme 2 – Alleviating Pinch-points = 7.468m
- Theme 3 – UTMC and Technology = 2.708m
- Utilities = 0.700m

1.9.81 This includes an allowance of 5% traffic management costs and 1% for preliminaries.

1.9.82 In addition to this, a quantified risk assessment (QRA) has been undertaken using @Risk software to derive a P80 value for all risks of £4.56m. This represents 29.7% of total scheme costs and has been added to these base costs in the financial case and to generate the adjusted scheme cost estimate for this economic assessment.

1.9.83 Since the November 2017 submission of the business case, the potential for the Housing Infrastructure Fund (HIF) scheme (see 2.15.2 of the Strategic Case) to come forward has increased, with BBC having been asked to prepare a business case for this highway improvement to unlock housing development land to the west of the railway station. This is due to be submitted in March 2019, with a decision on funding to be made in June 2019. The potential risks associated with joint delivery of the HIF scheme and this Transporting Bedford 2020 package of works have been included within the risk register.

1.9.84 All costs have been adjusted for optimism bias, at 44%, and input into the cost benefit analysis they have been discounted to 2010 prices.

1.9.85 The maintenance costs associated with the schemes have been estimated at 1% of the base scheme costs (excluding traffic management, preliminaries, utilities and contingency) and equate to a discounted value of £2.191m across the appraisal period.

1.9.86 The Broad Transport Budget for the scheme, including the optimism bias, is £28.405m over the 30 year period.

Indirect tax

1.9.87 The loss of indirect tax revenues as a result of road users making more efficient journeys, due to the scheme, is forecast using TUBA to be £0.294m over the 30 year appraisal period (discounted to 2010 prices). The impact this will have on the overall Benefit Cost Ratio (BCR) of the scheme will be discussed in the following section.

1.10 Value for Money Statement

1.10.1 This section provides a value for money conclusion by considering all of the evidence pulled together as part of the Appraisal Summary Table. This provides evidence to inform the final judgement on the Value for Money category of the scheme as recommended by DfT[5]. It summaries:

- The options considered and the do-nothing scenario
- Initial and adjusted BCRs
- Non-monetised benefits
- Risks and uncertainties

1.10.2 Sensitivity tests have also been undertaken to the test the robustness of the scheme's forecasted benefits and the results of these are set out in Section 1.11.

1.10.3 To support the value for money assessment the following tables are provided in the following pages:

- Public Accounts (PA) Table;
- Economic Efficiency of the Transport System (TEE) Table; and
- Analysis of Monetised Benefits (AMBC) Table

1.10.4 In addition, an Appraisal Summary Table (AST) is presented within the Appendices.

1.10.5 The AMBC table provides the user benefits (TEE table) and costs (PA table) derived from TUBA, as well as the wider benefits from the public realm enhancements to the town centre economy, greenhouse gas impacts, and accident savings benefits.

[5] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/267296/vfm-advice-local-decision-makers.pdf

Table 5. Central Case Public Accounts Table

Public Accounts (PA) Table

	ALL MODES TOTAL		ROAD INFRASTRUCTURE
Local Government Funding			
Revenue	0		0
Operating Costs	2191		2191
Investment Costs	24224		24224
Developer and Other Contributions	0		0
Grant/Subsidy Payments	0		0
NET IMPACT	26415	*(7)*	26415
Central Government Funding: Transport			
Revenue	0		0
Operating costs	0		0
Investment Costs	0		0
Developer and Other Contributions	0		0
Grant/Subsidy Payments	0		0
NET IMPACT	0	*(8)*	0
Central Government Funding: Non-Transport			
Indirect Tax Revenues	293.554634	*(9)*	293.554634
TOTALS			
Broad Transport Budget	26415	*(10) = (7) + (8)*	
Wider Public Finances	293.554634	*(11) = (9)*	

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative values.
All entries are discounted present values in 2010 prices and

Table 6. Central Case TEE Table

Non-business: Commuting	ALL MODES		ROAD	
User benefits	TOTAL		Private Cars and LGVs	
Travel time	36,416.2		36,416.2	
Vehicle operating costs	-19,465.5		-19,465.5	
User charges	0		0	
During Construction & Maintenance	0		0	
NET NON-BUSINESS BENEFITS: COMMUTING	16,950.8	*(1a)*	16,950.8	
Non-business: Other	ALL MODES		ROAD	
User benefits	TOTAL		Private Cars and LGVs	
Travel time	54,205.2		54,205.2	
Vehicle operating costs	-16,205.7		-16,205.7	
User charges	0		0	
During Construction & Maintenance	0		0	
NET NON-BUSINESS BENEFITS: OTHER	37,999.5	*(1b)*	37,999.5	
Business				
User benefits			Goods Vehicles	Business Cars & LGVs
Travel time	-24,494.8		2,607.8	-27,102.6
Vehicle operating costs	-12,666.5		-9,313.6	-3,352.9
User charges	0		0	0
During Construction & Maintenance	0		0	0
Subtotal	-37,161.3	*(2)*	-6,705.8	-30,455.5
Private sector provider impacts				
Revenue	0			
Operating costs	0			
Investment costs	0			
Grant/subsidy	0			
Subtotal	0	*(3)*		
Other business impacts				
Developer contributions	0	*(4)*		
NET BUSINESS IMPACT	-37,161.3	*(5) = (2) + (3) + (4)*		
TOTAL				
Present Value of Transport Economic Efficiency Benefits (TEE)	17,789.0	*(6) = (1a) + (1b) + (5)*		

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.

All entries are discounted present values, in 2010 prices and values

Table 7. Central Case Analysis of Monetised Costs and Benefits Table

Analysis of Monetised Costs and Benefits

Noise	0	*(12)*
Local Air Quality	0	*(13)*
Greenhouse Gases	-29.9	*(14)*
Journey Quality	1,381.4	*(15)*
Physical Activity	0	*(16)*
Accidents	4,197.9	*(17)*
Economic Efficiency: Consumer Users (Commuting)	16,950.8	*(1a)*
Economic Efficiency: Consumer Users (Other)	37,999.5	*(1b)*
Economic Efficiency: Business Users and Providers	-37,161.3	*(5)*
Wider Public Finances (Indirect Taxation Revenues)	-293.6	*- (11) - sign changed from PA table, as PA table represents costs, not benefits*
Present Value of Benefits (see notes) (PVB)	23,044.8	*(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)*
Broad Transport Budget	26,415.0	*(10)*
Present Value of Costs (see notes) (PVC)	26,415.0	*(PVC) = (10)*
OVERALL IMPACTS		
Net Present Value (NPV)	-3,370.2	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	0.87	BCR=PVB/PVC

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

Do-nothing Scenario and Options Considered

1.10.6 The do-nothing scenario would constitute the status quo in terms of the operation of the current highway network across the town centre, including current highway link and junction capacities and the absence of a functional UTMC system.

1.10.7 A broad range, and extensive number, of alternative scheme measures, and packages of scheme measures, have been considered over the last three years as part of the wider Town Centre transport strategy development process. All of these have been subject to extensive appraisal processes to establish the optimum package of measures within the available funding constraints.

1.10.8 Within the 'Pinch-point' theme, 11 separate scheme elements were examined and appraised, with six of these taken forward for inclusion within the final preferred package of measures.

1.10.9 Within the 'Public Realm' package, a town centre framework was established to consider both the geographical extent of potential measures (High Street, St. Paul's Square,

Embankment, Horne Lane, River Street, Greyfriars, Allhallows, Midland Road, Silver Street, Harpur Street) as well as the type of measures that could be employed (full pedestrianisation or reduced highway capacity). On the basis of detailed analysis and appraisal the preferred package of measures was identifies as a reduction in highway capacity and enhancement public realm provision along the High Street and St. Paul's Square.

1.10.10 Within the 'UTMC and Technology' package, the option development process has considered the wide range of current and emerging technologies available and evaluated the potential benefits from implementation of different corridors leading into the Core Town Centre, as well as across the Core Town Centre itself. The preferred package of measures identified the Southern and Northern Gateway corridors, along the former A6, as well as the Core Town Centre as the preferred option for implementing a UTMC and Technology package to enhance the efficiency of highway network operations.

Initial Benefit Cost Ratio

1.10.11 The Initial Net Present Value (NPV) for the scheme, encompassing the direct transport user benefits is forecast to be -£3.37m, with the expected Cost Benefit Ratio of the scheme at 0.87 to 1. This is a clear demonstration that the benefits of the scheme are not singularly about enhancing traditional transport provision.

1.10.12 The initial NPV represents a quantified assessment of monetised benefits in terms of a traditional set of transport scheme impacts. Not only does it exclude a range of non-monetised impacts (discussed below) but a major element of the package of measures is also designed to the enhance the town centre urban realm to support and grow the local economy. Excluding these benefits does not provide a full assessment of the impact of the scheme.

Adjusted Benefit Cost Ratio

1.10.13 The adjusted NPV for the scheme is forecast to be around £40.823m with the expected Cost Benefit Ratio of the scheme at 2.55 to 1. This represents a high value for money category.

1.10.14 This incorporates an additional £44.2 million benefits over 30 years in relation to enhanced town centre economic retail value, as set out in Section 1.6.

1.10.15 As presented in section 1.16 of this Economic Case, we have taken a conservative estimate of 25% of the anticipated potential uplift in retail values as a result of the urban realm improvements. Even with this conservative estimate, these benefits are what is driving the positive BCR for this scheme and therefore we have undertaken additional sensitivity tests to account for the risk that these retail value uplifts may not be realised. Our assessment shows that a 2.22:1 BCR could be achieved if only 20% of the retail value uplift was realised.

1.10.16 A further sensitivity test incorporating this scenario as well as more conservative estimates on growth rates and the benefits of the UTMC package is presented in Section 1.11.

Non-monetised Impacts

1.10.17 In addition to the monetised benefits set out above, the package of scheme measures is forecast to deliver a range of non-monetised impacts. Those criteria for which there is anticipated to be either positive or negative impacts are summarised within Table 8, with a full analysis of outcomes for all criteria, presented within the AST in the Appendices.

Table 8. Summary of Non-Monetised Benefits

IMPACT		DESCRIPTION	BENEFIT
Economy	Reliability impact on Business users	The proposed package of UTMC and Technology measures are anticipated to significantly enhance the reliability of journey times along the former A6 northern and southern corridors, as well as across the core town centre, in addition to reducing unpredictable variation in journey times.	High Beneficial
	Regeneration	The scheme will support local development; however, specific regeneration impacts, as defined by WebTAG guidance, will not be realised and therefore no assessment has been carried out to capture these.	Small Beneficial
Environmental	Townscape	The Public Realm package of measures will deliver a clear positive benefit in terms of enhanced townscape within the High Street and St. Paul's Square. Other physical infrastructure elements of the package of measures will be delivered in a manner sensitive to the local environment.	Moderate Beneficial
	Historic Environment	The package of scheme measures will not directly impact upon any heritage or historic resources; however, the public realm measures will be designed to complement historic buildings around St. Paul's Square, as well as providing greater connectivity to the cultural quarter and the historic Castle Mound.	Small Beneficial
Social	Reliability impact on Commuting and Other users	The proposed package of UTMC and Technology measures are anticipated to significantly enhance the reliability of journey times along the former A6 northern and southern corridors, as well as across the core town centre, in addition to reducing unpredictable variation in journey times.	High Beneficial
	Physical activity	The Public Realm enhancements within the core town centre will make the town more permeable with improved east-west connections. This will	Neutral

IMPACT		DESCRIPTION	BENEFIT
		encourage greater levels of pedestrian activity across the area. The wider UTMC and Technology package will facilitate greater mode choice through enhanced information provision and improved traffic management.	
	Journey quality	Journey quality within the town centre will be enhanced by the improvements to the public realm within the High Street and St. Paul's Square. The reductions in journey times and improved reliability will contribute a positive benefit for journey quality across the former A6 north and south corridor.	Moderate Beneficial
	Security	The Public Realm enhancements will enhance the safety and security for pedestrians within the High Street and St. Paul's Square	Small Beneficial
	Access to services	The Public Realm enhancements will improve the permeability of the core town centre enhancing accessibility to services. The wider package of measures will improve accessibility to services throughout the former A6 northern and southern corridors, including the Hospital. The technology package will deliver a range of information and travel demand initiatives to make it easier for individuals to travel by different modes to access services.	Moderate Beneficial
	Severance	The Public Realm enhancements will reduce severance impacts of the High Street and St. Paul's Square providing improved permeability between the core pedestrianised retail area and the 'Cultural Quarter' and the River.	High Beneficial
	Option and non-use values	The package of measures will deliver improvements to all modes of travel along the former A6 northern and southern corridors. The UTMC and Technology package will include enhance information provision for travellers helping them to make informed decisions about travel options.	Small Beneficial

1.11 High and Low Case Scenario Tests

1.11.1 WebTAG Unit M4[6] states that although the core scenario (of which results have been provided above) is intended to be the best basis for decision making, there is no guarantee that the outturn will match assumptions. Therefore sensitivity tests are undertaken to determine the potential impact under alternative scenario outcomes and to address the following questions:

- Under high demand assumptions, is the intervention still effective in reducing congestion or crowding, or are there any adverse effects, e.g. on safety or the environment?; and
- Under low demand assumptions, is the intervention still economically viable?

1.11.2 Section 4.2 of WebTAG Unit M4 sets out guidance on defining High and Low growth scenarios. The high growth scenario should consist of forecasts that are based on a proportion of base year demand added to the demand from the core scenario. The low growth scenario should be based on the same ranges but as a reduction to the core scenario demand.

1.11.3 The proportion of base year demand to be added/subtracted is based on a parameter **P** which varies by mode. The proportion is calculated based on the following:

[6] Tag Unit M4: Forecasting and Uncertainty: https://www.gov.uk/guidance/transport-analysis-guidance-webtag

- For 1 year after the base year, proportion p of base year demand added to the core scenario;
- for 36 or more years after the base year, proportion 6*p of base year demand added to the core scenario;
- between 1 and 36 years after the base year, the proportion of base year demand should rise from p to 6*p in proportion with the square root of the years.

1.11.4 For highway demand at the national level, the value of **P** is 2.5%, reflecting uncertainty around annual forecasts from the National Transport Model (NTM), based on the macro-economic variables that influence the main drivers of travel demand.

1.11.5 For this scheme the base modelled year is 2011 and future year model forecasts are 2021 and 2032. For 2021, this is 10 years from the base therefore the proportion to be applied to **P** is square root of 10 = 3.163. For 2032, this is 21 years from the base therefore the proportion to be applied to **P** is square root of 10 = 4.583.

1.11.6 Therefore the high and low growth sensitivity tests are defined as:

Table 9. High and Low Sensitivity Tests

SENSITIVTY TEST	FORECAST YEAR	FORMULA	CHANGE IN DEMAND
High Growth	2021	Core demand + 3.163*p	+7.9%
	2032	Core demand + 4.583*p	+11.5%
Low Growth	2021	Core demand + 3.163*p	-7.9%
	2032	Core demand + 4.583*p	-11.5%

1.11.7 The overarching impact of the high and low growth have been assessed within the SATURN model.

1.11.8 Alongside the potential variations in underlying growth, the sensitivity tests also encompass assessments of potential variations in the levels of benefits generated from the UTMC and Technology and Public Realm packages. Both these elements have been discussed earlier in the note (in Sections 1.4 and 1.6, respectively) and simply reflect higher or lower generation of benefits for analytical elements where there is less certainty. The UTMC high and low scenarios also incorporate the high and low traffic growth scenarios in deriving the value of the forecast delay reduction.

1.11.9 It should be noted that, in both cases, the Central Case forecast is considered to be conservative in nature and so the 'High Case' outcome is perceived to be a more likely outcome than the 'Low Case'.

1.11.10 The outcomes of the three elements of sensitivity testing have been combined to present the maximum variation in the potential economic outcomes, in terms of 'High Case' maximum benefits and 'Low Case' minimum benefits.

1.11.11 A summary of the two sensitivity scenarios is as follows:

- High Case

- High growth (2021 = +7.9%, 2032 = +11.5%)
- UTMC and Technology delay reduction = 23% of forecast delay
- Retail benefits attributed to public realm enhancements = 30% of differential in retail values from High Street to Core Town Centre

- Low Case
  - Low growth (2021 = -7.9%, 2032 = -11.5%)
  - UTMC and Technology delay reduction = 11.5% of forecast delay
  - Retail benefits attributed to public realm enhancements = 20% of differential in retail values from High Street to Core Town Centre

1.11.12 Under the high case scenario, the assessment the appraisal outcomes are:

- Present Value of Benefits = £89.435m
- Present Value of Costs = £26.415m
- Net Present Value = £63.020m
- Benefit Cost Ratio = 3.39

1.11.13 Under the low case scenario, the assessment the appraisal outcomes are:

- Present Value of Benefits = £55.990m
- Present Value of Costs = £26.415m
- Net Present Value = £29.575m
- Benefit Cost Ratio = 2.12

1.12 Summary

Key Risks and Uncertainties

1.12.1 A comprehensive quantified risk assessment (QRA) has been undertaken and is included as part of the Management Case. This suggests a P80 value of £2.536m should be applied in considering financial risk at this stage of scheme development. This is 16.5% of the scheme costs (excluding optimism bias). As noted in Section 1.9.75, there is potential for a HIF scheme to come forward and the impacts of this are considered in the risk register and the QRA.

1.12.2 Optimism bias has been added at 44%, recognising that although considerable work has been undertaken to develop the scheme to this stage particularly on the pinch-point elements, there is further work to do and therefore greater uncertainty on the technology elements of the UTMC. This is considered to be a conservative approach, especially for the Manton Lane pinch point scheme, which has undergone detailed design.

1.12.3 The other uncertainty to note is the level of retail value uplift that may be generated from public realm improvements. Our assessment, comparing values from similar pedestrianised areas in Bedford town centre core, is that the uplift will be significant. However, as a large proportion of the benefits of this package are derived from this anticipated we have undertaken some sensitivity tests around this to demonstrate that even with a lower than anticipated retail value uplift, significant benefits would still be delivered as reported in the Adjusted Benefit Cost Ratio section above.

Assumptions

1.12.4 Assumptions made in line with WebTAG have been documented throughout this Economic Case. We have also made several assumptions about the impacts of various scheme elements as these cannot be fully captured in the standard transport modelling undertaken. This is reflective of the fact that the scheme itself is a broader town centre improvement package and not just a transport scheme.

1.12.5 The main assumptions made can be summarised as:

- Modelling approach:
  - Fixed matrices used
  - Impacts on Interpeak period, including Saturday, not modelled but assumed to be neutral impact
- Delay reduction generated by UTMC
  - Greenfield scheme
  - Evidence of similar schemes suggests average of 23% reduction in delay. Conservative estimate of 75% of this reduction assumed for the central case (i.e. 17.3% reduction in delay at affected junctions)
  - Local Plan growth rates applied as a proxy for increase in vehicles on the network. High and low growth rates also applied in corresponding sensitivity tests
- Rateable value uplift from public realm improvements
  - Evidence from other parts of Bedford Town Centre suggests potential for over 200% uplift in value. Conservative estimate of 25% of this uplift assumed for the central case (i.e. 53% uplift in rateable values)

Benefit Cost Ratios

1.12.6 The following table summarises the impact of these risks and sensitivity tests on the BCR.

Table 10. BCRs

SCENARIO	PVC (£M)	PVB (£M)	NPV (£M)	BCR
Initial Central Case	26.42	23.04	-3.37	**0.87**
Adjusted Low case	26.42	55.99	29.58	**2.12**
Adjust Central Case with 20% rateable value uplift	26.42	58.69	32.28	**2.22**
Adjusted Central case	26.42	67.24	40.82	**2.55**
Adjusted High Case	26.42	89.43	63.02	**3.39**

1.12.7 The initial BCR is based only on the direct transport user benefits and does not fully capture the significant benefits that will be derived from the improvement to the public realm around the High Street and the subsequent impact on retail rental values and the local economy. Furthermore, it does not include a range of non-monetised impacts, particularly in relation to improved journey time reliability generated from the pinch-point schemes and introduction of UTMC.

1.12.8 The adjusted BCR presented incorporates the benefits derived from the retail rental value uplift to give a fuller appreciation of the likely benefits of the scheme. Sensitivity tests have been undertaken on this core adjusted BCR that demonstrate if only 20% of the potential retail rental value uplift was achieved, the BCR for the scheme would be 2.22:1.

1.12.9 When considering the central case adjusted BCR of **2.55:1** and including the anticipated non-monetised benefits, we consider this scheme to represent a **High Value for Money** investment.

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High Street

Address	Category	Rateable values for Retail Zone A £/sqm
15 High	Shop & Premises	300
43 High	Shop & Premises	325
61 High	Shop & Premises	350
76 High	Shop & Premises	275
86 High	Shop & Premises	275
Average		305

Pedestrianised Core

Address	Category	Rateable values for Retail Zone A £/sqm
36 Silver Street	Shop & Premises	803.25
15 Silver Street	Shop & Premises	765
5 Midland Road	Shop & Premises	725
23-25 Midland Road	Shop & Premises	765
31 Midland Road	Shop & Premises	803.25
Average		772

Source* https://www.tax.service.gov.uk/business-rates-find/search

*All of these values were accessed in March 2019

INFORMATION NOTE

SYSTRA

TRANSPORTING BEDFORD 2020 ECONOMIC CASE

BEDFORD RETAIL DEMAND ADDENDUM

1.1.1 The Bedford Retail Study Update 2018 provides a range of data regarding retail demand in the Bedfordshire Borough Council (BBC) area. This area was split up into several zones, with Zone 1 comprising of Bedford Town Centre, the area where the package of urban realm improvements will be focused. The retail benefits of making the proposed package of urban realm and transport improvements constitute a significant proportion of the economic case for putting in place the improvements. Therefore, it is necessary to highlight that the proposed uplift in retail rents due to the proposed scheme is supported by sufficient demand for retail provision in the Town.

