South Reading MRT (Phase 3 and 4)

Full Business Case

On behalf of **Reading Borough Council**

Reading Borough Council
Working better with you

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Contents

Figures

Tables

Appendices

1 Introduction

1.1.1 This document has been produced in support of a bid for funding made to the Thames Valley Berkshire Local Enterprise Partnership for Phase 3 and 4 of a Mass Rapid Transit (MRT) scheme to the south of Reading. This report provides the Full Business Case for the South Reading MRT Phases 3 and 4.

1.1.2 The scheme will provide a series of new and improved bus priority measures on the A33. It will link central Reading to existing / proposed residential and employment areas to the south of Reading including Green Park and the Mereoak Park and Ride facility. Phase 1 and 2 of the scheme runs between the A33 junctions with Longwater Avenue (Green Park) and Island Road. Phase 1 is complete and phase 2 is currently under construction.

1.1.3 Phases 3 and 4 are a continuation of the Phases 1 and 2 schemes to the north of Longwater Avenue on the A33 towards Reading town centre along with complementary bus priority measures on London Street. MOVA will also be implemented on the approach and intermediate junctions between the bus priority lanes at; Bennet Road gyratory; the A33/Island Road junction; Oracle roundabout, London Road/Kendrick Road junction, London Road/London Street junction and at the junction of the Inner Distributor Road (IDR)/London Street junction to optimise the signal operation to reduce delays for both buses and general traffic leading to more efficient use of available road space.

1.1.4 The purpose of the scheme is proposed to improve the attractiveness of travelling more sustainably, therefore reducing private car trips, easing forecast congestion and air quality along the existing highway network, particularly on the heavily congested A33 corridor. A greater use of bus/MRT services will enable a higher level of trips to be accommodated along the corridor to enable economic growth.

1.1.5 Decisions on transport investment are informed by evidence set out in a business case. The business case has been developed in line with Treasury's advice on evidence-based decision making set out in the Green Book and use its best practice five case model approach. This approach shows whether schemes:

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

1.1.6 The remainder of this document broadly follows that set out in the DfT's Business Case Guidance, 'The Transport Business Cases', DfT, December 2013.

1.1.7 PBA has undertaken work in support of the strategic and economic cases and this report details the work undertaken in support of these two elements and is set out as follows:

- Section 2 gives the background to the scheme and provides scheme details and the overall aims and objectives;
- Section 3 sets out how the scheme fits into the Strategic Context;
- Section 4 sets out the Economic Case for the scheme;

- Section 5 sets out the Financial Case;
- Section 6 sets out the Commercial Case; and
- Section 7 sets out the Management Case.

2 Background

2.1 Existing Situation

Population

2.1.1 The Office for National Statistics (ONS) publishes regular updates on the number of people living in local authority areas. The total population of Reading and Wokingham Boroughs are shown in Table 2-1**.** Reading saw population growth of 10.9% between 2007 and 2015, whilst Wokingham's population grew by 1.9%. Between 2007 and 2016, Reading's population grew by 11.6% while that of Wokingham grew by 2.9%.

Table 2-1: Population in Reading and Wokingham

	Reading	% change	Wokingham	% change
Jun-07	145,800	---	157,400	---
Jun-08	149,200	2.33%	159,700	1.46%
Jun-09	151,800	1.74%	161,900	1.38%
Jun-10	154,200	1.58%	163,200	0.80%
Jun-11	155,300	0.71%	154,900	-5.09%
Jun-12	157,100	1.16%	156,700	1.16%
Jun-13	159,200	1.34%	157,900	0.77%
Jun-14	160,800	1.01%	159,100	0.76%
Jun-15	161,700	0.56%	160,400	0.82%
Jun-16	162,700	0.62%	161,900	0.94%

Employment and Businesses

2.1.2 Table 2-2 shows the number of jobs in the three unitary authorities between the period of 2008 and 2015.

Table 2-2: Number of jobs in Reading and Wokingham

	Reading	% change	Wokingham	% change
Jun-08	109,000	---	76,000	---
Jun-09	100,000	-8.3%	75,000	-1.3%
Jun-10	101,000	1.0%	78,000	4.0%
Jun-11	105,000	4.0%	81,000	3.8%
Jun-12	108,000	2.9%	81,000	0.0%
Jun-13	109,000	0.9%	84,000	3.7%
Jun-14	113,000	3.7%	85,000	1.2%
Jun-15	117,000	3.5%	89,000	4.7%

2.1.3 Reading experienced a significant decline of 8.3% in the number of jobs between 2008 and 2009 as a result of the economic recession. Reading remains the unitary authority with the most jobs, with job numbers having increased since 2009. Wokingham has also seen increases in job numbers since 2009.