1.1.2 Through assessing the current market share of the Bedford Town Centre, as laid out in the Bedford Retail Study Update 2018, the Town Centre holds the most significant proportion of market share throughout the Zones that BBC is divided into. For example, Bedford Town Centre has the largest retail market share (%) in almost every Zone from 1-12 except Zone 3, see Table 1 below.

Table 1. Comparison Market Shares in 2014 (%), Bedford Retail Study Update 2018

ZONE 1 DESTINATION	ZONE											
	1	2	3	4	5	6	7	8	9	10	11	12
Bedford Town Centre	41.2	37.0	21.1	33.8	16.0	12.6	8.6	15.5	16.2	20.6	63.2	6.5
Kempston District Centre	1.2	0.1	0.9	2.3	0.1	0.4	0.0	0.0	0.4	0.8	0.0	0.0
Interchange Retail Park, Race Meadows Way, Kempston	16.0	17.4	21.8	15.1	7.5	6.5	6.3	13.5	7.8	13.0	2.0	1.8
St Johns Centre Retail Park, Rope Walk, Bedford	11.4	6.7	8.8	13.6	2.7	2.1	0.6	3.3	2.7	2.8	0.1	1.2
Other Zone 1	11.6	9.0	6.1	8.4	4.6	1.7	0.4	3.1	3.1	4.2	0.0	0.4

1.1.3 Once this fact has been accounted for, it can be assumed that any demand for growth in the amount of net floor space within BBC over the plan period up to 2030 will be mostly attributed to Bedford Town Centre. This can be further supported by the fact that the expenditure growth rate 2027-2036 is expected to be 3.2%, suggesting that there will also be a rise in the amount of per capita expenditure on comparison goods (£). This growth

is consistent with the 2017 Update, where the long term (2022-2035) annual growth rate was at 3.2%.

1.1.4 The Bedford Retail Study Update forecasts a need for 11,790 sqm net additional comparison floorspace up to 2024; and 34,210 up to 2030. The comparison between 2017 and 2018 update of additional floorspace requirements is shown in the table below. It indicates that the retail demand remains broadly similar to the 2017 figures used to support the original November 2017 business case.

Table 2. Summary of 2017 Update and 2018 Update comparison floorspace needs (sqm net)

SQM NET	2014	2016	2020	2024	2028	2030	-	-
2018 Update	0	4,640	2,630	11,79	26,880	34,210	-	-
SQM NET	**2014**	**2016**	**2020**	**2024**	**2028**	**2030**	**-**	**-**
2017 Update	0	6,020	2,420	9,930	22,540	-	35,970	45,650

1.1.5 Given this forecast, it is reasonable to predict that Bedford Town Centre is likely to command a large proportion of this need for additional retail floorspace.

1.1.6 Access the Bedford Retail Study Update 2018 here:

http://edrms.bedford.gov.uk/OpenDocument.aspx?id=et6oGrXGCNurNLdo8dVSmQ%3d%3d&name=11%20-%20Bedford%20Retail%20Study%20Update%202018.pdf

1.1.7 A recent Town Centre Update paper to the Bedford Borough Council Corporate Services Overview and Scrutiny Committee confirmed a more mixed picture in 2018. Footfall in Bedford Town Centre has declined by 4.8% (compared to a national average of 5.1%) and there have been some store closures. However, there have also been more than 70 new store openings and significant investments including the redevelopment of the Harpur shopping centre (c.£5m investment).

1.1.8 Bedford Business Improvement District (BID) also report overall positive feedback from retailers over the festive period, with footfall in the shopping centre 1% higher than December 2017 and some stores reporting sales increases of 8-12%, compared to 2017.

1.1.9 Although not immune to store closures, the percentage of vacant shop units in Bedford continues to reduce year on year and vacancy rates in Bedford (10.9%) are lower than neighbouring towns and the national average (11.2%). Therefore, whilst there are clearly some challenges in the 2018 retail market, Bedford appears to be faring better than neighbouring towns and the national average.

1.1.10 The committee paper can be found here:

http://www.councillorsupport.bedford.gov.uk/documents/s44599/Item%2007%20Town%20Centre%20Update.pdf

APPROVAL

Version	Name		Position	Date	Modifications
1	Author	J. West	Assistant Consultant	19/01/2018	
	Checked by	K. Hall	Project Director	22/01/2018	
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2	Author	A. Polonara	Assistant Consultant	15/03/2019	Updated with 2018 figures.
	Checked by	K. Hall	Project Director	19/03/2019	
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Bedford Town Centre Transport Strategy **19/03/2019**

Reference number 105251/GB01T14A88

VALUE FOR MONEY STATEMENT SUMMARY

BEDFORD BOROUGH COUNCIL

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BEDFORD TOWN CENTRE TRANSPORT STRATEGY

VALUE FOR MONEY STATEMENT SUMMARY

IDENTIFICATION TABLE	
Client/Project owner	Bedford Borough Council
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2	Author	K. Hall	PM	05/06/18	Paragraphs 1.2.13 and 1.2.14 added re: HIF
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	Checked by	K. Hall	PD	19/03/19	
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1. VALUE FOR MONEY STATEMENT

1.1 Introduction

1.1.1 This section provides a value for money conclusion by considering all of the evidence pulled together as part of the Appraisal Summary Table. This provides evidence to inform the final judgement on the Value for Money category of the scheme as recommended by DfT[1]. It summaries:

- The options considered and the do-nothing scenario
- Initial and adjusted BCRs
- Non-monetised benefits
- Risks and uncertainties

1.1.2 Sensitivity tests have also been undertaken to the test the robustness of the scheme's forecasted benefits and the results of these are set out in the Economic Case.

1.1.3 Supporting tables for Public Accounts (PA), Economic Efficiency of the Transport System (TEE); and Analysis of Monetised Benefits (AMBC) are provided in the full Economic Case, to which an Appraisal Summary Table (AST) is also appended.

1.2 Summary

Options Considered

1.2.1 The do-nothing scenario would constitute the status quo in terms of the operation of the current highway network across the town centre, including current highway link and junction capacities and the absence of a functional UTMC system.

1.2.2 The package of measures assessed in the do-something scenario includes:

- Improvements in the town centre highway/public realm quality to discourage unnecessary through traffic and improve the quality of the environment for users of the town centre;
- A widespread programme of small/medium infrastructure improvements focussed on key junction pinch-points where worthwhile increases in capacity and reliability that assist all road users are justified and deliverable
- A major upgrade to existing traffic management systems across the whole Town Centre and Southern Gateway area to provide the maximum delay reductions possible, provide real-time information to drivers to support their decision-making, and to be ready to incorporate emerging/future technology on Cooperative Intelligent Transport Systems (C-ITS), Expressway driver information systems, autonomous vehicles and mobility as a service technology.

[1] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/267296/vfm-advice-local-decision-makers.pdf

Initial Benefit Cost Ratio

1.2.3 The Initial Net Present Value (NPV) for the scheme, encompassing the direct transport user benefits is forecast to be -£3.37m, with the expected Cost Benefit Ratio of the scheme at 0.87 to 1. This is a clear demonstration that the benefits of the scheme are not singularly about enhancing traditional transport provision.

1.2.4 The initial NPV represents a quantified assessment of monetised benefits in terms of a traditional set of transport scheme impacts. Not only does it exclude a range of non-monetised impacts (discussed below) but a major element of the package of measures is also designed to the enhance the town centre urban realm to support and grow the local economy. Excluding these benefits does not provide a full assessment of the impact of the scheme.

Adjusted Benefit Cost Ratio

1.2.5 The adjusted NPV for the scheme is forecast to be around £40.823m with the expected Cost Benefit Ratio of the scheme at 2.55 to 1. This represents a high value for money category.

1.2.6 This incorporates an additional £44.2 million benefits over 30 years in relation to enhanced town centre economic retail value, as set out in the Economic Case.

1.2.7 We have taken a conservative estimate of 25% of the anticipated potential uplift in retail values as a result of the urban realm improvements. Even with this conservative estimate, these benefits are what is driving the positive BCR for this scheme and therefore we have undertaken additional sensitivity tests to account for the risk that these retail value uplifts may not be realised. Our assessment shows that a 2.22:1 BCR could be achieved if only 20% of the retail value uplift was realised.

1.2.8 A further sensitivity test incorporating this scenario as well as more conservative estimates on growth rates and the benefits of the UTMC package is presented in the Economic Case.

Non-monetised Impacts

1.2.9 In addition to the monetised benefits, the package of scheme measures is forecast to deliver a range of non-monetised impact. Those criteria for which there is anticipated to be either positive or negative impacts are summarised below, with a full analysis of outcomes for all criteria, presented within the full Economic Case.

- Economy
  - Reliability impact on Business users - High Beneficial
  - Regeneration - Small Beneficial
- Environmental
  - Townscape - Moderate Beneficial
  - Historic Environment - Small Beneficial
- Social
  - Reliability impact on Commuting and Other users - High Beneficial

- Physical activity - Neutral
- Journey quality - Moderate Beneficial
- Security - Small Beneficial
- Access to services - Moderate Beneficial
- Severance - Small Beneficial
- Option and non-use values - Small Beneficial

Key Risks and Uncertainties

1.2.10 A comprehensive quantified risk assessment (QRA) has been undertaken and is included as part of the Management Case. This suggests a P80 value of £2.536m should be applied in considering financial risk at this stage of scheme development. This is 16.5% of the scheme costs (excluding optimism bias).

1.2.11 Since the November 2017 submission of the business case, the potential for the Housing Infrastructure Fund (HIF) scheme to come forward has increased, with BBC having been asked to prepare a business case for this highway improvement to unlock housing development land to the west of the railway station. This is due to be submitted in March 2019, with a decision on funding to be made in June 2019. The potential risks associated with joint delivery of the HIF scheme and this Transporting Bedford 2020 package of works have been included within the risk register.

1.2.12 Optimism bias has been added at 44%, recognising that although considerable work has been undertaken to develop the scheme to this stage particularly on the pinch-point elements, there is further work to do and therefore greater uncertainty on the technology elements of the UTMC. This is considered to be a conservative approach, especially for the Manton Lane pinch point scheme, which has undergone detailed design.

1.2.13 The other uncertainty to note is the level of retail value uplift that may be generated from public realm improvements. Our assessment, comparing values from similar pedestrianised areas in Bedford town centre core, is that the uplift will be significant. However, as a large proportion of the benefits of this package are derived from this anticipated we have undertaken some sensitivity tests around this to demonstrate that even with a lower than anticipated retail value uplift, significant benefits would still be delivered as reported in the Adjusted Benefit Cost Ratio section above.

Assumptions

1.2.14 Assumptions made in line with WebTAG have been documented throughout this Economic Case. We have also made several assumptions about the impacts of various scheme elements as these cannot be fully captured in the standard transport modelling undertaken. This is reflective of the fact that the scheme itself is a broader town centre improvement package and not just a transport scheme.

1.2.15 The main assumptions made can be summarised as:

- Modelling approach:
  - Fixed matrices used

- Impacts on Interpeak period, including Saturday, not modelled but assumed to be neutral impact

- Delay reduction generated by UTMC
  - Greenfield scheme
  - Evidence of similar schemes suggests average of 23% reduction in delay. Conservative estimate of 75% of this reduction assumed for the central case (i.e. 17.3% reduction in delay at affected junctions)
  - Local Plan growth rates applied as a proxy for increase in vehicles on the network. High and low growth rates also applied in corresponding sensitivity tests

- Rateable value uplift from public realm improvements
  - Evidence from other parts of Bedford Town Centre suggests potential for over 200% uplift in value. Conservative estimate of 25% of this uplift assumed for the central case (i.e. 53% uplift in rateable values)

Sensitivity Tests

1.2.16 A summary of the two sensitivity scenarios is as follows:

- High Case
  - High growth (2021 = +7.9%, 2032 = +11.5%)
  - UTMC and Technology delay reduction = 23% of forecast delay
  - Retail benefits attributed to public realm enhancements = 30% of differential in rateable values from High Street to Core Town Centre

- Low Case
  - Low growth (2021 = -7.9%, 2032 = -11.5%)
  - UTMC and Technology delay reduction = 11.5% of forecast delay
  - Retail benefits attributed to public realm enhancements = 20% of differential in rateable values from High Street to Core Town Centre

1.2.17 A further sensitivity test was conducted to assess the impact of the retail benefits only, using the low case scenario of 20% differential in rateable values.

Benefit Cost Ratios

1.2.18 The following table summarises the impact of these risks and sensitivity tests on the BCR.

Table 1. BCRs

SCENARIO	PVC (£M)	PVB (£M)	NPV (£M)	BCR
Initial Central Case	26.42	23.04	-3.37	**0.87**
Adjusted Low case	26.42	55.99	29.58	**2.12**
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Adjusted Central case	26.42	67.24	40.82	**2.55**

SCENARIO	PVC (£M)	PVB (£M)	NPV (£M)	BCR
Adjusted High Case	26.42	89.43	63.02	**3.39**

1.2.19 The initial BCR is based only on the direct transport user benefits and does not fully capture the significant benefits that will be derived from the improvement to the public realm around the High Street and the subsequent impact on retail rental values and the local economy. Furthermore, it does not include a range of non-monetised impacts, particularly in relation to improved journey time reliability generated from the pinch-point schemes and introduction of UTMC.

1.2.20 The adjusted BCR presented incorporates the benefits derived from the retail rental value uplift to give a fuller appreciation of the likely benefits of the scheme. Sensitivity tests have been undertaken on this core adjusted BCR that demonstrate if only 20% of the potential retail rental value uplift was achieved, the BCR for the scheme would be 2.22:1.

1.2.21 When considering the central case adjusted BCR of **2.55:1** and including the anticipated non-monetised benefits, we consider this scheme to represent a **High Value for Money** investment.

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SYSTRA

Transporting Bedford 2020

26/03/2019

Reference number 105251/GB01T14A88

FULL BUSINESS CASE (COMMERCIAL & MANAGEMENT)

BEDFORD BOROUGH COUNCIL

SYSTRA

TRANSPORTING BEDFORD 2020

FULL BUSINESS CASE

IDENTIFICATION TABLE	
Client/Project owner	Bedford Borough Council
Project	Transporting Bedford 2020
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4	Author	BH	PM	26/03/2019	
	Checked by	BH	PM		

	Approved by	MM	MTP	

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1. THE COMMERCIAL CASE

1.1 Introduction

1.1.1 The Commercial Case for the Transporting Bedford 2020 scheme provides evidence that the proposed investment can be procured, implemented and operated in a viable and sustainable way. Adopting a commercial approach to the project is fundamental to determining that BBC gets the best deal from the market.

1.1.2 This chapter defines the current progress of the commercial aspects requirements. Areas this chapter considers include:

- Output Based Specification;
- Procurement Options
- Procurement Strategy;
- Payment Mechanisms;
- Pricing Framework and Charging Mechanisms;
- Potential for Risk Transfer;
- Contract Length; and
- Contract Management

1.2 Output Based Specification

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

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

1.2.2 The Output Based Specification for the first pinch point schemes has been developed, and is included in Appendix 5 The output specification focuses on key outputs at various project stages from inception through to post scheme asset management. The specification is to be used as part of the project management checkpoint process and as part of the works information package provided to contractors for works delivered under framework contracts. The process is expected to evolve and be modified for each indivual scheme element.

1.2.3 The specification for the package of scheme measures is broadly as follows:

- Public realm enhancements and footway widening along the High Street and around parts of St. Paul's Square and St. Mary's Street;
- Junction widening and signalisation schemes at Clapham Road / Manton Lane and Bromham Road / Shakespeare Road junctions;
- Carriageway widening along Britannia Road and across Cowbridge;
- Provision of new pedestrian and cycling footbridges at Cowbridge;
- Installation of new UTMC system across the core town centre and Northern and Southern Gateway corridors, incorporating new or upgraded signals;
- Provision of new UTMC common database, monitoring equipment, traffic database and control room equipment; and
- Installation of new signage, information and publicity systems and ANPR cameras.

1.3 Procurement Options

1.3.1 In the initial business case submission BBC identified three procurement options for the delivery of their LEP funded schemes. The alternative options were:

- Full OJEU Tender;
- Delivery through existing Minor Highways Improvement Works Contract
- Delivery through existing framework contracts such as the Eastern Highways Alliance; The SCAPE family of framework contracts or Crown Commercial Services Contracts such as Traffic Management and Technology (2)
- A combination of all elements

1.3.2 The 'Full OJEU' approach would require an 'open' tender, where anyone may submit a tender, or a 'restricted' tender, where a Pre-Qualification is used to whittle down the open market to a pre-determined number of tenderers. This process would take a number of months to establish and evaluate and would then be followed up by the main tender process with at least 6 weeks for tender returns, a review process, and a period of stand-still.

1.3.3 Delivery through BBC's existing highways term contract or an existing framework contract would not strictly be a procurement process as it is an existing contract. The contract is based on mini completion or an agreed schedule that is utilised to determine a bill of quantities for any specific works. This provides BBC certainty on the magnitude of costs for delivering work. Given the relatively standard nature of the schemes, in highway design terms, this approach is considered to be an appropriate approach.

1.4 Procurement Strategy

1.4.1 The procurement process is governed by the Council's own constitutional procurement Rules. The strategy will be subject to review by the Project Governance Board including the Council's Procurement Manager, senior Legal officer and senior officers from across the Council who are highly experienced in strategic procurement and contract management.

Express approval by the Project Board will oversee the release of tender documentation and secondly to enable the procurement to move to the award procedure stage following review of the award recommendation.

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1.4.2 The Council's preferred route (based on previous experience of delivering long term time limited projects such as the DfT Challenge fund project for street lighting upgrades, large civil engineering projects such as Phases 1 and 2 of the Bedford Western bypass, and a number of large traffic engineering schemes within the urban environment), is to use in house design capabilities to undertake detailed scheme design and to use a variety of procurement methods for construction, giving the greatest flexibility and options for the differing types of works in the pinch point, technology and public realm tranches.

1.4.3 In 2016 the Councils existing term maintenance contract was procured and allowed sufficient headroom for elements of scheme delivery. Rates are considered competitive for Highways Engineering given the bespoke item coverage and currency of the contract. The scheme design team are well versed in use of the contract which has been used frequently over the last eight years to deliver a range of highways maintenance and junction improvement schemes on time and on budget. The contractual arrangements are tailored for the type of individual projects which are similar in nature of the pinch point tranche of schemes.

1.4.4 The Transporting Bedford 2020 package of works for pinch point schemes and public realm works has also been entered onto the Eastern Highways Alliance Framework contract forward programme. Direct award or mini competition using this framework would allow the Council to encourage the most competitive tendering, and access contractors who have a proven track record of delivering similar schemes across the region. This mechanism allows the Council to quickly access a body of resource of slightly larger contractors who have the capacity and experience in delivering some of the larger pinch point schemes and the public realm works.

1.4.5 Schemes that require specialist construction elements (e.g. works near railway infrastructure) would be programmed for delivery later in the overall delivery programme and these schemes would be procured through individual tenders. tendered. This approach will also be taken with the technology element of works. A framework contract has already been put in place to provide the Council with an expert client / design and project management resource in this field.

1.4.6 A pre design procurement review exercise identified two further framework options for the project. The SCAPE Civil Engineering framework which offers direct award frameworks that optimise speed of delivery, local SME engagement and the latest techniques in social value measurement. The Civil Engineering framework is fully performance managed and operates in full compliance of UK and EU procurement regulations.

1.4.7 Works under the SCAPE Civil Engineering framework are delivered by locally based teams that have demonstrated the right balance of cost, quality and market leading expertise, giving greater assurance on risk management and delivery. Performance indicators measured by SCAPE demonstrate a high number of similar projects being completed on time, on budget and to the highest standard.

1.4.8 The SCAPE framework also includes a commitment to social value measurement on every commission, supporting some of the wider strategic aims of both SEMLEP and Bedford Borough Council .

1.4.9 The Crown Commercial Services 'Traffic Management Technology 2' framework provides access to an extensive range of transport technology products and services, including smart traffic management and traffic data. The framework is subdivided into 15 separate service options known as 'lots' providing access to specialist suppliers from small enterprises to internationally renowned companies. The agreement is fully mandated for use across central government and is also available to all wider public sector organisations.

1.4.10 For the early stages of the project the procurement of each element has been considered by the project steering group and colleagues from the Councils procurement team as each respective element progress through design to a pre procurement stage. The main considerations in choosing a procurement route can be generally summarised as being :-

- The suitability of the contract option for the type of work involved (including in house resource availability)
- The maturity of the design at the time of procurement
- The allocation of risk
- The level of involvement of third parties (eg utility companies)
- Recent experience of the contract for design and supervision staff
- The volume of work being delivered elsewhere through the contract
- Cost base and cost certainty
- The level of feasibility work and programme management required
- The lead in times of the procurement process
- Marketplace influences
- Compliance with current regulations

1.4.11 These considerations have led to the procurement strategy being implemented as follows on those schemes that have reached implementation stage:

1.4.11.1 Manton Lane advance works. Work was procured via the Councils existing term maintenance contract for Highway works. The scheme design was well developed with low risks in terms of change of scope of works or external factors. The contractor had a proven record of delivering similar types of works. This element of the project was completed below budget and on time.

1.4.11.2 Supply of journey time monitoring equipment for scheme evaluation and monitoring purposes. Equipment was procured under direct award via TMT2. The equipment specification for this element was exact as equipment needed to work in conjunction with existing monitoring software. Options within the TMT2 lots were reviewed to secure the best price for supply and installation. The equipment has been provided to the fixed cost on time.

1.4.11.3 Pinch point schemes - Supply of traffic signal equipment. Equipment has been procured through a combination of direct award under TMT2 where specifications are exact and there is a limited number of suppliers and through provision of at least three quotes from potential suppliers for lower value equipment. Installation and commissioning work is carried out by the Councils existing supplier for traffic signal works.

1.4.11.4 Technology Element – Urban Traffic Control system. Services have been procured through the TMT2 framework contract using a competitive tender process. The relevant TMT2 lot included all known potential UK suppliers for the UTC system. A specification was produced and tender carried out using the Councils e-procurement system 'Intend'. 3 tenders were received with one of the three being qualified and subsequently discounted. The two remaining bids were assessed on a 60% price 40% quality basis. A contract for the UTC has been awarded.

1.4.11.5 Technology element Urban Traffic Management Control system. Procurement of the UTMC element will follow the same path as the UTC system procurement through TMT2 framework competitive tender.

1.4.11.6 Pinch point scheme - Manton Lane area main works. Modelling work and analysis of the likely benefits arising from the pinchpoint scheme led to a number of significant changes to the scheme throughout the design process. Further difficulties in obtaining information from utility companies also resulted in delays to the programme as the scheme evolved. A number of high risk items pertaining to delivery (notable interaction with Network Rail works and utility works) remained of concern at procurement stage. For this reason works have been procured through the SCAPE Civil Engineering framework to make best use of the early contractor involvement, value engineering and staged processes to award. A delivery agreement has been signed with the principal contractor (Balfour Beatty) and work is to commence on site in April 2019.

1.4.11.7 Pinch point scheme - Britannia Road. The design for the Britannia Road has been satisfactorily completed with positive engagement from stakeholders. Works are again being procured through the SCAPE contract with Balfour Beatty as principal contractor. Given that the works overlap with the site period for Manton Lane this route offers best value in terms of providing resources and managing delivery of the two schemes.

1.4.12 A procurement review was carried out in February 2019 to reconsider all procurement options in terms of project delivery timescales and budget management. The existing strategy of utilising a variety of routes to market was considered to be appropriate. Use of both the SCAPE and TMT2 frameworks has provided clarity and value for money, added benefits such as the ability to utilise the ECI and feasibility work elements of the SCAPE contract at minimal cost has also proved beneficial. Outcomes and outputs from both the Manton Lane and Britannia Road schemes will be monitored to inform future delivery of the remaining pinchpoint schemes.

1.4.13 Public realm schemes will be procured through a compliant competitive tender process in order to reflect the unique constraints and risks pertaining to this scheme and the need to evaluate delivery in terms of quality and cost above the scope of any of the available framework contracts.

1.5 Payment Mechanisms

1.5.1 Payment timing will be adopted to maximise the value from the contract through minimising financing and construction costs. Prompt and fair payment mechanisms will be applied throughout the supply chain. This is covered under the procurement process and will be monitored during the contract to ensure full value is delivered.

1.6 Pricing Framework and Charging Mechanisms

1.6.1 The tendered elements of the programme delivery will require the appointed Contractor to deliver the individual work elements for a specified lump sum of money. These contracts will provide for specific risks associated with delivery of the individual work elements that will be carried by the Contractor, which would result in the lump sum being adjusted if the compensation events occur.

1.6.2 The council has various procurement options available to deliver these works, these include but are not limited to, the following:

1. The Eastern Highways Alliance Framework – works can be awarded through this framework via direct award or mini-competition using either lot 1 (schemes with a value of up to £1.5 million) or lot 2 (schemes with a value of between £1 and £20 million).

2. The SCAPE Civil engineering Framework –. The framework is designed to deliver a variety of project types, from single commissions to programmes of work. Delivered by Balfour Beatty, a leading international infrastructure group with more than 100 years of experience in complex infrastructure projects, works under the Civil Engineering framework are valued from £50,000 to £100m and

above. The framework covers civil engineering and infrastructure works in sectors such as environmental, transportation and public sector assets.

3. The Crown Commercial Services Traffic Management Technology 2 (TMT2) agreement is for the supply of traffic and roadside technology goods and services for use by UK public sector organisations. The framework is flexible and scalable solution providing a range of procurement options from direct award for low value commodity items to further competitions for complex/enterprise projects. Contract terms and conditions are based on the NEC forms of contract. The framework provides optimal choice of suppliers, goods and services giving allowing the Council direct access to manufacturers, where appropriate.

4. The Bedford Borough Council Minor Highways Works contract an existing tendered contract with a priced schedule of rate but also allows the facility to use day works or a cost plus options.

5. The Bedford Borough Council Carriageway resurfacing contract – this is a contract currently being tendered and due to commence April 2018, this will have a priced schedule of rates but will also include the facility to use day works or cost plus options.

6. The Bedford Borough Council professional services agreement for traffic signal advice and design (currently with Kiers) and the joint Bedfordshire / Cambridgeshire traffic signals maintenance and renewal contract (currently with Dynniq)

7. The council also has the option to use existing Eastern Shires Procurement Office frameworks where applicable.

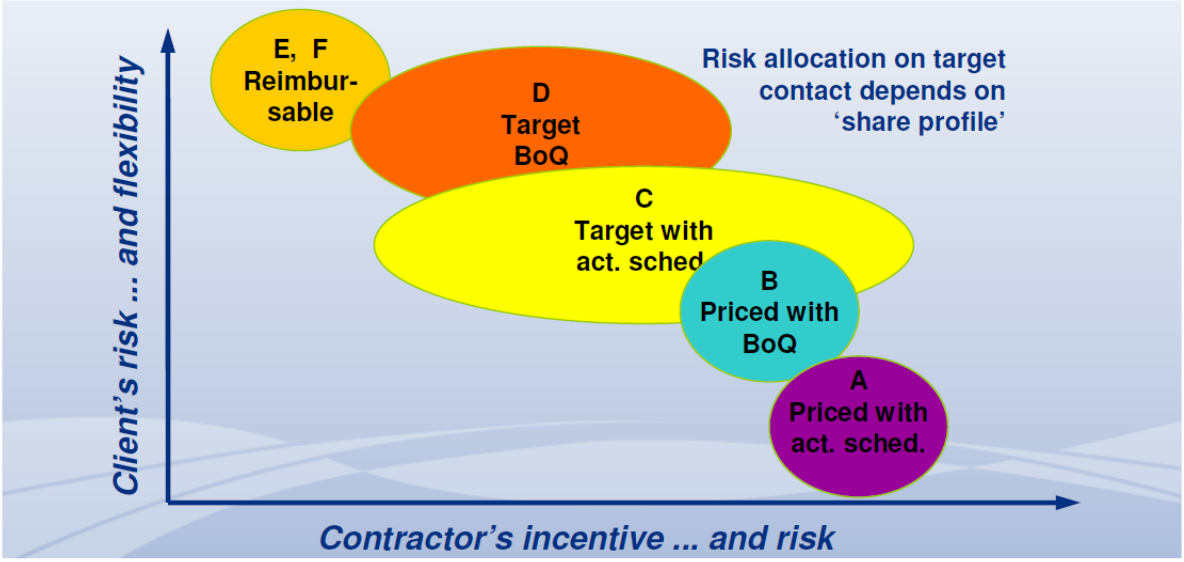
1.7 Risk Allocation and Transfer

1.7.1 Although many of the design risks can only be resolved through rigorous design and review processes, once the design options are clear and the scope of land acquisition, highway requirements, environmental requirements are fully identified; the primary risks will be related to construction. There is potential for transferring these risks through the construction procurement process. This are explored fully as the design and procurement process progresses on individual schmes.

1.7.2 The risk register for this project is monitored and reviewed by the Project Board and is subject to regular review. This ensures that risks are identified at an early stage and mitigation strategies are put in place.

1.7.3 Pinch point schemes are being delivered through the SCAPE Civil Engineering framework using NEC3/4 Option A (Priced contract with activity schedule) Option A provides the greatest benefit in terms of risk transfer – The Borough Council is able to adopt this approach by ensuring that scheme designs and specifications are properly formed before enetering into works delivery agreements with contractors and that issues such as environmental aspects, advance works for site clearance, utility works etc are carried out before main works elements or have been clearly defined and accounted for within the main works package.

Main options – estimating and efficiency risk



1.7.4 The NEC contracts are founded on a collaborative, project-management approach to construction. Requiring all parties to act 'in a spirit of mutual trust and co-operation', and for there to be properly documented Works Information, a competent and well-resourced Project Manager and a hands-on client, which are all correspondingly more important to the success of the project. The project manager and supervising engineer will take an active role in the project delivery, by being aware of what it is going on, being available to take decisions when required and to actively participate in risk reduction through the early warning process, which is required when anything occurs which could increase prices, delay completion or any other key date or impair the performance of the works, and also the compensation event notification process, where the Contractor notifies the Client about an actual or potential compensation event so as to enable the parties to act/mitigate.

1.7.5 Under the NEC contract, prices tendered should not have built into them the risk premium that arises when all risks are transferred, or are sought to be transferred, to the contractor, and should result in less risk of disputes at the end of the contract. Scheme designs are considered sufficiently mature to enable the works information to satisfactorily specify and describe the works, accurately state constraints on how the Contractor provides the works and set out the detail of risk allocation

1.7.6 The project risk register has been used to inform the NEC contract risk register and joint client / contractor risk workshops have taken place as part of the SCAPE procurement process.

1.7.7 Additional Employer risks specified in delivery agreements have been defined as :

- Unexploded ordnance in excavations
- Discovery of protected wildlife and/or invasive species within the site

- Changes to the Prices and Programme resulting from the UK's withdrawal from the European Union.

1.8 Contract Lengths

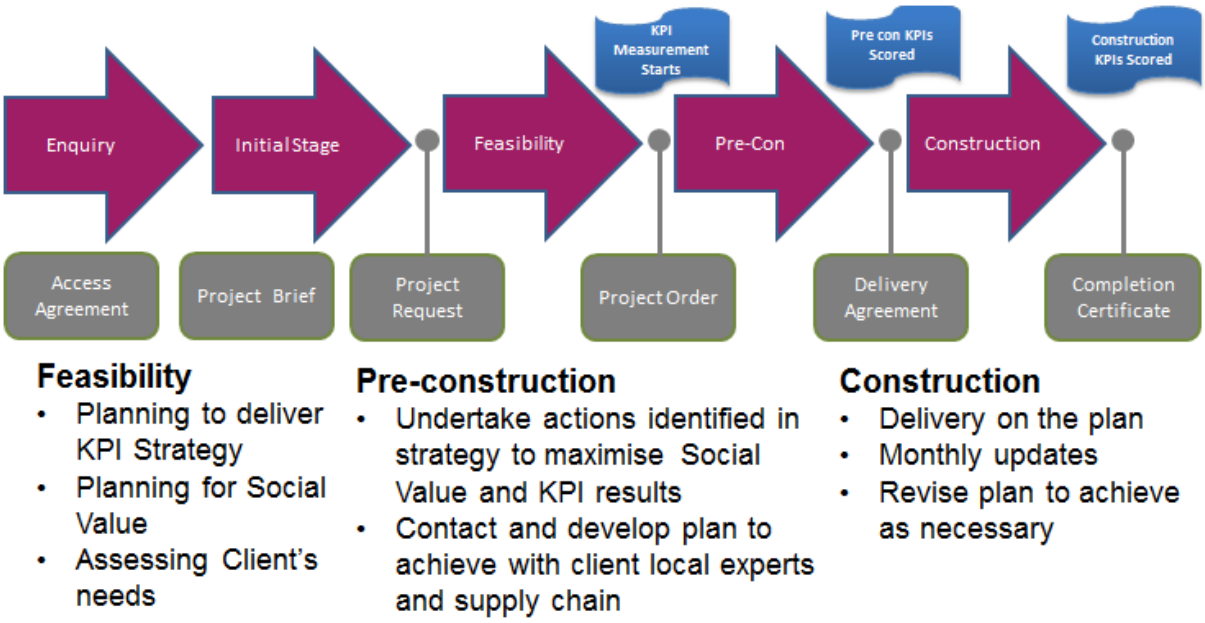
1.8.1 The existing BBC Minor Highways Improvements works is valid until July 2019 9at which point it will be retendered) .

1.8.2 The Eastern Highways Alliance Framework (Lot 2) is in place until 2021.

1.8.3 The SCAPE Civil Engineering Framework 2018 is live and covers the project period.

1.8.4 It is envisaged that individual schemes contracts will be for periods of around 6 months.

1.8.5 The SCAPE framework process is shown in the diagram below.



1.8.5.1 The Council has signed the SCAPE access agreement to enable use of the framework.

1.8.5.2 For the initial stage a preliminary design and details of risks; constraints and programme requirements are prepared to form the 'Project Request'. This then leads to the principal contractor carrying out feasibility work on the project (i.e. Early Contractor Involvement). There is no contractual commitment at this stage.

1.8.5.3 The project order stage forms a commitment to proceed with works and sees the commencement of pre works planning, resource allocation and the start of KPI measurement as specified within the framework.

1.8.5.4 The delivery agreement is signed once a programme of works, risk assessments and method statements are finalised. Contractual obligations are largely completed with the issuing of a completion certificate.

1.8.5.5 Both the Manton Lane and Britannia Road pinch point schemes are being delivered through the SCAPE process. For Manton Lane the timescale between the project order and anticipated issuing of the completion certificate is approximately nine months. For Britannia Road the equivalent period is approximately eight months.

1.8.6 Technology Theme Contract Lengths

1.8.6.1 The two main contractual elements for the technology theme are the provision of an Urban Traffic Control (UTC) system and an Urban Traffic Management and Control (UTMC or mobility platform) system. The contract for the UTC has been awarded with a term date of 2029. Industry advice is that a major upgrade to SCOOT software within the UTC should be expected within that timeframe. Therefore the UTC contract includes provision for this upgrade to be supplied at no extra cost. BBC revenue budgets have been adjusted to cover any additional annual support or licence costs. The specification for the UTMC contract will be set to a similar timeframe.

1.9 Contract Management

1.9.1 BBC will meet with external contractors on a monthly basis throughout the construction and deliver periods on each individual scheme, or more frequently if this is deemed necessary by the Project Manager.

1.9.2 All contractors will be contractually obliged to provide monthly progress and financial updates to BBC, which will include updates to the project programme.

2. THE MANAGEMENT CASE

2.1 The Introduction

2.1.1 The purpose of the Management Case is to outline how the proposed scheme and its intended outcomes will be delivered successfully. It gives assurances that the scheme content, programme, resources, impacts, problems, affected groups and decision makers, will all be handled appropriately, to ensure that the scheme is ultimately successful.

2.2 Evidence of Similar Projects

2.2.1 BBC can demonstrate a successful record of delivering public realm and highway improvements schemes across the borough network, working alongside their Highways Term Contractors and other external contractors . Previous schemes include:

- Town Centre Public Realm improvements in All Hallows; and Greyfriars Bus Station
- Bedford Western Bypass (Western Section opened 2010 & Northern section opened 2016)
- Major town centre junction/link improvements at Tavistock Street; Dame Alice Street and Goldington Road.
- Borough-wide Street lighting upgrade (DfT Challenge Fund tranche1)

2.2.2 The UTMC and Technology elements of the project are, by their very nature, innovative and new; however, the Borough Council will work with specialist agents who have previous experience of delivering these types of systems and technologies.

2.3 Project Dependencies

2.3.1 There area several dependencies that may potentially impact upon the Transporting Bedford 2020 project. , including tilities diversions, streetworks coordination and engagement with Network Rail for the Cowbridge infrastructure improvements. Other major projects such as the One Public Estate, HIF bid and Future High Streets fund share a common management structure with Transporting Bedford 2020 which ensures cross project visibility and risk management.

Utility Diversions

2.3.2 It is anticipated that some utility diversions will be required as a consequence of the scheme. These diversions could involve some engineering challenges; however, early contractor involvement will mitigate against any potential utility or construction risks. Trial holes will be undertaken to establish the location of apparatus in key areas to ensure an accurate assessment of impacts and costs can be made at this stage of the project.

Network Rail

2.3.3 One of the significant infrastructure elements is a junction improvement at Cowbridge on Ampthill road. This scheme will include a new pedestrian / cycle bridge rail overbridge on the Marston Vale branch line. In is anticipated that this element of works will take place towards the end of the project timeframe to allow sufficient engagement with network rail on design and programme considerations.

2.3.4 Network Rail Midland Mainline Electrification Project. As part of the Midland Main Line Upgrade Network Rail need to reconstruct Bromham Road Bridge in Bedford. Bromham Road Bridge is a two span brick arch bridge that lies to the north of Bedford Central station and carries the 2-lane single carriageway Bromham Road over the Midland Main Line.The bridge has insufficient clearance for overhead line equipment to safely pass beneath it, and therefore the bridge needs to be partially demolished and then reconstructed. Before work to demolish and reconstruct the bridge can take place, the utilities within the bridge deck need to be removed and relocated. A programme of works has been agreed between Bedford Borough Council and Network Rail. Work commenced on 4 March 2019 and is due to be completed in Spring 2020

Streetworks coordination

2.3.5 There are a number of significant third party works planned for Bedford town centre over the coming years. These include Network Rail replacement of Ford End Road and Bromham Road bridges as part of the Midland Mainline electrification works, which are scheduled for spring 2018 and summer 2019 respectively.

2.3.6 Cadent Gas are carrying out a number of gas main replacement works throughout the town centre. Some of this work (e.g. Bedford High street) has already been brought forward and completed so as not to impact the public realm schemes planned as part of this project.

2.3.7 Early and continued engagement through the Councils established streetworks permitting scheme will allow constraints in programming and opportunities for joint use of road space to be identified and planned.

2.4 Housing Infrastructure Fund

2.4.1The Council continues to seek funding and approvals for further developments to improve infrastructure and public realm in Bedford. For example, the Council is currently preparing a Business Case for the Housing Infrastructure Fund to fund a highways scheme that will enable the delivery of much needed homes to the Bedford Town Centre. The proposed scheme involves the construction of a single lane carriageway connecting Prebend Street to Ashburnham Road passing under the existing Ford End Bridge, and is estimated to cost £5-10 million. The Business Case for the scheme will be submitted to the Ministry of Housing, Communities and Local Government (MHCLG) and Homes England by late March 2019, with a funding decision expected in mid-2019.

2.5 –One Public Estate

2.5.1The OPE programme sets out the three areas in Bedford where major regeneration is proposed. All three areas are independent of the TCS but the benefits of both programmes are interlinked. The infrastructure associated with the OPE programme will deliver similar interventions as the TCS particularly at key pinch points (Midland Rd / Prebend Street, Wilmer's Corner, and the Station Quarter) and public realm improvements. The extent of the Area 1 – Northern Gateway scheme measures have been revised following the successful outcome of the Borough Councils National Productivity Infrastructure Fund bid as announced by DfT in October 2017. The successful NPIF bid w permits the wider improvements across the Paula Radcliffe Way /Great Ouse Way and Manton Lane/Brickhill Drive junctions.

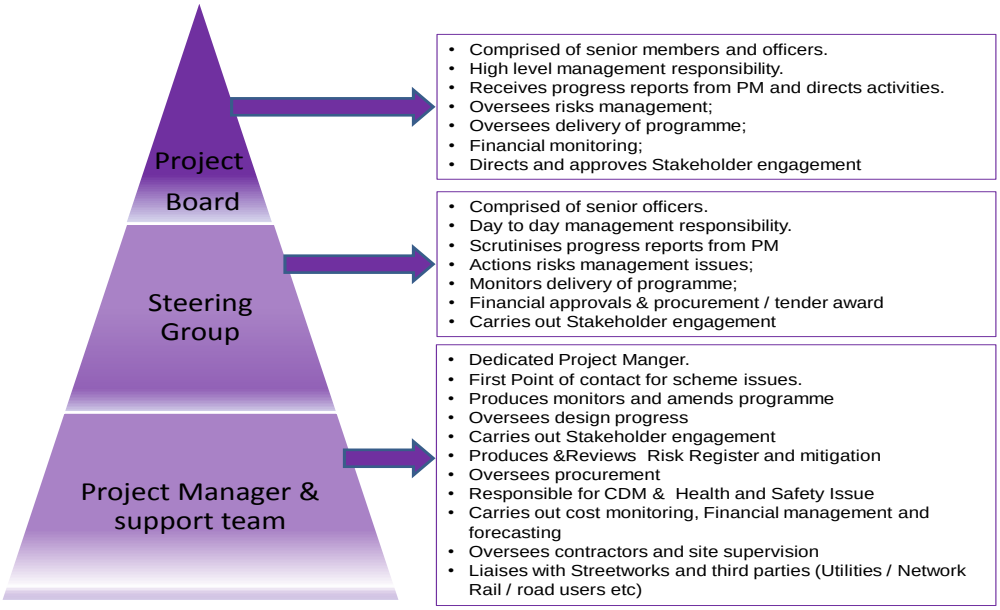
2.6 Future High Streets Fund

2.6.1 Future High Streets Fund. The Future High Streets Fund was launched on 28 December 2018 and is a £675 million fund that aims to help local areas make their high streets and town centres fit for the future. BBC will be submitting an Expression of Interest setting out the need for funding, nature of the challenge and the vision for the future of the town centre. The expression of interest bid is due to be submitted by 22 March 2019.The objective of the Fund is to renew and reshape town centres and high streets in a way that improves experience, drives growth and ensures future sustainability.The expression of interest does not include specific scheme proposals at this stage

2.7Governance, Organisational Structure & Roles

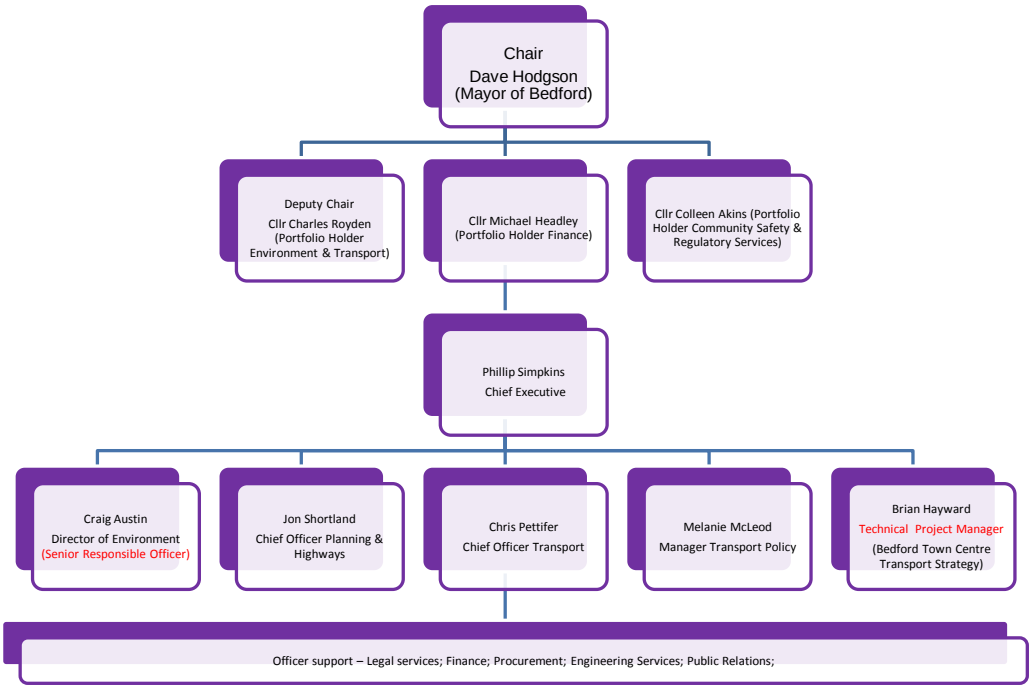
2.4.1 Ultimate responsibility for delivery of the scheme rests with BBC, who will assume an overall project management role. The hierarchy of the project management governance structure is shown in the figure below

Bedford Town Centre Transport Strategy – Governance arrangements diagram



2.4.2 The Project Board includes the Mayor; Portfolio Holders for Environment and Finance; Chief Executive; Director for Environment; Chief Officer for Transportation and the Project Manager. The Project Board structure is shown below:

Bedford Town Centre Transport Strategy – Project Governance Board



2.4.3 The Project Board will make key decisions in relation to the project and will have the final say on committing funds; awarding contracts and managing risk. The Project Board – whose membership includes the Projects Senior Responsible Officer - will receive technical input from a Steering Group (mentioned below).

2.4.4 The Board will initially meet fortnightly during the first year of the project. Standing items on the Project Board agenda will include:

- Review of programme and delivery
- Receive Checkpoint Reports
- Detailed review of scheme design progress
- Stakeholder engagement
- Review of Risk Register
- Review of Health and Safety Issues
- Procurement & approvals
- Financial management and cost monitoring
- Outcome monitoring

2.4.5 A Steering Group has been established to oversee reports made to the project board and ensure actions required by the are completed on time. The group comprises of Chief Officers, Team leaders in Traffic Management , Programme Management and Transport Policy and the Councils dedicated Project Manager. The Steering Group will meet on a weekly basis to produce and review checkpoint reports , update the risk register, and make recommendations to the project governance board for decisions. There is a deliberate overlap in membership of the two groups to ensure clarity of communication and a wider corporate responsibility.

2.4.6 The Steering Group comprises of the following and :

Chief Officer for Transport – Chris Pettifer.

Chris has over twenty five years experience working at a senior level in Transport Operations, specialising in Public and client transport policy and operations at a number of local authorities. He is the Councils lead officer for rail issues and is working with Network Rail on projects such as the Midland Mainline Electrification project and East West Rail. He recently oversaw the redevelopment of Bedford's Greyfriars bus station and has a close working relationship with bus operators in the Borough. Chris' current role includes responsibility for Parking operations and Traffic Management.

Chief Officer for Planning & Highways – Jon Shortland

Jons background is in Road safety and Transport Planning. With over 30 years experience. He is a chartered engineer with RosPA qualifications. More recently Jon has carried out a 'watchman' role on a County Council Managing Agent Contract and as Contract Manager for a multinational Civil Engineering company. His role at Bedford includes management of the Councils Engineering Services team who will be carrying out detailed design activities on this project.

Manager for Transport Policy – Melanie McLeod

Melanie is a qualified Transport Planner, has worked for Bedford Borough and County Councils for over twenty years and is the Councils lead officer on Transport Policy. Mel has been involved with this project since the initial conception stages and led the Councils work on the transport study that underlines the project. Mel has led numerous transport related stakeholder engagements through her work on developing the Councils Local Transport Plan and various strategic Transport projects.

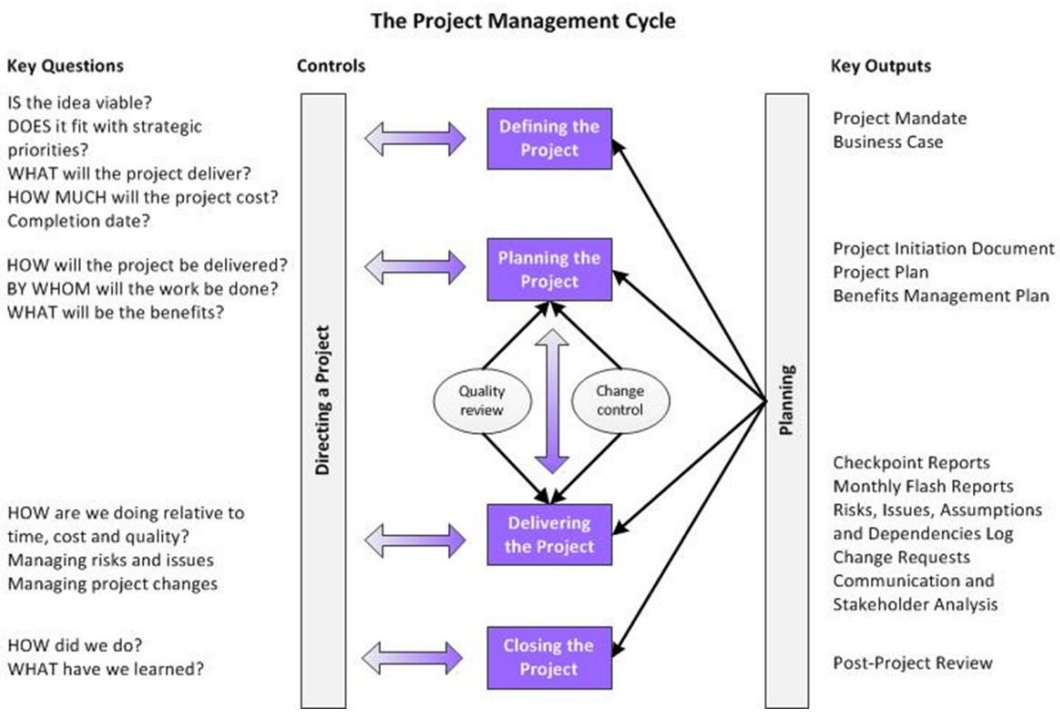
Bedford Town Centre Strategy Technical Project Manager – Brian Hayward (TPM)

Brian is a qualified Civil Engineer and Fellow of Chartered Institution of Highways & Transportation. He has a background in Highways design and site supervision and has worked as contract manager overseeing local Highways Authority contracts from the client side, has ten years experience as Head of Highways at Bedford BC overseeing capital programmes of work and managing annual budgets in excess of £12m. He has recently overseen the delivery of the Bedford Bough Council DfT challenge fund project for street lighting improvements and project managed the successful delivery of the £18M Bedford Western bypass project.

2.4.7 The day-to-day management and delivery of the project will be the responsibility of the Technical Project Manager and Engineering support staff. They will work closely with the Term Contractors and other delivery partners, and also form a point of contact for stakeholders.

2.4.8 The usual Council governance procedures will apply to all aspects of the project management, as set out in Bedford Borough Councils PMO Manual (as shown in Appendix 3) with issues being escalated in accordance with Council protocols as necessary. The Director of Environment and the Councils Project Manager will have delegated authority to take operational decisions. Financial management will be in accordance with Councils established protocols. The Project Manager will be the budget holder for the project and will have authority on all transactions up to £5000. Transactions up to £50,000 can be approved by Chief Officers and amounts about £50,000 will require Director approval. The Chief Officers and Directors are members of the Project Governance Board.

2.4.9 The Project will be managed in accordance with Bedford Borough Councils PMO Manual (as shown in Appendix 3). An extract from the PMO manual showing the overarching project management cycle is shown below.



2.4.10 Stage 3 of the PMO Manual "Delivering the Project" states how activities relating to monitoring and controlling a project will take place.

2.4.11 Monitoring and Controlling includes:

- Measuring the ongoing project activities (where we are);
- Monitoring the project variables (cost, effort, ...) against the project plan and the project baseline (where we should be);
- Identify corrective actions to properly address issues and avoid risks (How can we get on track again);

- Influencing the factors that could result in arbitrary changes to the project so only changes that have been subject to a formal change control process are implemented.

2.4.12 The methods used for this will vary for the various Tranches of work explained elsewhere in this business case, but a form of regular update reporting to both the Steering Group and Project Board to ensure robust governance is usual.

Where issues are identified which are beyond the authority of the Project Manager or Steering Group to influence or resolve, the issue will be escalated to the Project Board.

2.4.13 Checkpoint Reporting

All BBC led projects have a formal system of reporting, to ensure that progress updates are circulated and everyone is kept informed.

To enable this regular Checkpoint Reports are provided . The template for this document is in Appendix 4. Note that Checkpoint Reports will be prepared by the Technical Project Manager and submitted to the Steering Group and Project Board prior to submission to the Project Board for sign-off .

The Checkpoint Report will be completed by the Project Manager to capture the current status of the project. These reports are the source of understanding of the current progress or issues with the project. The checkpoint report summarises Project, risks, issues, assumptions and dependencies (known as RAIDs). ie items which could impact adversely on the project. The project plan will be updated to show expected and actual timeframes for the checkpoint reports / decisions.

2.5 Project Plan

2.5.1 A provisional Project Plan has been developed. It covers each key stage of the project and the critical path. The plan is reviewed and updated on regular basis and will be considered at fortnightly Governance Board meetings. A simplified Gantt chart of the project plan, as reviewed in February 2019is shown in Appendix 1.

2.5.2 A comparison between the project plan provided in the Business Case of July 2018 and the project plan included in Appendix 1is shown in the high level programme table below:

ACTIVITY	JULY 18 BUSINESS CASE PROGRAMME DATE	FEB 19 BUSINESS CASE REVIEW PROGRAMME DATE
Data gathering and modelling	March 2018	March 2018*
High St – Initial design & stakeholder engagement	Feb 2019	Nov 2018*
High St – detailed stakeholder	Nov 2019	June 2019

engagement		
High St – Detailed Design	May 2020	March 2020
High Street – Procurement	June 2020	June 2020
High Street - Construction	February 2021	March 2021
Cauldwell St – Design	Aug 2020	Aug 2020
Cauldwell St – Procurement	Nov 2020	Nov 2020
Cauldwell St - Construction	Apr 2021	Apr 2021
Manton Lane area – Advance work - Construction	Aug 2018	Sept 2018*
Manton Lane area - Design	July 2018	June 2018*
Manton Lane area – Land agreement	Aug 2018	Nov 2018*
Manton Lane area – Procurement	Oct 2018	Dec 2018*
Manton Lane area – Advance utility work	Oct 2018	April 2019
Manton Lane area – Construction completed	May 2019	Dec 2019
Manton Lane area – Phase 2 (NPIF) Construction	May 2019	Sept 2021
Bromham Road – Design	Dec 2019	Dec 2019
Bromham Road – Procurement	Feb 2020	March 2020
Bromham Road - Construction	Aug 2020	Aug 2020
Britannia Road – Design	Nov 2018	March 2019
Britannia Road – Procurement	Jan 2019	Apr 2019
Britannia Road - Construction	July 2019	Dec 2019
Cowbridge / Ampthill Road – Network Rail engagement	March 2019	March 2019
Cowbridge / Ampthill Road – Design	Sept 2018	Dec 2019
Cowbridge / Ampthill Road – Procurement	June 2019	Feb 2020

Cowbridge / Ampthill Road – Construction	Feb 2021	Feb 2021

* indicates activity is complete

2.5.3 The Project Manager will have overall responsibility for delivering the tasks required to achieve key milestones. Key milestones, timescales and tasks are summarised below:

- Full Business Case submitted October 2017;
- Initial approval from SEMLEP: July 2018;
- Detailed design begas: December 2017;
- Establishment of contracting arrangements: February-May 2018;
- Works began on ground: September 2018;
- Completion works – Pinch Points February 2021;
- Completion works – Technology October 2020;
- Completion works – Public Realm April 2021

2.6 Assurance and Approvals Plan

2.6.1 Project assurance and approvals are the main responsibility of the Project Board supported by the Steering Group who will also ensure the quality of the work carried out. The scheme will be managed in line with the Project Plan and the Project Board will sign off each stage and give the go/no go decision at the gateway to start the following stage. Although the different tranches of the project have subtly different requirements in design procurement, stakeholder engagement and construction the project management process will be tailored to provide a consistent format of reports allowing risks, cost implications and delivery implications to be recorded and clearly expressed at each gateway stage (ie commencement of detailed design, commencement of procurement, commencement of works etc).

2.6.2 Further project assurance will be undertaken in the form of the checkpoint reports which will be produced by the Technical Project Manager, agreed by the Steering Group and signed off by the Project Board. The project plan will be updated to show expected and actual timeframes for the checkpoint reports / decisions.

2.7 Communications and Stakeholder Management

2.7.1 BBC have a tried and tested Stakeholder Engagement process which is used on all significant projects. Effective use of the process has resulted in limited adverse feedback from the public and ensured successful delivery of schemes both from a project management and public relations perspective.

2.7.2 The main aim from the Stakeholder Engagement process is to ensure that stakeholders and members of the general public are kept informed throughout the development and implementation of a scheme. This can range from keeping key stakeholders updated with critical information, essential to the successful delivery of the scheme to providing information to the general public

2.7.3 A range of target audiences are identified, including: those who will benefit (directly or indirectly) from the scheme; those affected (directly or indirectly); those who may have

an interest without being directly affected; those with a statutory role; and those involved in the funding of the scheme.

2.7.4 The level of information provided to each group will vary based upon the specific needs ranging from intensive consultation, general consultation, through to information provision.

2.7.5 A detailed stakeholder management strategy has been developed that identifies specific stakeholders and interest groups, categorises them in terms of impact, and establishes the required level of engagement.

2.8 Contract Management

2.8.1 The project will be managed by BBC Project Delivery Manager (Brian Hayward) with officers from their in house design team and contracts team delivering the works streams with support from Transport Consultants (SYSTRA) providing additional resources where required and specialist services that cannot be provided in-house.

2.9 Project Reporting

2.9.1 Progress Reports will be produced by the Project Manager for consideration by the Project Governance Board and comprise updates on:

- Review of programme and delivery
- Detailed scheme design progress
- Stakeholder engagement
- Review of Risk Register
- Review of Health and Safety Issues
- Procurement & approvals
- Financial management and cost monitoring
- Outcome monitoring

2.9.2 The report identifies any areas of concern or where decisions are required by the Steering Group.

2.10 Risk Management Strategy

i. The Technical Project Manager will be responsible for the management of risks associated with the project, including chairing regular risk workshops and maintaining the Risk Register. The risk management process improves when responsibility for individual risks are delegated to team members, where necessary. Therefore Risk workshops will be held at regular intervals during the development of the project and will be timed to coincide with various activities shown on the programme. Typically Risk Workshops will be held at the following milestones:

- Start of detailed design for scheme elements
- Midpoint of detailed design for scheme elements
- Start of procurement for individual scheme elements

- Following award of contract for individual scheme elements
- During mobilization period
- At frequent intervals during construction period.

The Project Manager will re-issue the Risk Register as and when it is revised. Membership of the risk workshops will vary depending upon the stage of the project.

ii) The effective management of risk and uncertainty through accurate evaluation and proactive mitigation of risks is critical to the success of the project. The following guiding principles will be adhered to:

- Risk management is part of all project management board meetings and decision-making Project risk will be managed as an on-going process as part of the scheme governance structure. A scheme risk register is maintained and updated at each of the two-weekly Project Governance Board meetings. Responsibility for the risk register being maintained is held by BBC's Technical Project Manager.
- Risk management will be proactively and consistently applied throughout the project lifecycle
- The management of risks is to ensure their reduction to a level as low as 'reasonably practical' or adopt appropriate mitigation strategy
- A QRA will be initiated at the beginning of the project
- Risk communication will be open and transparent to all stakeholders

iii) The QRA commences at the initial stage of the project with the identification and assessment of risks in terms of their likelihood and associated cost outcomes, and follows a cyclic process as shown below.

A QRA has been undertaken for the project initially and results presented at this stage. Further reviews of QRA will be undertaken as required for this project. QRA will be reviewed in line with the WebTAG guidance on Scheme Costs.The Steering Group & Project Board will identify risks and measure their impacts on the programme. All risks will be documented in a register with the impact on programme clearly defined and the mitigation set out. The programme will take account of the 'most likely' scenario after mitigation.

The top risks and our measures to mitigate them are included in the Quantified Risk Assessment Shown in Appendix 2.

iv. QRA Process model through the life of the project

The QRA process involves four steps.

Step 1 is identification of all risks affecting the project through risk workshops and risk reviews, resulting in a risk register. Risk workshops typically include a mixture of expertise such as engineers, designers, finance officers, procurement specialists, and environmentalists.

Typically, the risk register is instigated with a list of project risks with qualitative information, then through various workshops and iterations, it will be developed to a comprehensive risk register to log the full spectrum of potential risks (also opportunities if necessary). Appropriate risk owners will be allocated for each risk, and progress on the management of the key risks will be discussed at each Project Board meeting. Periodic risk workshops will review all risks, add new risks, and close expired risks as the project progresses. The first round of workshops took place between January and March 2018.

Step 2 of the QRA process is analysis of the various risks by defining their distributions in terms of probabilities, impacts and knock-on effects. This information is gathered through risk workshops and other interactions. A qualitative risk ranking will be undertaken in the form of a standard decision matrix using the concept shown below. Each risk will be assessed using a score; High, Medium, Low, etc., for Cost, Time, Performance, and Probability to calculate an overall risk scoring and to categorise into Red, Amber, or Green.

The risk matrix used is :

Risk Scoring Matrix

Impact					
	High/ Critical	3	3	6	9
	Medium/ Serious	2	2	4	6
	Low/ Marginal	1	1	2	3
			1	2	3
			Low/ Improbable	Medium/ Could happen	High/ Probable
			Probability		

Probability Categories

Description		Prob	Scale Value
H	Probable	>70%	3
M	Could happen	30-70%	2
L	Improbable	<30%	1

Impact Categories

Description		Guide Scenario	Scale Value
H	Critical	Failure that involves significant rework, modification or reassessment	3
M	Serious	Failure or setback that causes additional work and reassessment but containable	2
L	Marginal	Impact has some effect causing rework or reassessment but easily handled	1

Risk Category & Action

- Key/ Critical Risks - closely monitor, manage & develop fallback plans
- Intermediate Risks - monitor and manage to mitigate/ include specific risk allowances in cost estimate/ programme
- Minor Risks - general allowance in base cost estimate & programme

At the inception stage the first generation of a risk register identified 99 separate risk issues.

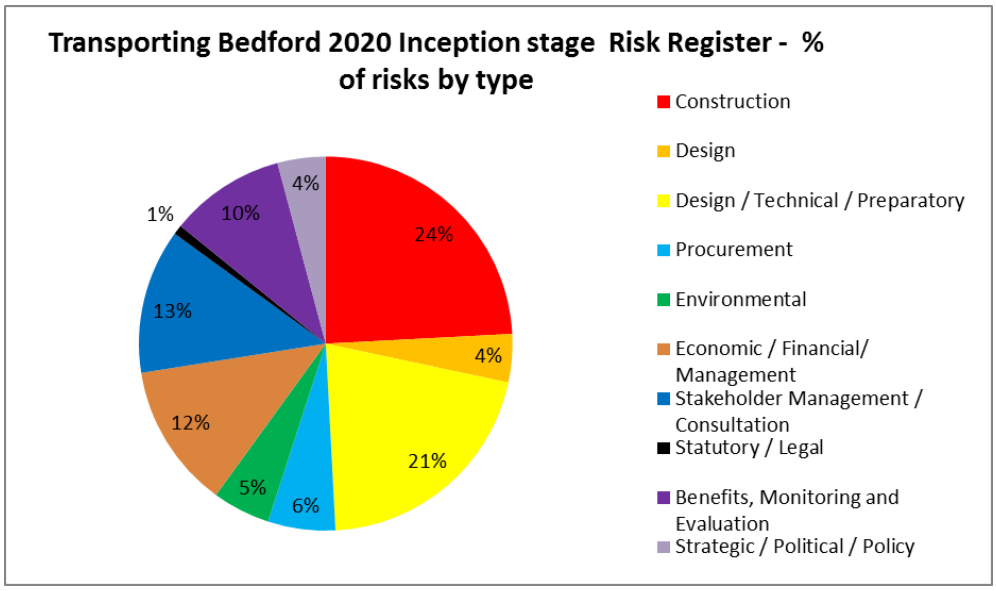
The register was subsequently reviews through a number of risk workshops, and the total number of risks identified rose to 102 (including 2 risks that were subsequently mitigated) . For the QRA process, monetised risk quantities has been agreed through group consensus for each individual risk for the minimum impact, maximum impact, likely impact, and likelihood/probability of occurring.

At the time of the most recent review carried out in March 2019 the total number of risks identified was 120, of which 22 had been closed.

Many of the high risk items giving rise to a projected increase in costs relate to possible delays to the delivery programme. These potential delays include delaying some elements of scheme delivery in order to accommodate Network Rail bridge works adjacent to some of the pinch point schemes and potential delays relating to utility works delivery. BBC engaged the services of a consultant who specialises in coordinating utility works and positive progress has been made in both quantifying and programming utility works, and as this work continues the risk of disruption and increases in costs will reduce. Similarly discussions have been ongoing with Network Rail regarding their planned works, and a delivery programme is now in place and work has commenced on schedule.

Current high risks include an environmental risk relating to a possible need to fell mature trees as part of the Bromham Road junction improvement scheme (an issue that will be reviewed as the scheme design progresses) ; and two issues relating to defining the technology elements and SMART mobility aspects.

In order to help the project teams manage such a high number of risks each risk item has been categorised into a project related type as shown below. Future risk workshops will focus on one or two area, with the Project Board taking an overview. The chart purely shows numbers of risk and does not reflect the financial impact of risk arising from each category.



Transporting Bedford 2020 -March 2019 Risk Register	High Risk	Medium Risk	Low Risk	Managed Risks	Total Number
Construction	0	5	21	3	29
Design	0	0	4	1	5
Design / Technical / Preparatory	2	1	18	4	25
Procurement	0	0	4	3	7
Environmental	1	3	2	0	6
Economic / Financial/ Management	0	1	8	6	15
Stakeholder Management / Consultation	0	4	10	1	15
Statutory / Legal	0	0	0	1	1
Benefits, Monitoring and Evaluation	0	0	10	2	12
Strategic / Political / Policy	0	1	3	1	5
Total	3	15	80	22	120
	3%	13%	67%	18%	

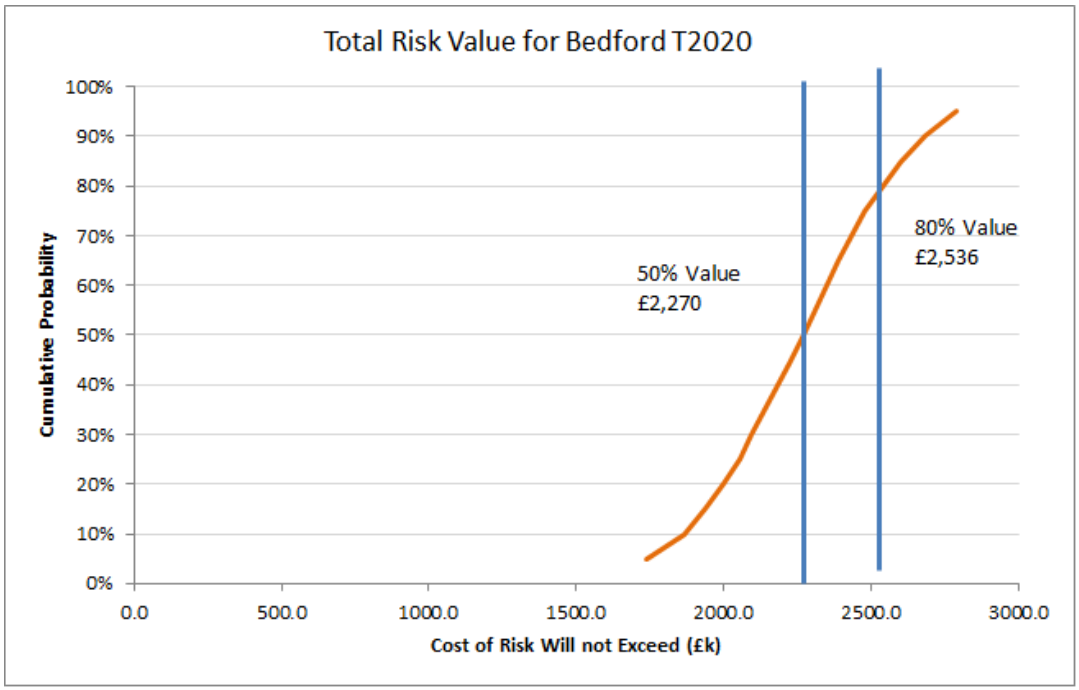
Step 3 A risk model was constructed using the Microsoft Excel and @Risk® software packages. The model used the Monte-Carlo simulation theory by replicating a large number of iterations of likely project risk scenarios. Confidence levels relating to the cost of the scheme are obtained from the distribution of the averaged results produced by the simulations. The risk model has been updated in March 2019 to take into account the updated risk position.

Step 4 is analysing the results against required contingency needs for the project. The 50% percentile value P(50) will be reported in line with WebTAG guidance.

The P(80) figure of £2,536,000 (16.5%) has been used in the economic case. The Project Board will use other results of the QRA, including other percentile values, to monitor and manage risks at overall project level.

Outputs are shown on the chart below, and are also included in the Risk Register appended to this document.

To be updated



v) The management strategy will enforce a systematic approach to responding to the various risks during the project lifecycle, and will continuously look to avoid, mitigate, transfer, or accept risks. In many cases, additional technical work or surveys, or early discussions with partners has reduced or mitigated risks. Risk control measures such as preventive, corrective, directive, or detective measures will be in place to treat risks. Delivery and contractor teams will be responsible for managing their risks and reporting any newly identified risks to the Project Manager. Risks escalated to Medium or High which could impact on the progress or financial position of the project will be referred by the Project Manager to the Project Board.

2.11 Scheme Delivery Risks

2.11.1 Earlier in this section of the report, the experience of BBC's staff has been highlighted in terms of delivering major transport schemes effectively and with little adverse effect. This was achieved through rigorous management policies, processes and procedures that were effectively and accurately implemented. An important aspect of the management process is identifying risks associated with scheme delivery and funding early in the process to allow mitigation to be identified.

2.11.2 Appendix 2 shows the Project Risk Register, with risks categorised in accordance with BBC established risk management policy. The Project Governance Board review the risk register at its fortnightly meetings and oversee mitigation measures. A collegiate approach is taken to risk appraisals to reduce the effects of risk appetite skewing the register. The Project Board's overview provides a backstop to ensure that risks are being adequately identified and managed and can direct staff and financial resources accordingly. The risk register is very much treated as a live document – as demonstrated by the fact that there have been sixteen revisions to the register since it was first developed in summer 2017. The latest risk register identifies some twenty two risks out of a total of one hundred and twenty identified risks that have been fully mitigated and closed.

2.11.3 The project risk register is used as a basis to inform the NEC risk register which is developed separately by client and contractor for individual works elements. The NEC Risk Register is a register of the risks which are listed in the Contract Data and the risks which the Project Manager or the Contractor has notified as an early warning matter. The link between the overall project risk register and the NEC risk register is vital to ensure that risks are being properly managed and fully considered as part of works procurement.

2.11.4 As well as fortnightly reports to the project Board the Transporting Bedford 2020 scheme finances are reported monthly to the Councils S151 Officer and portfolio holder for finance. All costs are managed through the Councils 'agresso' financial management system with monitoring and forward programme and financial management controlled via a master spreadsheet that contains information on planned and actual costs elements at a detailed level. This provides a fully auditable oversight and control of budget/timescale pressures and data is used to inform SEMLEP quarterly monitoring reports. The risk register – including all scheme delivery risks – has also formed part of the Quarterly monitoring reports to SEMLEP.

2.11.5 Further reference to risk management and high risk issues is made in Section 2:16 of the Strategic Case chapter of the Business Case.

2.12 Benefits Realisation and Monitoring

2.12.1 The purpose of benefits realisation is to plan for and track the benefits that are expected to be accrued over the lifetime of the scheme. The plan will detail the activities required to track the progress of the scheme including project milestones and responsibilities.

2.12.2 Monitoring will take place prior to scheme opening (baseline) and at predefined intervals upon successful delivery of the scheme, notably:

- 1 year post scheme opening;
- 4 years post scheme opening; and
- 9 years scheme opening.

2.12.3 The key scheme benefit indicators set out against the scheme objectives are shown within Table 2 below.

Table 1. Scheme Benefits Indicators

OBJECTIVE	DESIRED OUTCOMES
TS01 (Regeneration)	Support the heritage, cultural and economic regeneration in the town centre through enhanced access and improved town centre permeability.
TS02 (Town Centre Traffic)	Manage vehicular activity in the core town centre, in particular through movements, to enhance the pedestrian retail, night-time, and visitor economy experience, whilst ensuring adequate town centre access for traders, freight, public transport and taxis and to car parks
TS03 (Cross-town movements)	Facilitate efficient cross town and end-to-end corridor movements, for all transport modes, through strategic routings, reduced congestion at network pinch-points and improved infrastructure provision
TS04 (Strategic links)	Enhance strategic links to the town to secure the long term position of Bedford as a regional centre, whilst reducing the volume and impact of through vehicular traffic movements that could otherwise utilise the town ring road
TS05 (Network resilience)	Provide network resilience, across all modes, that accommodates forecast growth associated with future development aspirations of the town and changes to population demographics
TS06 (Safety & Security)	Create a safe and secure environment for all transport users, taking particular account the needs of vulnerable users, and reduce conflicts between vehicular and non-vehicular transport movements
TS07 (Environment)	Manage the environmental impacts of transport, in particular within the air quality management area, and promote sustainable modes of travel
TS08 (Access to health & education)	Proactively manage access to health and educational facilities, including hospital sites, schools, the college and the university, in order to make best use of transport network capacity
TS09 (Sense of Place)	Create a coherent 'sense of place' across the town quarters, ensuring clear vehicular and non-vehicular way-finding leading into and around the town centre, with a particular focus on ensuring connectivity with the river and the rail station
TS10 (Design)	Ensure inclusive, resilient, long-term, and low maintenance design of transport infrastructure and operational services

2.12.4 In order to ensure that the objectives are being realised, a method for measuring outputs from the scheme are classified in Table 3 below. The acceptable thresholds are deemed to be realistic and achievable, based on outputs from the PERs audit and forecast highway model for the package of scheme measures. Baseline data and

methods of measurement will be clearly set out in a monitoring and evaluation template.

Table 2. Outcome Measurement and Acceptability thresholds

MONITORING INDICATOR	MEASUREMENT	ACCEPTABLE THRESHOLD
TS01 (Regeneration)	Journey times (all modes); accessibility and permeability (PERs audit); rateable values of retail properties	5% reduction in peak hour journey times (all modes) +2 points for PERS rating for Permeability 25% increase in rateable values
TS02 (Town Centre Traffic)	Town centre vehicle kms, town centre vehicles speeds	5% reduction in town centre vehicle kms 15% reduction in High Street average speeds
TS03 (Cross-town movements)	Journey times	5% reduction in peak hour journey times (all modes)
TS04 (Strategic links)	strategic public transport services (rail routes/services; bus network kms); through traffic vehicle-trips within town centre cordon	5% increase in bus service levels 5% reduction in through traffic
TS05 (Network resilience)	Transport network capacity	10% increase in transport operating capacity
TS06 (Safety & Security)	Accident levels; security (PERS audit)	10% reduction in accident levels +2 points for PERS rating for Security
TS07 (Environment)	Town centre vehicle-kms;	5% reduction in town centre vehicle kms
TS08 (Access to health & education)	accessibility contours to sites	5% reduction in access times
TS09 (Sense of Place)	qualitative assessment of design and signage (PERS audit)	+2 points for PERS rating for Quality of Environment
TS10 (Design)	qualitative assessment of design	Design review

2.12.5 BBC will conduct a full evaluation of the impact of the package of scheme measures in the period after it is completed. The Council will prepare evaluation reports for short, medium and long term horizons ie one year (2022), four years (to 2025) and nine years (to 2030) after scheme opening, using the information to be collected as set out above to gauge the impact of the scheme on the traffic and transport network, and assess the success in meeting the scheme objectives. Unexpected effects of the scheme will be reported upon and, where appropriate, remedial measures identified.

2.12.6 BBC undertake to provide funding for short medium and long term monitoring. The form of monitoring and reporting will be as specified by SEMLEP.

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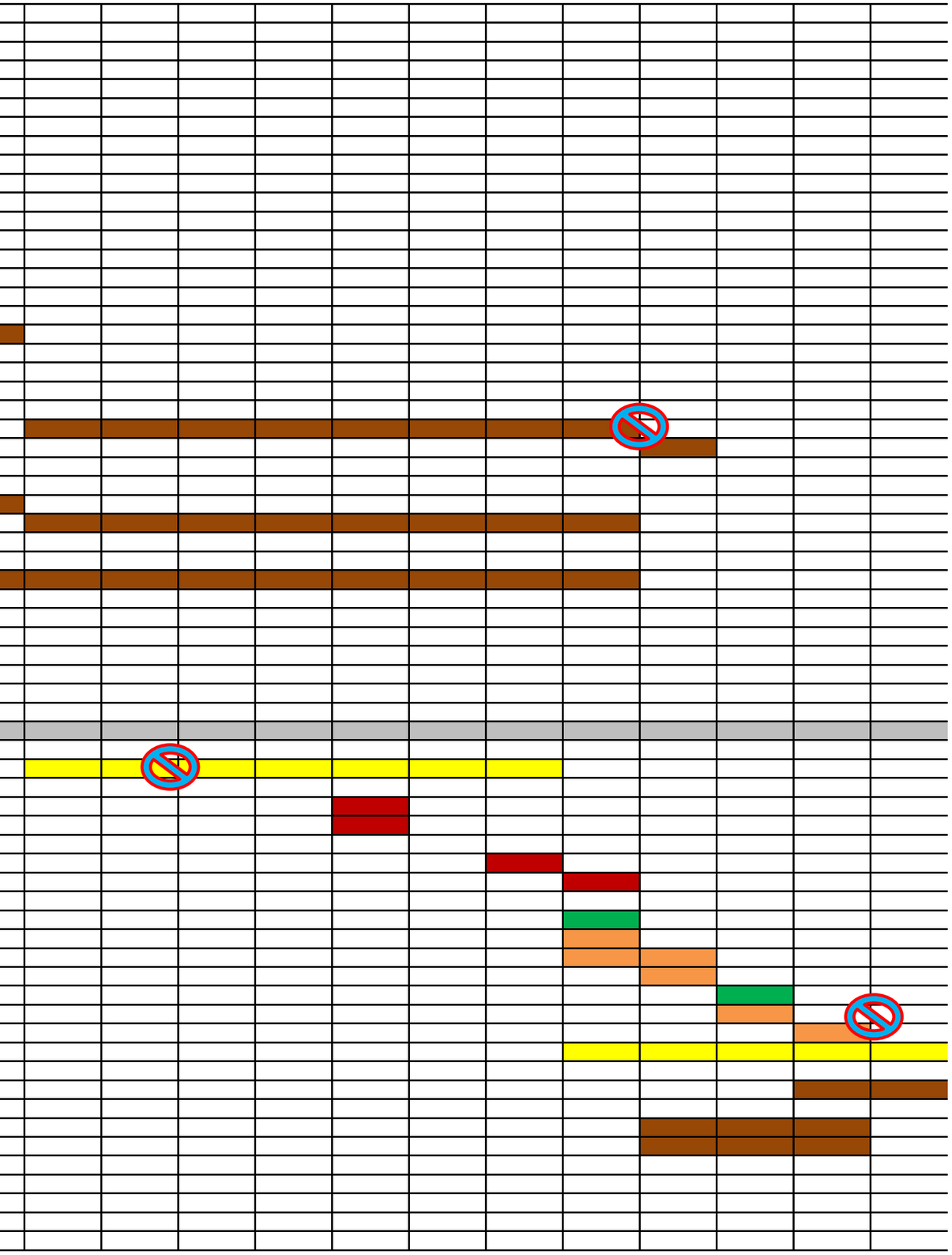
SYSTRA

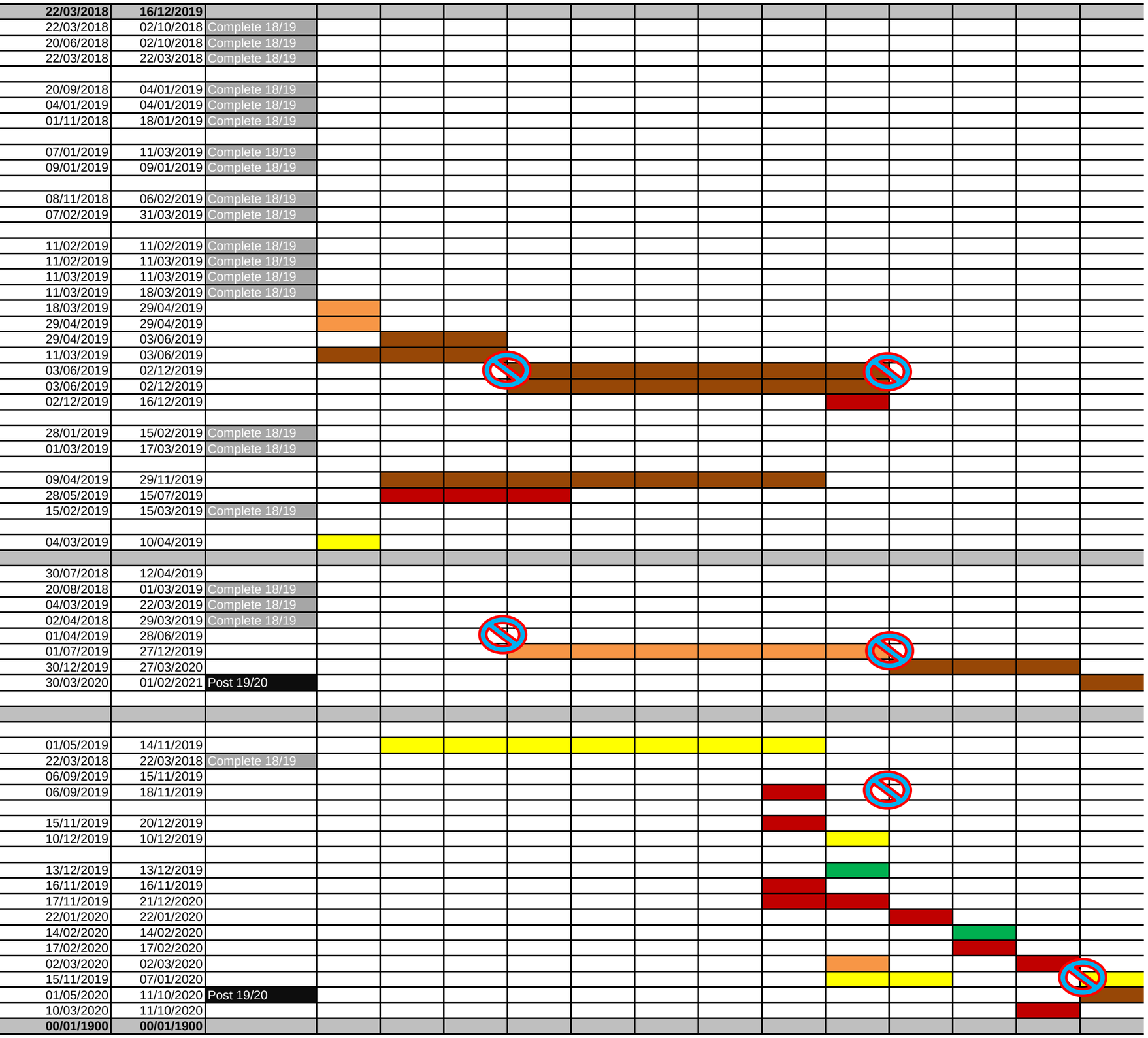
Transporting Bedford 2020 Commercial Case Appendix 1 - 2019/20 Programme

Task Name	Start Date	End Date		Apr-19	May-19	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20
High Street Public Realm																
Develop initial options	02/04/2018	22/11/2018	Complete 18/19													
Stage 1 Road Safety Audit	29/10/2018	29/10/2018	Complete 18/19													
Preliminary design - Engineering Services	01/09/2018	22/11/2018	Complete 18/19													
Project Board Accepts Preferred Option	22/11/2018	22/11/2018	Complete 18/19													
Revise Preferred Option (loading requirements)	06/02/2019	19/02/2019	Complete 18/19													
Stakeholder engagement	01/01/2019	22/06/2019														
SCAPE Feasibility Report	01/04/2019	30/06/2019														
Questionnaires to businesses and consultation	14/05/2019	15/07/2019														
Public Exhibition and consultation	01/09/2019	30/11/2019														
Detailed Design	01/08/2019	29/02/2020														
Tender documents	01/11/2019	29/02/2020														
Stage 2 Road Safety Audit	01/01/2020	01/02/2020														
Project Board approval	29/02/2020	29/02/2020														
Procurement	29/02/2020	31/03/2021														
Tender period	29/02/2020	30/04/2020														
Tender assess and award	30/04/2020	10/05/2020	Post 19/20													
Mobilisation	10/05/2020	24/07/2020	Post 19/20													
Supervision - Engineering Services	27/07/2020	31/03/2021	Post 19/20													
Construction	27/07/2020	31/03/2021	Post 19/20													
Ground Radar and Trial Holes	12/02/2019	26/02/2019														
C4 Estimates	13/02/2019	09/04/2019														
Mobilisation	10/09/2019	01/12/2019														
Advance Utility Work	01/02/2020	31/03/2020														
Manton Lane Junction - Phase 1																
Advance Works - School Entrance to Brickhill Drive	**12/02/2018**	**02/09/2018**	Complete 18/19													
Internal Stakeholder Engagement	12/02/2018	16/03/2018	Complete 18/19													
Stage 1 Road Safety Audit	22/03/2018	22/03/2018	Complete 18/19													
Preliminary design/develop options	23/03/2018	26/04/2018	Complete 18/19													
Request working times and diversions	26/02/2018	26/02/2018	Complete 18/19													
Request views from transportation	22/02/2018	07/03/2018	Complete 18/19													
Meeting with transportation	27/04/2018	27/04/2018	Complete 18/19													
Traffic modelling	22/03/2018	29/05/2018	Complete 18/19													
External Stakeholder comments	08/06/2018	21/06/2018	Complete 18/19													
Revise junction geometry	30/05/2018	05/06/2018	Complete 18/19													
Drainage report	11/04/2018	11/04/2018	Complete 18/19													
Drainage design	11/04/2018	17/04/2018	Complete 18/19													
Pavement design	11/04/2018	17/04/2018	Complete 18/19													
Traffic Signal Design	30/05/2018	12/06/2018	Complete 18/19													
Assess land take requirements	06/06/2018	12/06/2018	Complete 18/19													
Streetlighting design	30/05/2018	05/06/2018	Complete 18/19													
Traffic sign design	06/06/2018	12/06/2018	Complete 18/19													
Stage 2 road safety audit	06/06/2018	12/06/2018	Complete 18/19													
Revise design following RSA	13/06/2018	19/06/2018	Complete 18/19													
Prepare cost estimates	06/06/2018	07/06/2018	Complete 18/19													
Prepare contract documents	06/06/2018	07/06/2018	Complete 18/19													
Design approval	06/06/2018	19/06/2018	Complete 18/19													
Advance Tree Removal Works	30/03/2018	03/04/2018	Complete 18/19													
Trial Trenches	15/05/2018	16/05/2018	Complete 18/19													
Mobilisation	20/06/2018	20/07/2018	Complete 18/19													
Construction	23/07/2018	02/09/2018	Complete 18/19													
Main Junction works - Manton Lane																
Design																
Surveys and data collection	18/12/2017	28/02/2018	Complete 18/19													
Tree Surveys	01/06/2018	30/06/2018	Complete 18/19													
Stakeholder Engagement	13/12/2017	30/03/2018	Complete 18/19													
Preliminary Design	01/01/2018	30/03/2018	Complete 18/19													
BMS Sports hall investigative works	01/10/2018	30/10/2018	Complete 18/19													
Traffic Modelling and LINSIG	01/03/2018	06/06/2018	Complete 18/19													

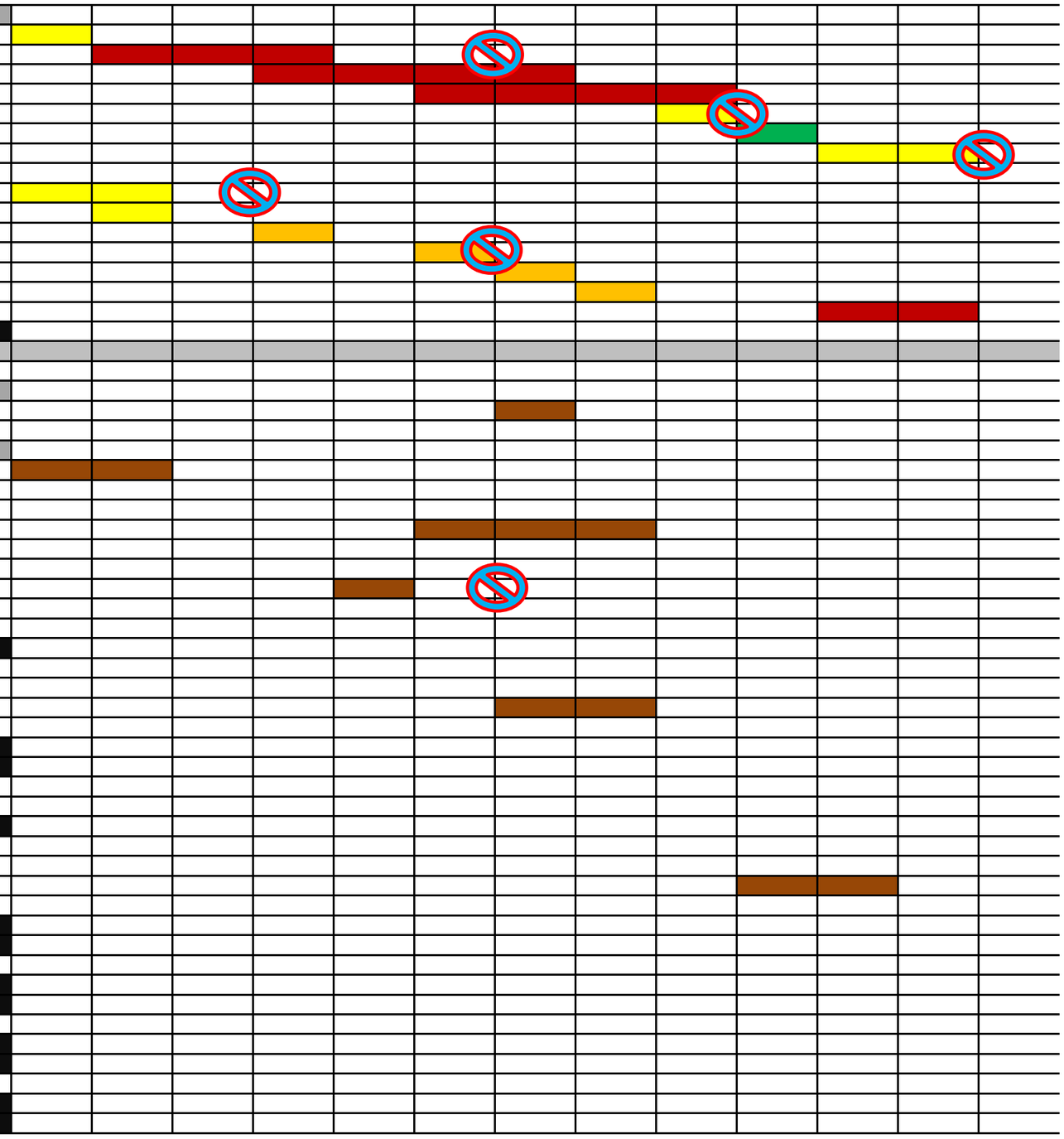
Detailed Design	07/06/2018	16/08/2018	Complete 18/19
Stage 2 Road Safety Audit	13/08/2018	13/09/2019	Complete 18/19
Managing utility works - Paige Solutions			
Statutory Traffic Regulation Order Process	17/08/2018	25/09/2018	Complete 18/19
Procurement			
Issue Project Request to Board for approval	06/09/2018	14/09/2018	Complete 18/19
Issue Project Request to contractor	14/09/2018	14/09/2018	Complete 18/19
Feasibility Period	17/09/2018	12/10/2018	Complete 18/19
Contractor provides Feasibility Report	12/10/2018	12/10/2018	Complete 18/19
Pre-construction			
Provide layout plans to contractor	15/10/2018	16/10/2018	Complete 18/19
Prepare Works Information and Issue to Contractor	03/10/2018	23/10/2018	Complete 18/19
Contractor develops Activity Schedule	24/10/2018	06/12/2018	Complete 18/19
Pre-construction Works Calculated and Submitted	07/12/2018	07/12/2018	Complete 18/19
Project Board Approval of Works Estimate and Programme	07/12/2018	20/12/2018	Complete 18/19
Delivery Agreement Sealed	21/12/2018	29/01/2019	Complete 18/19
Mobilisation and Construction			
Mobilisation (at risk)	29/01/2019	23/04/2019	
Enabling Works (tree clearance)	25/02/2019	18/03/2019	Complete 18/19
Enabling Works (bus shelter works)	06/12/2018	16/12/2018	Complete 18/19
Enabling Works (trial holes and GPR surveys)	14/01/2019	14/02/2019	Complete 18/19
Start on-site	23/04/2019	23/04/2019	Complete 18/19
Construction period	23/04/2019	21/12/2019	
Stage 3 Road Safety Audit	04/01/2020	18/01/2020	
Utility Works			
BT Openreach			
C4 Process	01/01/2019	23/04/2019	
Diversion works	23/04/2019	21/12/2019	
Vodafone			
C4 Process	20/12/2018	07/03/2019	Complete 18/19
Diversion Works	23/04/2018	21/12/2019	
Land Purchase and Accommodation Works			
Setting Out	01/08/2018	01/09/2018	Complete 18/19
Confirm land requirements and draft land plan	22/06/2018	17/08/2018	Complete 18/19
Agree Heads of Terms with Bedford Modern School	17/08/2018	31/03/2019	Complete 18/19
Develop accommodation works and plans with BMS	20/08/2018	12/10/2018	Complete 18/19
Sign land transfer agreement and instruct accommodation works	01/03/2019	31/03/2019	Complete 18/19
Bromham Road/Shakespeare Road Junction			
Preliminary Design			
Stakeholder Engagement	01/05/2019	14/11/2019	
Stage 1 Road Safety Audit	22/03/2018	22/03/2018	Complete 18/19
Preliminary Design - Engineering Services	06/09/2019	15/11/2019	
Traffic Modelling and LINSIG	06/09/2019	18/10/2019	
Detailed Design			
Detailed Design	15/11/2019	20/12/2019	
Stage 2 Road Safety Audit	10/12/2019	10/12/2019	
Procurement			
Project Board approval to proceed	13/12/2019	13/12/2019	
Issue Project Brief and Project Request	16/12/2019	16/12/2019	
Prepare Feasibility report	17/12/2019	21/01/2020	
Feasibility Report received	22/01/2020	22/01/2020	
Project Board Approval to proceed (Project Order)	14/02/2020	14/02/2020	
Prepare Delivery Agreement (Pre-construction)	17/02/2020	17/02/2020	
Seal SCAPE Delivery Agreement	02/03/2020	02/03/2020	
Statutory Traffic Regulation Order Process	15/11/2019	07/04/2020	
Construction			
Mobilisation	18/02/2020	08/05/2020	
Start on-site	11/05/2020	11/05/2020	Post 19/20
Advance works - trees and hedges	24/01/2020	05/03/2020	
Advance Utility Works	10/01/2020	05/03/2020	
Supervision - Engineering Services	11/05/2020	28/08/2020	Post 19/20
Construction	11/05/2020	28/08/2020	Post 19/20
Stage 3 Road Safety Audit	11/09/2020	11/09/2020	Post 19/20



Britannia Road	22/03/2018	16/12/2019	
Initial Preparatory Works	22/03/2018	02/10/2018	Complete 18/19
Stakeholder Engagement	20/06/2018	02/10/2018	Complete 18/19
Stage 1 Road Safety Audit of Business Case layout	22/03/2018	22/03/2018	Complete 18/19
Preliminary Design			
Preliminary Design - Engineering Services	20/09/2018	04/01/2019	Complete 18/19
Project Board Approval of Layout	04/01/2019	04/01/2019	Complete 18/19
Traffic Modelling and LINSIG	01/11/2018	18/01/2019	Complete 18/19
Detailed Design			
Detailed Design - Engineering Services	07/01/2019	11/03/2019	Complete 18/19
Stage 2 Road Safety Audit	09/01/2019	09/01/2019	Complete 18/19
Land Purchase			
Development of Land Purchase Agreement	08/11/2018	06/02/2019	Complete 18/19
Land purchase	07/02/2019	31/03/2019	Complete 18/19
Procurement			
Issue Project Brief and Project Request	11/02/2019	11/02/2019	Complete 18/19
Prepare Feasibility report	11/02/2019	11/03/2019	Complete 18/19
Feasibility Report received	11/03/2019	11/03/2019	Complete 18/19
Project Board Approval to proceed (Project Order)	11/03/2019	18/03/2019	Complete 18/19
Prepare Delivery Agreement (Pre-construction)	18/03/2019	29/04/2019	
Seal SCAPE Delivery Agreement	29/04/2019	29/04/2019	
Mobilisation	29/04/2019	03/06/2019	
Preconstruction and mobilisation - Engineering Services Fees	11/03/2019	03/06/2019	
Construction	03/06/2019	02/12/2019	
Site supervision	03/06/2019	02/12/2019	
Stage 3 Road Safety Audit	02/12/2019	16/12/2019	
Enabling Works			
Trial holes, GPR and cores	28/01/2019	15/02/2019	Complete 18/19
Advance works - trees and hedges	01/03/2019	17/03/2019	Complete 18/19
Utilities			
Utility diversion works	09/04/2019	29/11/2019	
BT Openreach	28/05/2019	15/07/2019	
C3 Estimate	15/02/2019	15/03/2019	Complete 18/19
Traffic Regulation Orders			
Statutory Traffic Regulation Order Process	04/03/2019	10/04/2019	
Cowbridge Footbridge			
Existing bridge assessment	30/07/2018	12/04/2019	
Ground investigation	20/08/2018	01/03/2019	Complete 18/19
Geotechnical Interpretation Report	04/03/2019	22/03/2019	Complete 18/19
Initial Network Rail engagement (BAPA)	02/04/2018	29/03/2019	Complete 18/19
Footbridge procurement (design and build)	01/04/2019	28/06/2019	
Footbridge design & planning	01/07/2019	27/12/2019	
Advance Utility Works	30/12/2019	27/03/2020	
Footbridge construction	30/03/2020	01/02/2021	Post 19/20
Ampthill Road Corridor			
Preliminary Design			
Stakeholder Engagement	01/05/2019	14/11/2019	
Stage 1 Road Safety Audit	22/03/2018	22/03/2018	Complete 18/19
Preliminary Design - Engineering Services	06/09/2019	15/11/2019	
Traffic Modelling and LINSIG	06/09/2019	18/11/2019	
Detailed Design			
Detailed Design	15/11/2019	20/12/2019	
Stage 2 Road Safety Audit	10/12/2019	10/12/2019	
Procurement			
Project Board approval to proceed	13/12/2019	13/12/2019	
Issue Project Brief and Project Request	16/11/2019	16/11/2019	
Prepare Feasibility report	17/11/2019	21/12/2020	
Feasibility Report received	22/01/2020	22/01/2020	
Project Board Approval to proceed (Project Order)	14/02/2020	14/02/2020	
Prepare Delivery Agreement (Pre-construction)	17/02/2020	17/02/2020	
Seal SCAPE Delivery Agreement	02/03/2020	02/03/2020	
Statutory Traffic Regulation Order Process	15/11/2019	07/01/2020	
Construction (Smart Corridor)	01/05/2020	11/10/2020	Post 19/20
Construction (Civils)	10/03/2020	11/10/2020	
Technology Elements	**00/01/1900**	**00/01/1900**	



UTC Tender award	00/01/1900	00/01/1900	Complete 18/19
Launch meeting	10/04/2019	10/04/2019	
Sites tranche A & B	05/05/2019	28/07/2019	
Sites tranche C & D	14/07/2019	30/10/2019	
Migration & Testing	01/09/2019	31/12/2019	
Training	10/12/2019	10/12/2019	
Project sign off	31/01/2019	31/01/2019	
System full go live	01/02/2019	01/03/2019	
UTMC			
Spec	01/02/2019	31/05/2019	
Supplier Discussions	01/05/2019	14/05/2019	
Issue Tender Docs (TMT2)	14/07/2019	14/07/2019	
Tender Assessment	20/09/2019	31/09/2019	
Supplier Demonstration	01/10/2019	12/10/2019	
Tender award	05/11/2019	05/11/2019	
System initial go live	20/02/2020	30/06/2020	
System full go live	30/11/2020	30/11/2020	Post 19/20
Traffic Signal Site Upgrades/New Sites	**01/06/2018**	**31/08/2021**	
Bromham Rd/Union St/Greyfriars			
Design	01/06/2018	30/06/2018	Complete 18/19
Construct	01/10/2019	31/10/2019	
Midland Rd/River St			
Design	01/01/2019	28/02/2019	Complete 18/19
Construct	01/04/2019	31/05/2019	
Kimbolton Rd/Polhill Ave/Brickhill Dr			
Design	01/04/2019	01/05/2019	
Construct	01/09/2019	30/11/2019	
Goldington Rd/Newnham Ave			
Design	01/06/2019	31/07/2019	
Construct	01/08/2019	31/08/2019	
Elstow Rd/Spring Rd			
Design	01/01/2020	29/02/2020	
Construct	01/12/2020	31/01/2021	Post 19/20
Kempston Rd/Spring Rd			
Design	01/08/2019	30/09/2019	
Construct	01/10/2019	30/11/2019	
Ampthill Road/Pioneer Park			
Design	01/07/2020	31/08/2020	Post 19/20
Construct	01/12/2020	01/01/2021	Post 19/20
Clapham Rd/Linden Ave			
Design	01/04/2019	31/05/2019	
Construct	01/07/2021	31/08/2021	Post 19/20
Elstow Rd/London Rd			
Design	01/10/2019	30/11/2019	
Construct	01/01/2020	29/02/2020	
Dame Alice St/The Broadway/High St			
Design	01/04/2020	31/05/2020	Post 19/20
Construct	01/12/2020	31/01/2021	Post 19/20
St Peter's St/St Cuthbert's St			
Design	01/06/2020	31/07/2020	Post 19/20
Construct	01/12/2020	31/01/2021	Post 19/20
Cauldwell St/Kingsway			
Design	01/10/2020	30/11/2020	Post 19/20
Construct	01/02/2021	31/03/2021	Post 19/20
Cauldwell St/Prebend St			
Design	01/12/2020	31/01/2021	Post 19/20
Construct	31/01/2021	31/03/2021	Post 19/20



Draft 2019/20 Milestones

Bromham Road/Shakespeare Road Junction	Stakeholder Engagement	commenced by	End Q1
Britannia Road	Construction	commenced by	
Cowbridge Footbridge	Footbridge procurement (design and build)	procurement completed by	
UTMC	Specification	Finalised by	
Technology Elements	UTC Sites tranche A & B	works complteted by	End Q2
UTMC	Tender Asessment	completed by	
Traffic Signal Site Upgrades/New Sites	Goldington Rd/Newnham Ave	Construction work completed by	
High Street Public Realm	Public Exhibition and consultation	completed by	End Q3
Manton Lane Junction - Phase 1	Construction period	completed by	
Britannia Road	Construction	completed by	
Cowbridge Footbridge	Footbridge design & planning	completed by	
Ampthill Road Corridor	Traffic Modelling and LINSIG	completed by	
UTC	Training	completed by	
High Street Public Realm	Detailed Design	completed by	End Q4
Bromham Road/Shakespeare Road Junction	Delivery agreement	signed by	
Ampthill Road Corridor	Statutory Traffic Regulation Order Process	completed by	
UTC	System full go live	by	

Transporting Bedford 2020 – Commercial Case Appendix 5

Theme 1 Pinch points Outline Output Specification

The strategic objectives are set out in more detail in the strategic case, but in broad terms relate to reducing congestion and delays at various pinch points across Bedford improving journey times and reliability on key routes, improving road safety in the area and supporting the future economic viability of Bedford and the surrounding area.

This output specification sets out key deliverables through the project lifecycle

INCEPTION STAGE 1				
Ref.	**Output**	**Who does it**	**When**	**Comments / Evidence (Complete once evidence is uploaded to JESTER DMS)**
	Project Brief Confirm project scope, outline budget & timeline			
	Carry out Gap Analysis Agree how the project will be managed Design team understand needs, aspirations, and risks from business case Collaboratively identify any external support required			
	Benefits and Monitoring Refer to benefits and monitoring plan to understand main objectives measurement methods and baseline.			

DESIGN STAGE 2				
Ref.	**Output**	**Who does it**	**When**	**Comments / Evidence (Complete once evidence is uploaded to Folder 7 on BC)**
	Risk Workshop Risk and opportunity identification, value management workshops			
	ITS equipment Ensure signal design consistent with technology theme and UTC / UTMC specification			
	Road Safety Audit			

	Ensure designers response to RSA 1/2 addresses any issues raised			
	Buildability Audit Ensure independent audit completed any any maintenance issues are designed out			
	Benefits Modelling Test design using microsimulation and signal design modelling tools to ensure benefits are present			
	Utilities Ensure utility works are identified and mitigated as far as possible			
	Activity Schedule / BoQ Prepare and test cost elements and compare to budget availability			
	Procurement Review and finalise design ensuring suitability for method of procurement			
PRE-CONSTRUCTION STAGE 3				
Ref.	**Output**	**Who does it**	**When**	**Comments / Evidence** **(Complete once evidence is uploaded to Folder 7 on BC)**
	Market test Cost 100% of build up costs priced using example rates to establish cost base			
	Community Engagement Communicate programme / design intentions to identify any constraints / issues Appropriate to the size and type of scheme			
	Procure Works Follow frameworks requirements or issue tender documents in accordance with corporate requirements			
CONSTRUCTION STAGE 4				
Ref.	**Output**	**Who does it**	**When**	**Comments / Evidence** **(Complete once evidence is uploaded to Folder 7 on BC)**
	Register the scheme for CCS (except if project under £500K value or has an 8 week/ less duration)			

	Communications Ensure scheme boards erected prior to work commencing Issue press release and publicity materials Letter drop local area			
	Establish KPI Monitoring and Reporting Establish contractual KPI's relating to cost, delivery and management.			
	Scheme specific outputs Installation of signal infrastructure and equipment Installation of SCOOT and/or MOVA controller detection Widening and resurfacing of carriageway in accordance with BBC specification Installation of public transport infrastructure (bus stops; shelters and technology) Installation of pedestrian and cycle facilities in accordance with design specification Installation of new signage, information and publicity systems			
	Support Bio-Diversity No environmental incidents.			
POST CONSTRUCTION / ASSET MANAGEMENT STAGE 5				
Ref.	**Framework Commitment**	**Who does it**	**When**	**Comments / Evidence** **(Complete once evidence is uploaded to Folder 7 on BC)**
	Asset Management Ensure as built drawings are completed Insight inventory is updated IMTRAC inventory is updated			
	Lessons Learnt Review Construction stage KPIs and cost outcomes			
	Benefits realisation Undertake monitoring in accordance with business case requirements and reassess outcomes in terms of Economic Case requirements. Submit SEMLEP monitoring information.			

			No. of Risks
Project Name:	Bedford Town Centre Strategy		
Project No:	Transporting Bedford 2020 PMO 040	Red (Critical)	3
Project Manager:	Brian Hayward	Amber (Intermediate)	15
Project Team :	Melanie McLeod / Brian Hayward	Green (Minor)	80
Date:	13/03/2019	Closed	22
Revision:	P		120

BEDFORD BOROUGH COUNCIL

RISK IDENTIFICATION & MITIGATION					RISK ASSESSMENT - RESIDUAL RISK			ACTION PLAN - RESIDUAL RISK		
Ref	Category	Risk	Potential Impact	Completed Mitigation Action (to date)	Probability	Impact	Risk Score/ Category	Action Plan	Next Action Target Date	Risk Status
General Risks applying to whole project										
1	Economic / Financial/ Management	Scheme costs - overrun	programme overrun beyond March 2021	Programme established taking into account road space constraints and sequencing of projects. Schemes with greatest engineering difficulty separated in programme to provide long lead in times; high value but more straightforward schemes programmed for end of project; BBC funding element allows flexibility. Manton Lane scheme works spilt into two phases to avoid clash with NR - Phase 2 not funded by LGF funds. Cost and programme review exercise carried out in Feb 2019. Base costs in line with original business case. First two pinch point schemes priced and contracts awarded. Feasibility work underway for other schemes as part of SCAPE.	1	3	3	Governance methodology for risk review and programme monitoring established to facilitate contingency planning. Early issues identified that are delaying programme.	30/06/19	OPEN
2	Stakeholder Management / Consultation	Network Rail works at Bromham Road delayed	Delays to programme	NR works underway with programme finalised. - Manton lane scheme split into two phases to avoid conflict. Opportunities for joint working on Bromham Rd scheme identified. Traffoic management arrangements for schemes at Manton lane and Britannia Road agreed	2	2	4	Continue discussions with Network Rail . Monitor during NR works period March 2019 - Feb 2020	30/06/19	OPEN
3	Economic / Financial/ Management	SEMLEP Annual funding of LGF allocation not received	Insufficient funds to deliver project	SEMLEP forward plan and funding profile established	1	2	2	Constant engagement with SEMLEP	30/06/19	OPEN
4	Construction	Long lead in times for permanent service diversions	Delays to programme	Programme established to allow timeframe for utility works in advance of main construction periods. Early Liaison with utility companies to ensure stats get diverted before construction. Utility equipment surveys carried out for first batch of schemes. Paige solutions employed to assist with process.	1	3	3	Using Paige solutions to assist in managing processes	01/11/19	OPEN
5	Construction	Unknown services struck during construction period	Increased scheme costs & delay to programme	Utility searches at pre design stage ; GPR survey undertaken to establish location of statutory undertakers equipment and unmarked services. Trial holes and CAT scans in advance of works, permit to dig for main works ;ensure trail holes carried out in advance of design stage. use of specialist company to survey and locate.	1	3	3	permit to dig system during works	30/06/19	OPEN
6	Environmental	Working restrictions due to environmental constraints	Delays to programme	Programme will consider seasonality the available number of hours for different works locations and phases and ensure programme allowance is sufficient. Ensure compliance requirements are included in tender documents	1	3	3	Tender documentation to include mitigation measures on - for example - noise and dust.	30/06/19	OPEN
7	Stakeholder Management / Consultation	Cowbridge - disruption to Interchange Retail park access during works	Disruption to local economy; Delays to programme, negative impact upon reputation and poor perception of overall improvements.	IRP identified as a key stakeholders and will be involved in key planning discussions	3	1	3	Direct engagement from PM prior to construction period	30/06/19	OPEN
8	Stakeholder Management / Consultation	Engagement with Network Rail for Cowbridge Scheme	Delays to programme	Feasibility design identifies requirements. Infrastructure works scheduled at end of overall programme to provide sufficient headroom for NR engagement. BAPA issued.	1	3	3	Detailed design and engagement with NR commenced - BAPA agreement signed.	30/06/19	OPEN
9	Environmental	Programme delayed due to inclement weather	Delays to programme	Initial programme includes extra time allowance for schemes being constructed in winter periods	2	2	4	Review programme, use forecast data from winter service activities to identify potential issues, move schemes off critical path if opportunity allows.	30/06/19	OPEN
10	Stakeholder Management / Consultation	Stakeholder engagement on public realm schemes delayed	Lack of engagement with scheme intentions or deliverables	Project plan in development; communication strategy and stakeholder engagement identified as early activities. SMP part of business case	1	2	2	Stakeholder meeting on design proposals commence March 19	30/06/19	OPEN
11	Construction	Adverse ground conditions in High St and/or contamination delays completion of works.	Increased Costs and delays to programme	Ground radar surveys will be commissioned. The current cost estimate makes allowances for risk associated with unforeseen ground conditions.	2	2	4	Surveys to be carried out Feb 19	30/06/19	OPEN
12	Construction	Long lead in times for permanent service diversions	Delays to programme	Programme established to allow timeframe for utility works in advance of main construction periods. Early Liaison with utility companies to ensure stats get diverted before construction	1	3	3	Review C18 returns as part of design process. Page solutions employed to assist	30/06/19	OPEN
13	Construction	Unknown services struck during construction period	Increased scheme costs & delay to programme	Utility searches at pre design stage ; GPR survey undertaken to establish location of statutory undertakers equipment and unmarked services. Trial holes and CAT scans in advance of works, permit to dig for main works	1	3	3	Specialist company to survey and locate Feb 19	30/06/19	OPEN
14	Stakeholder Management / Consultation	Technology elements - Stakeholder engagement not defined	Lack of engagement with scheme intentions or deliverables	Project plan in development; communication strategy and stakeholder engagement identified as early activities.	2	2	4	Stakeholder Management plan programme established as part of business case to be monitored	30/06/19	OPEN
15	Design / Technical / Preparatory	Cowbridge - road restraint on bridge is substandard and needs upgrading	Increased scheme costs & delay to programme	Asset inventory reviewed and site assessment carried out	1	3	3	a full assessment of the existing parapets at the bridge and approach road restraint to be completed early 2019 being carried out by Balfour Beatty as part of site investigation works.	30/06/19	OPEN
16	Environmental	Programme delayed due to inclement weather	Delays to programme	Initial programme includes extra time allowance for schemes being constructed in winter periods	2	2	4	Review programme, use forecast data from winter service activities to identify potential issues, move schemes off critical path if opportunity allows. Latest programme confirms works on Manton Lane & Britannia Rd in Spring /Summer 19 - including overnight works	30/06/19	OPEN
17	Economic / Financial/ Management	BBC funding not in accordance with SEMLEP requirements	Insufficient funds to deliver project	BBC MTFS approved Sept 2017. CIL 123 funding to be allocated	0	0		BBC business case approved by corporate asset working group, Exec approval of Capital Programme 24 Jan. S151 undertaking to be provided to SEMLEP board		CLOSED
18	Economic / Financial/ Management	BBC is not able to commit enough senior management resource to the project	Poor project governance or delays to implementation programme	A Project Management Board has been formed to meet throughout the project with attendance from all of the senior BBC staff. Corporate PMO processes being used. Board is supported by Steering group comprising Chief Officers and PM.	0	0		BBC project Board established; Design team established, mechanism for external support established.		CLOSED
19	Economic / Financial/ Management	Changes to inflation assumptions (potentially as a result of lack of contractor capacity)	Insufficient funds to deliver project	Inflation allowance built into cost base - An allowance for inflation has been applied to adjust the costs from September 2017 prices to 2018 prices of @ 1.5% (£221,155) - procurement method uses existing frameworks where possible, relatively short duration of overall programme in terms of inflation risk	1	1	1	. Review as part of design process	30/06/19	OPEN
20	Economic / Financial/ Management	Funding approval delayed by SEMLEP Board	programme start delayed - insufficient time to complete early design & stakeholder engagement	BBC funding in place to fund project manager . Board decision in principle given in November 2017, further update to SEMLEP Task Group and Board in Feb 2018.	0	0		final approval for 2018/19 in July 2018.		CLOSED
21	Economic / Financial/ Management	Funding approval 2019/20 delayed by SEMLEP Board	programme start delayed - insufficient time to complete early design & stakeholder engagement	BBC funding in place to fund project manager . Process for annual review agreed with SEMLEP	0	1		Timetable for resubmission of business case agreed.		CLOSED
22	Economic / Financial/ Management	HIF Procurement	Procurement of major HIF works at same as TB2020 procurement could result in some contractors declining to bid for works on either project.	TB2020 procurement centred upon existing contract frameworks with minimal spot tendering. Difference in value of works elements is likely to mean that there is little crossover in contractors bidding for work on both schemes	1	1	1	HIF timetable established - Bid to be submitted March 2019	30/06/19	OPEN

Project Name:	Bedford Town Centre Strategy		No. of Risks
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BEDFORD BOROUGH COUNCIL

RISK IDENTIFICATION & MITIGATION					RISK ASSESSMENT - RESIDUAL RISK			ACTION PLAN - RESIDUAL RISK		
Ref	Category	Risk	Potential Impact	Completed Mitigation Action (to date)	Probability	Impact	Risk Score/ Category	Action Plan	Next Action Target Date	Risk Status
23	Economic / Financial/ Management	HIF Design resource	A successful HIF bid may overstretch in house design resources leading to delay.	In year forward plan developed by engineering Services team to allocate resources to various projects. SYSTRA support for HIF bid in place and funded	1	1	1	Monitor development of HIF bid and use agency staff if required .	30/06/19	OPEN
24	Economic / Financial/ Management	HIF contractor availability	Delivery of major HIF works at same time as TB2020 procurement could result in some sub contractors being unable to contribute to both projects	HIF bid process established - potential clashes identified. TB2020 procurement review completed as part of business case resubmission.	1	2	2	Joint HIF /TB2020 Risk reviews in place.	30/06/19	OPEN
25	Economic / Financial/ Management	HIF Road space / Programme conflicts	Restrictions on road space availability due to conflicts over diversion routes	HIF period now extended so that works could take place after completion of TB2020	1	1	2	Close liaison with HIF team and streetworks to avoid conflict	30/06/19	OPEN
26	Economic / Financial/ Management	HIF Impacts upon TB202 scheme benefits	Delivery of HIF scheme reduces TB2020 benefits in eg reducing journey time	Preliminary HIF design is consistent with strategy employed by TB2020 (eg signalising junctions) HIF modelling work shows overall benefits meeting aims of TB2020	1	1	1	Evaluation and Monitoring plans to be reviewed and sensitivity test to be carried out if HIF bid progresses.	30/06/19	OPEN
27	Economic / Financial/ Management	Local authority contribution of is not forthcoming due to pressures on other budgets	Insufficient funds to deliver project at end of project timeframe	Members are aware that the LEP have prioritised the scheme which, subject to statutory consents being obtained and design / procurement, will be affordable and delivered within the approved funding envelope. There would be considerable reputational damage if BBC decided to abandon the scheme because of a change in short term funding priorities.	0	0		BBC business case sets funding requirements for duration of programme - report to be considered by Executive 24/1/18. Funding to be secured as part of CIL. Review risk after 2019 elections		CLOSED
28	Economic / Financial/ Management	NPIF bid announcement delayed	programme start delayed - pinch point scheme at Clapham Rd / Manton Lane unable to proceed	Bid for funding submitted - announcement expected Autumn 2017. Design for Clapham Rd pinch point scheme can proceed as 'reduced' scheme	0	0				CLOSED
29	Economic / Financial/ Management	Scheme costs - optimism bias	Scheme costs not properly identified due to optimism bias	Overall optimism bias of 44%. Detailed estimate to be completed as part of detailed design process 15% contingency to be provided in project cost. BBC funding to cover risk and contingency. Scheme estimates based on LoHAC rates. Key infrastructure elements to be procured through competitive tender or SCAPE. BBC funding to be reviewed and increased if costs base changes. Design team resource expanded to allow greater focus on cost elements.	1	2	2	Use of specialist resource to manage utility works. Comparison between business case costs and procured costs being monitored on a scheme by scheme basis with any significant differences to be reported to project board	30/06/19	OPEN
30	Stakeholder Management / Consultation	Coherent delivery with other town centre projects and programmes	Project will not be delivered on time, may also impact budget	All key programmes, such as the One Public Estate, have BBC involvement and so good communication across departments will ensure coherent delivery. Through partnership working with other organisations, including utilities companies and Network Rail, opportunities for synergies between Streetworks will be identified.	1	2	2	Project Governance Board to review programme as part of corporate project plan,	30/06/19	OPEN
31	Stakeholder Management / Consultation	Network Rail Works at Ford End Road delayed	Delays to programme	Works commence Oct 2017, continuing on schedule into March 2018 - programme of works established.	0	0		Works completed without delay		CLOSED
32	Stakeholder Management / Consultation	Project programming optimistic	Project will not be delivered on time, may also impact budget	NRSWA notices issued to reserve road space; design of early start elements underway; ECI to mobilise contractors. SMP established. SCAPE process being used including feasibility work - cost and programme review exercise carried out Feb 2019	1	2	2	Review Traffic Management; working hours; utility works at each detailed design stage and mobilisation stage	30/06/19	OPEN
33	Statutory / Legal	Legal agreement between BBC & SEMLEP not in place or delayed.	Financial transactions not binding or properly governed.	Early engagement with SEMLEP about form of agreement. BBC Finance and Legal teams have approved draft of legal agreement.	0	0		Funding agreement in place		CLOSED
34	Strategic / Political / Policy	Equality Impact Assessments not completed	BBC not acting in accordance with Public Sector requirements on Equal Opportunity Impact Assessments	EQIAs to be carried out on each Tranche as part of detailed design process.	1	1	1	Activities not on critical path of programme, allowance for slippage in delivery programme. Evidence base to be provided to SEMLEP to ensure BBC practices align with SEMLEP requirements	30/06/19	OPEN
35	Strategic / Political / Policy	Monitoring requirements not established or completed	Incorrect governance or ability to demonstrate fulfilling of objectives	Benefits quantified in business case. Requirements for SEMLEP quarterly monitoring understood	0	0		Monitoring and evaluation plan completed as part of business case. Quarterly monitoring reports being submitted		CLOSED
36	Strategic / Political / Policy	Political / Public objection to scheme preventing its progression	Delays to programme	Stakeholder Management Plan in place. Project details to be discussed by overview and scrutiny committee in November 2017. Traffic Regulation Order process allowed for in design element of programme. Comms plan shared with SEMLEP	1	1	1	Review of required TROs throughout stakeholder engagement and design steps.	30/06/19	OPEN
37	Design / Technical / Preparatory	Capacity to produce detailed design	Delays to design stages in programme	Resourcing requirements identified as part of project plan development ; specialist design resource secured through existing framework contracts. Additional resource in place Oct 18. Site supervision staff in place Jan 19.	0	2		Additional support available through agency or external consultants. Additional resource secured August 2018. Existing staff undergoing training in 3D design to improve in house capability		CLOSED
38	Procurement	Challenge from unsuccessful contractors following procurement process	Delays to programme	Diligent procurement procedure and involvement of procurement specialists in process.	1	1	1	ensure procurement methods follow corporate guidelines. SCAPE and TMT2 framework contracts being used.	30/06/19	OPEN
39	Procurement	Delays in awarding contract due to extended queries on tenders	Delays to programme	Allowance made in project plan for full review of tender documents and process	1	1	1	maximise tender periods for individual scheme packages, scape process well defined and allows stages for ECI	30/06/19	OPEN
40	Construction	Delays in construction programme resulting in increased contract administration requirements / costs.	Delays to programme	SCAPE process defined. Technology elements specified in contract documents.	0	1				CLOSED
41	Construction	Unknown major utility works during programme of scheme delivery	Disruption to programme	NRSWA notices issued. Streetworks team appraised of anticipated programme. Permits submitted for Manton Lane; Britannia Road. Surveys carried out. Paige solutions employed.	1	2	2	advance notices to be issued for Ampthill Road . Draft programme coordinates with all known risks	30/06/19	OPEN
42	Strategic / Political / Policy	Elections in 2019	Delays to programme caused by approvals needed within election period or delays in establishing project board post election	programme to identify constraints arising during election period	2	2	4	Review following elections	10/05/19	OPEN
43	Strategic / Political / Policy	Legislation changes	Changes in national legislation affect funding or reporting requirements	Constant engagement with SEMLEP and DfT to identify any potential issues	1	1	1	Constant engagement with SEMLEP - DfT guidance on self assessment makes reference to data / asset management implications will need to be taken into account on technology element of project	30/06/19	OPEN
44	Benefits, Monitoring and Evaluation	Limited resources for the Project Manager to monitor, track and report on the Scheme benefits post construction.	Failure to comply with SEMLEP requirements on monitoring	To use a simplified approach that accesses existing data for benefit measurement.PM to establish baselines for monitoring and make data available to Project Board - Quarterly monitoring reports to be submitted to SEMLEP signed by SRO	0	3				CLOSED
45	Benefits, Monitoring and Evaluation	Project scope variations are not aligned with the planned Scheme benefits, and the possibility of not aligning with strategic objectives.	Project does not deliver intended benefits	Business case and risk register used to inform design process - PM and Project Board responsibility to sign off individual elements	1	1	1	Review process in place for significant project scope variations ensuring alignment with Scheme benefits.	30/06/19	OPEN

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Date:	13/03/2019	Closed	22
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46	Benefits, Monitoring and Evaluation	The measurement data (for baseline measurement and ongoing measurement against targets) is limited.	Monitoring activities insufficient to demonstrate project achieves benefits	Detailed and robust monitoring plan sets out how/when/who/what details for various monitoring activities	1	2	2	Other sources for data have been identified and recorded in monitoring plan	30/06/19	OPEN
47	Benefits, Monitoring and Evaluation	The benefits proposed in the Business Case are not fully realised at the end of the Scheme due to available funding.	Project does not deliver intended benefits	Business case establishes targets (planned outcomes) based upon the funding commitment.	1	2	2	Monitoring of outputs to be carried out throughout the scheme - process established for monitoring outcomes after completion.	30/06/19	OPEN
48	Benefits, Monitoring and Evaluation	The benefits do not achieve their interim targets for realisation	Project does not deliver intended benefits	Benefits, monitoring, evaluation and contingency plan established	1	2	2	implement contingency plan	30/06/19	OPEN
49	Benefits, Monitoring and Evaluation	As technology changes/improves over the life of the Scheme, the data collection methods may change and become more accurate, thereby potentially skewing the results against the baseline data.	Unable to accurately demonstrate scheme benefits	Process for data collection established, using simple factual method of measurement wherever possible. Data collection methodology uses established and repeatable data sources.	1	1	1	review during annual / quarterly monitoring . Technology architecture finalised - includes data warehouse provision	30/06/19	OPEN
Infrastructure Theme										
101	Construction	Adverse ground conditions and/or contamination delays completion of works.	Increased Costs and delays to programme	As built drawings available from recent works at Cowbridge and Cauldwell St. Geotechnical surveys will be commissioned for high risk sites where information on previous site works is not available. The current cost estimate makes allowances for risk associated with unforeseen ground conditions.	1	2	2	GPR surveys being undertaken	30/06/19	OPEN
102	Construction	Disruption to public transport during the works and resulting reduction in patronage	Loss of reputation - increased congestion affects duration of works	Early discussion with stakeholders as part of SMP	1	1	1	Monitor as part of SMP, use RTI and performance indicator on bus punctuality information to assess	30/06/19	OPEN
103	Construction	Higher than expected traffic delays during construction leading to changes being required during works to TM arrangements	Loss of reputation - increased congestion affects duration of works	Advance planning with Streetworks team to agree TM proposals in relation to known traffic flows and any measures that can mitigate. SMP includes use of VMS signs to provide information on works.	1	1	1	Monitor delays using existing traffic journey time methodology; positive messages reinforced as part of SMP via social media and VMS	30/06/19	OPEN
104	Construction	Impacts during construction	Disruption to local economy; Delays to programme, negative impact upon reputation and poor perception of overall improvements.	SMP outlines process to engage with local businesses; PM to act as central point of contact.	2	1	2	Joint comms meetig arranged. Keep log of incidents / complaints and carry out positive engagement before during and after scheme delivery	30/06/19	OPEN
105	Construction	Manton Lane Rbt - Highways drainage of the existing roundabout may introduce a significant change to the highway drainage provision needing extensive works than currently foreseen	Increased scheme costs & delay to programme	Establish drainage survey of existing highways drainage that will enable this to be assessed	0	3		Drainage survey and design complete - no issues		CLOSED
106	Construction	Poor asset condition requiring increased remedial works as part of scheme eg drainage lighting, pavement	Increased costs of scheme elements and/or further maintenance works required	Utilise existing asset management inventory and condition data during design Establish asset condition through surveys and due diligence . Coordination with Asset Management team on 3 year programme.	1	2	2	Review need for additional BBC maintenance schemes in vicinity of works post scheme delivery - some works adjacent to Manton lane site have been completed prior to TB2020 works	30/06/19	OPEN
107	Construction	Road space / Traffic Management Act implications if utility works present	Delays to programme	programme considers the impact of known and necessary utility works . Road space requirements arising from programme logged with streetworks team; HAUC meetings to be included as part of SMP	1	2	2	Streetworks permit conditions to be reviewed	30/06/19	OPEN
108	Construction	Roadworks coordination - own works programme	Delays to programme	initial discussions with traffic manager; public transport operators; schools to take place having due regard to overall existing programme.	1	2	2	advance notices to be issued once funding agreed. Draft programme coordinates with all known risks. BBC own works programme to be fitted around this project.	30/06/19	OPEN
109	Construction	Tar bound materials in existing surfacing being planed out - treated as U2 material	Increased costs of scheme elements and/or further maintenance works required	Materials known at all sites apart from Manton Lane - Pre test carriageway material at sites where composition is unknown. Procedures in place via DMRB for the identification and disposal of material. Design to consider recycling where appropriate.	0	2		Manton Lane area trial pits completed. No tar bound materials found.		CLOSED
110	Construction	Use of sub standard material in construction resulting in earlier failure or remedial work.	Extension of scheme programme	Site supervision protocols will include material quality checks, contractors risk .	1	1	1	Site supervisor employed Jan 19	30/06/19	OPEN
111	Construction	Working restrictions as a result of the need to avoid disruption during peak periods	Delays to programme	Programme will consider seasonality the available number of hours for different works locations and phases and ensure programme allowance is sufficient. Ensure compliance requirements are included in tender documents	1	2	2	Clarify restrictions and timeframes during procurement	30/06/19	OPEN
112	Construction	Works taking place on local strategic road network - timing of works required to avoid key dates relating to Christmas / events etc.	Delays to programme	current programme of works avoids other disruptive works on network, works in this tranche phased to avoid conflict, early engagement with Streetworks team and roadworks info being provided as part of SMP	1	2	2	Clarify restrictions and timeframes during procurement	30/06/19	OPEN
113	Design	Land acquisition	Changes to scheme design	Legal documents exchanged.	0	3				CLOSED
114	Design	Planning approval required to implement schemes	Delays to programme	Works all deliverable within public highways boundary and under highways powers	1	2	2	No planning approvals needed for core works.	30/06/19	OPEN
115	Design	Statutory process (inc TTRO & TRO)	Delays to programme	Traffic regulation order processes carried out in house, timescales identified and contained within design stage /mobilisation stage	1	1	1	Full suite of TROs and TTROs to be overseen by PM / Design team.	30/06/19	OPEN
116	Design / Technical / Preparatory	Changes in design standards during scheme leading to rework/delays	Changes to scheme design	Regular review of any changes to standards. Local standards well established, potential requirements of NR design standards to be reviewed during discussions with NR Established mechanism for applying departures from standards.	1	2	2	Design team to follow DMRB and BBC Highways design guide	30/06/19	OPEN
117	Design / Technical / Preparatory	Changes to design after construction has commenced	Increased scheme costs & delay to programme	The detailed design for the contract tender documents will provide as much detail as possible on the site conditions and methods of construction; so as to avoid questions about "buildability" early contractor involvement in larger schemes	1	1	1	Sign of process as part of BBC PMO gateway requirements . BBC policies on HFS, Resurfacing, RSA & departures from standard are being reviewed during 2019. Design team are involved in process.	30/06/19	OPEN
118	Design / Technical / Preparatory	Cowbridge - the proposed widening may require strengthening of the bridge deck to adequately support the widened live loading	Increased scheme costs & delay to programme	Engagement with NR commenced - BAPA signed Sept 18		3				CLOSED

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119	Design / Technical / Preparatory	Design errors/ omissions that could lead to designs being revised and could cause delay	Delay in finalising design and costs	Established check / approval process for design	1	1	1	Sign of process as part of BBC PMO gateway requirements	30/06/19	OPEN
120	Design / Technical / Preparatory	Impact upon design due to locality of utility services	Delay in finalising design and costs	Utility searches & NRSWA C18 process early in programme; Identify precise location of services and agree constraints with utility companies at earliest opportunity - arrange for trail pits during design stage. Page solutions engaged to assist.	1	2	2	Sign of process as part of BBC PMO gateway requirements	30/06/19	OPEN
121	Design / Technical / Preparatory	Inaccuracy of base mapping and land boundary information compared to that used for outline design costs	delay to programme and additional survey / design costs	Topographical surveys have been completed. The current cost estimate makes allowances for risk associated design changes resulting from more accurate topographical information	0	2				CLOSED
122	Design / Technical / Preparatory	Incomplete or late delivery of outputs by design teams	Delay in finalising design and costs	Ongoing programme monitoring and checkpoint reports . Other resources available where hold ups occur.	1	1	1	weekly progress meetings to be held between design team and PM	30/06/19	OPEN
123	Design / Technical / Preparatory	Estimated scheme costs inaccurate	Cost overrun (pinch point schemes)	Detailed estimate to be completed based on site investigations, lessons learnt from previous works in vicinity. 15% contingency to be provided in project cost	1	2	2	Scheme estimates based on LoHAC rates. Key infrastructure elements to be procured through SCAPE contract. Cost differences to be reported to PB and contained within business case review. Now more robust information is available on actual contract rates a programme & cost review will be undertaken.	30/06/19	OPEN
124	Environmental	Ashburnham Road / Shakespeare Road - felling of trees causes public complaints	Delays to programme	Check requirements of TPO with Tree team, early issue for discussing as part of stakeholder management strategy	3	2	6	Engagement with local members and community groups - commensurate measures to remediate effects to be identified. No TPOs in place.	30/06/19	OPEN
125	Environmental	Programme delayed due to incident affecting Highways Network	Delays to programme	programme identifies critical path activities	1	2	2	Schemes to be moved off critical path if opportunity allows - if elements are significantly delayed then BBC funding to be made available for completion of project	30/06/19	OPEN
126	Environmental	Programme delays due to Japanese Knotweed	Delays to programme	Japanese Knotweed identified as present in Manton Lane Aug 2018	1	2	2	Knotweed to be removed as contaminated waste during main construction phase - programme allowance made	30/06/19	OPEN
126	Procurement	Procurement of works	project will not be delivered on time budget will not be spent	Maximum use of existing contractual arrangement and application of robust procurement framework. Procurement options already evaluated (existing contract; in house delivery or framework contract)	0	3		Forward plan agreed with BBC procurement - utilises existing framework contracts.		CLOSED
127	Stakeholder Management / Consultation	Cauldwell St Jctn - Bedford College and Bedford Free school access issues delay programme	Delays to programme	College & BFS identified as a key stakeholders and will be involved in key planning discussions	1	1	1	Direct engagement from PM prior to construction period	01/06/19	OPEN
128	Stakeholder Management / Consultation	Cauldwell St Jctn - OPE development leads to a change in design	Abortive works	Design to be 'future proofed' to allow retro fit of new road layout with minimal disruption	1	2	2	PM to liaise with OPE PM	01/06/19	OPEN
129	Stakeholder Management / Consultation	Cowbridge - site on diversion route for A421	incident on A421 during works period may delay works	Incident most likely to be of short duration - VMS signs to be placed in advance of site and A421 diversion route amended with agreement of HE	1	1	1	PM to liaise with HE	01/09/19	OPEN
130	Stakeholder Management / Consultation	Manton Lane -Bedford Modern School access issues delay programme	Disruption to local amenity; Delays to programme, negative impact upon reputation and poor perception of overall improvements.	BMS identified as a key stakeholder and will be involved in key planning discussions	2	1	2	Direct engagement from PM prior to construction period - Weekly meetings to be held with school during works period.	30/06/19	OPEN
131	Stakeholder Management / Consultation	Stakeholder engagement with Public Transport operators delayed	Lack of engagement with scheme intentions or deliverables	early engagement underway - meetings held with Stagecoach & planned for other operators.	1	2	2	PM to carry out & record consultations and liaise with design teams	30/06/19	OPEN
139	Benefits, Monitoring and Evaluation	Limited resources for the Project Manager to monitor, track and report on the Scheme benefits post construction.	Failure to comply with SEMLEP requirements on monitoring	PM established baselines for monitoring and make data available to Project Board - Monitoring and evaluation report submitted as part of business case	0	3		Quarterly monitoring reports to be submitted to SEMLEP signed by SRO		CLOSED
140	Benefits, Monitoring and Evaluation	Project scope variations are not aligned with the planned Scheme benefits, and the possibility of not aligning with strategic objectives.	Project does not deliver intended benefits	Business case and risk register used to inform design process - PM and Project Board responsibility to sign off individual elements	1	1	1	Review process in place for significant project scope variations ensuring alignment with Scheme benefits.	30/06/19	OPEN
141	Benefits, Monitoring and Evaluation	The measurement data (for baseline measurement and ongoing measurement against targets) is limited.	Monitoring activities insufficient to demonstrate project achieves benefits	Detailed and robust monitoring plan sets out how/when/who/what details for various monitoring activities. Other potential sources for measurement data will be investigated	1	2	2	Monitoring and evaluation timetable established. Quarterly monitoring reports to be submitted to SEMLEP	30/06/19	OPEN
142	Benefits, Monitoring and Evaluation	The benefits proposed in the Business Case are not fully realised at the end of the Scheme due to available funding.	Project does not deliver intended benefits	Business case establishes targets (planned outcomes) based upon the funding commitment.	1	2	2	Monitoring of outputs to be carried out throughout the scheme - process established for monitoring outcomes after completion.	30/06/19	OPEN
143	Benefits, Monitoring and Evaluation	The benefits do not achieve their interim targets for realisation	Project does not deliver intended benefits	Benefits, monitoring, evaluation and contingency plan established	1	2	2	implement contingency plan	31/6/19	OPEN
144	Benefits, Monitoring and Evaluation	As technology changes/improves over the life of the Scheme, the data collection methods may change and become more accurate, thereby potentially skewing the results against the baseline data.	Unable to accurately demonstrate scheme benefits	Process for data collection established, using simple factual method of measurement wherever possible. Data collection methodology uses established and repeatable data sources.	1	1	1	review during annual / quarterly monitoring	30/06/19	OPEN
Public Realm Theme										
201	Design	Planning constraints	Delays to programme	Works contained within public Highway and deliverable under Highways powers. Area around old bank owned by BBC but not highway - boundaries clearly established.	1	1	1	Coordination with Better High Streets bid for funding	30/06/19	OPEN
202	Design	Statutory process (inc TTRO & TRO)	Delays to programme	Traffic regulation order processes carried out in house, timescales identified and contained within design stage /mobilisation stage	1	1	1	Full suite of TROs and TTROs to be overseen by PM / Design team.	30/06/19	OPEN

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203	Design / Technical / Preparatory	Changes to design of High St / Public realm after construction has commenced		SMP to include details of street furniture and material specifications .Traffic modelling required as part of design stage to give assurance on requirements for signals/crossing points etc The detailed design for the contract tender documents will provide as much detail as possible on the site conditions and methods of construction; so as to avoid questions about "buildability" early contractor involvement in larger schemes	1	1	1	Sign of process as part of BBC PMO gateway requirements	30/06/19	OPEN
204	Design / Technical / Preparatory	Estimated scheme costs inaccurate	cost overrun (Public Realm)	Detailed estimate to be completed based on site investigations, lessons learnt from previous works in vicinity. 15% contingency to be provided in project cost. Pallete of materials agreed by PB August 18	1	2	2	Scheme estimates based on LoHAC rates. Key infrastructure elements to be procured through competitive tender SCAPE2 to secure best rates.	30/06/19	OPEN
205	Procurement	Contractors not interested in work on offer through framework agreements	Delays to programme	Project identified on EHA forward plan - early engagement of contractors. Discussions held with SCAPE framework providers.	2	1	2	Back up procurement options with existing contractors and /or in house delivery to be considered if necessary	30/06/19	OPEN
206	Procurement	Procurement of works	project will not be delivered on time budget will not be spent	Maximum use of existing contractual arrangement and application of robust procurement framework. Procurement options already evaluated (existing contract; in house delivery or framework contract). Provurement strategy reviewed Feb 2019	0	3				CLOSED
207	Stakeholder Management / Consultation	Stakeholder engagement with Public Transport operators delayed	Lack of engagement with scheme intentions or deliverables	Project plan in development; communication strategy and stakeholder engagement identified as early activities.	1	2	2	PM to carry out & record consultations and liaise with design teams	30/06/19	OPEN
208	Stakeholder Management / Consultation	Public realm schemes - Works extended due to requirement to facilitate access to shops	Delay to programme; Loss of reputation - increased congestion affects duration of works. Businesses may seek to claim rate rebate.	Programme allows facility for delivery periods - design to include buildability audit and early contractor engagement to tailor works.	1	2	2	establish sub teams to carry out stakeholder engagement. Harpur centre to be included in consultations.	30/06/19	OPEN
209	Construction	Disruption to public transport during the works at StPauls Square where there are a number of bus stops leading to a reduction in patronage	Loss of reputation - increased congestion affects duration of works	Early discussion with stakeholders as part of SMP - use knowledge gained from recent maintenance works in St Pauls to provide workable alternative arrangements for bus users	1	2	2	Ensure issues are picked up in SMP - make best use of comms prior to construction period	30/06/19	OPEN
210	Construction	Impacts during construction - disruption to local businesses	Delay to programme; Loss of reputation - increased congestion affects duration of works	Early discussion with stakeholders as part of SMP - use knowledge gained from recent Gas main renewal works to inform best working practices	1	2	2	Ensure issues are picked up in SMP - make best use of comms prior to construction period	30/06/19	OPEN
211	Construction	Noise pollution complaints raised during construction works affecting programme	Restrictions on working hours extend programme	Manton lane / Clapham Rd / Britannia Road - working hours restrictions established	1	2	2	working hours to be reviewed and specified in tender documents	30/06/19	OPEN
212	Construction	Poor asset condition requiring increased remedial works as part of scheme eg drainage lighting, pavement	Increased costs of scheme elements and/or further maintenance works required	Utilise existing asset management inventory and condition data during design Establish asset condition through surveys and due diligence	1	2	2	Review need for additional BBC maintenance schemes in vicinity of works post scheme delivery	30/06/19	OPEN
213	Construction	Roadworks coordination - own works programme	Delays to programme	initial discussions with traffic manager; public transport operators; schools to take place having due regard to overall existing programme.	1	2	2	advance notices to be issued once funding agreed. Draft programme coordinates with all known risks. BBC own works programme to be fitted around this project.	30/06/19	OPEN
214	Construction	Shortage of specialist materials or labour for works on public realm schemes	Delays to programme	Design to be completed well in advance of construction period allowing long lead in time for sourcing materials. Materials to be non specialist wherever possible Requirements to be clearly stated in procurement phase and additional cost risks to be borne by contractor. Pallette of materials agreed by PB.	2	1	2	Material specification to be included in contract documentation.	30/06/19	OPEN
215	Construction	Use of sub standard material in construction resulting in earlier failure or remedial work.	Extension of scheme programme	Site supervision protocols will include material quality checks, contractors risk .	1	1	1	Recruitment underway Sept 18 for clerk of works.	30/06/19	OPEN
216	Construction	Works impacted by river festival	Disruption to scheme programme	Current programme set out to avoid clashes	1	1	1	dates of river festival to be added as a constraint to scheme project plan	30/06/19	OPEN
Technology Theme										
301	Design / Technical / Preparatory	statutory process (inc TTRO & TRO) undefined for area wide delivery	Delays to programme	Traffic regulation order processes carried out in house, timescales identified and contained within design stage /mobilisation stage. Individual work areas to be viewed as self contained package with specialist delivery team	1	1	1	Full suite of TROs and TTROs to be overseen by PM / Design team.	30/06/19	OPEN
302	Design / Technical / Preparatory	Capacity to produce detailed design	Delays to programme	initial feasibility works completed. Framework contract in place with Keir to provide specialist design resource	1	2	2	Additional support available through agency or external consultants	30/06/19	OPEN
303	Design / Technical / Preparatory	CCTV / JTMS compatibility issues	Disruption to scheme programme	Cloud based system to be used with common UTMC protocols	1	1	1	Activities not on critical path of programme, allowance for slippage in delivery programme. Engage specialist to delivery UTMC and Technology elements. Ensure procurement and construction procedures are sufficiently robust to minimise likelihood of construction difficulties.	30/06/19	OPEN
304	Design / Technical / Preparatory	Impact upon design due to locality of utility services	Delay in finalising design and costs	Utility searches & NRSWA C18 process early in programme; Identify precise location of services and agree constraints with utility companies at earliest opportunity - arrange for trail pits during design stage.	1	1	1	Review on site by site basis	30/06/19	OPEN
305	Design / Technical / Preparatory	Remote Monitoring system compatibility issues	Disruption to scheme programme	Cloud based system to be used with common UTMC protocols	1	1	1	Activities not on critical path of programme, allowance for slippage in delivery programme. Engage specialist to delivery UTMC and Technology elements. Ensure procurement and construction procedures are sufficiently robust to minimise likelihood of construction difficulties.	30/06/19	OPEN
306	Design / Technical / Preparatory	Technology elements not properly defined or Changes to design after construction has commenced due to changes in technology	Change in scope and costs of technology tranche	UTC spec finalised, contract awarded. UTMC spec produced Dec 18	3	2	6	working with TSC to define scope and implementation. Opening Data bid to DfT successful. Scope of technology elements to be reviewed by internal group.	30/06/19	OPEN
307	Design / Technical / Preparatory	UTMC common database compatibility issues	Disruption to scheme programme	Cloud based system to be used with common UTMC protocols	1	1	1	Draft specification produced Dec 18	30/06/19	OPEN
308	Design / Technical / Preparatory	UTMC system design delayed due to specialist resource issues	Delay in finalising design and costs	initial feasibility works completed. Framework contract in place with Keir to provide specialist design resource	1	2	2	Draft specification produced Dec 18	30/06/19	OPEN

			No. of Risks
Project Name:	Bedford Town Centre Strategy		
Project No:	Transporting Bedford 2020 PMO 040	Red (Critical)	3
Project Manager:	Brian Hayward	Amber (Intermediate)	15
Project Team :	Melanie McLeod / Brian Hayward	Green (Minor)	80
Date:	13/03/2019	Closed	22
Revision:	P		120

BEDFORD BOROUGH COUNCIL

RISK IDENTIFICATION & MITIGATION					RISK ASSESSMENT - RESIDUAL RISK			ACTION PLAN - RESIDUAL RISK		
Ref	Category	Risk	Potential Impact	Completed Mitigation Action (to date)	Probability	Impact	Risk Score/ Category	Action Plan	Next Action Target Date	Risk Status
309	Design / Technical / Preparatory	UTMC system procurement undefined or nor deliverable as single package	Delays to programme	Industry market testing completed. Early activities with existing partners underway to refine scope. Gateway process to determine specifications, common protocols to be used to provide future proofing in fast changing sector	2	1	2	Draft specification produced Dec 18	30/06/19	OPEN
310	Design / Technical / Preparatory	Estimated scheme costs inaccurate	Cost overrun (Technology)	Detailed estimate to be completed based on site investigations, lessons learnt from previous works in vicinity. 15% contingency to be provided in project cost	1	2	2	Scheme estimates based on LoHAC rates. Key infrastructure elements to be procured through TMT2	30/06/19	OPEN
311	Procurement	Procurement of Signing & information systems	Disruption to scheme programme	TMT framework being utilised	1	1	1	Monitor with procurement	30/06/19	OPEN
312	Procurement	Procurement of works	Project will not be delivered on time budget will not be spent	TMT framework being utilised. Procurement review completed Feb 19	0	3				CLOSED
313	Design / Technical / Preparatory	ANPR enforcement systems not compatible with existing BBC systems	Disruption to scheme programme	BBC PMO procedure to provide high level corporate project visibility and direction. Existing system specifications to be used as basis for design	1	1	1	Sign of process as part of BBC PMO gateway requirements	30/06/19	OPEN
314	Design / Technical / Preparatory	Travel demand / SMART mobility aspects undefined	Delay in finalising design and costs	Industry market testing completed. Early activities with existing partners underway to refine scope.	3	2	6	working with TSC to define scope and implementation. Opening Data bid to DfT successful. Scope of technology elements to be reviewed by internal group.	30/06/19	OPEN
315	Design / Technical / Preparatory	UTMC Instation and Control Room not supported by internal IT or property	Delays to programme	Discussions held with ICT - cloud based systems to be used.	0	1				CLOSED
316	Construction	Roadworks coordination	programme of scheme	initial discussions with traffic manager; public transport operators; schools.	1	2	2	advance notices to be issued once funding agreed. Draft programme coordinates with all known risks	30/06/19	OPEN
317	Construction	Traffic signals outstation upgrades delivery programme conflicts with other works	Delays to programme	initial discussions with traffic manager taken place having due regard to overall existing programme.	1	2	2	flexibility in order of delivery retained in project plan BBC own works programme to be fitted around this project.	30/06/19	OPEN