A33 Corridor

2.1.4 The A33 corridor is the main strategic route for vehicles travelling to and from Reading town centre to the south of Reading linking to major employment locations, major housing developments and M4 junction 11. The corridor is shown in Figure 2-1.

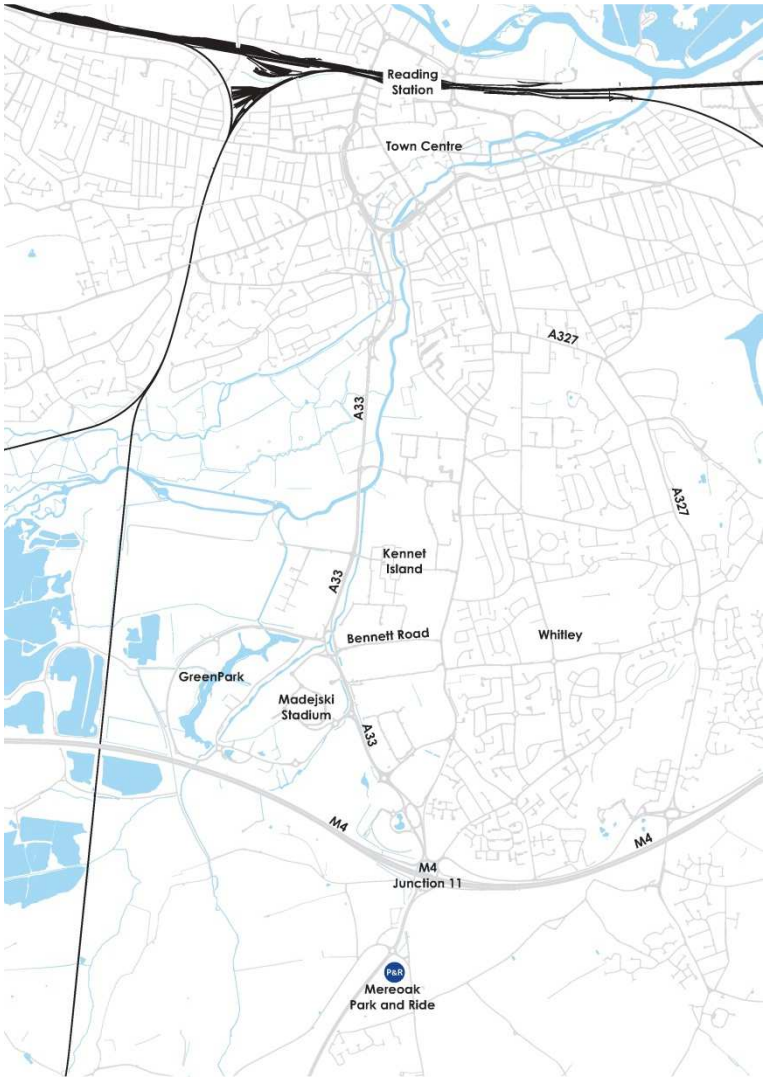

Figure 2-1: South Reading Highway Network

2.1.5 It carries high volumes of traffic between the M4/A33 and town centre providing access to over 50,000 town centre jobs. The route is also the main access for the major south Reading employment area of 10,000 jobs and 1,600 homes.

2.1.6 The A33 is busy throughout the day, but particularly during AM and PM peak periods when employees arrive and leave the business units and parks along the corridor and when there are high levels of traffic into Reading town centre. Figure 2-2 provides a comparison of daily traffic flows over the last 10 years. This shows that the corridor caries in the region of 45,000 vehicles per day and has increased from around 42,000 in 2007.

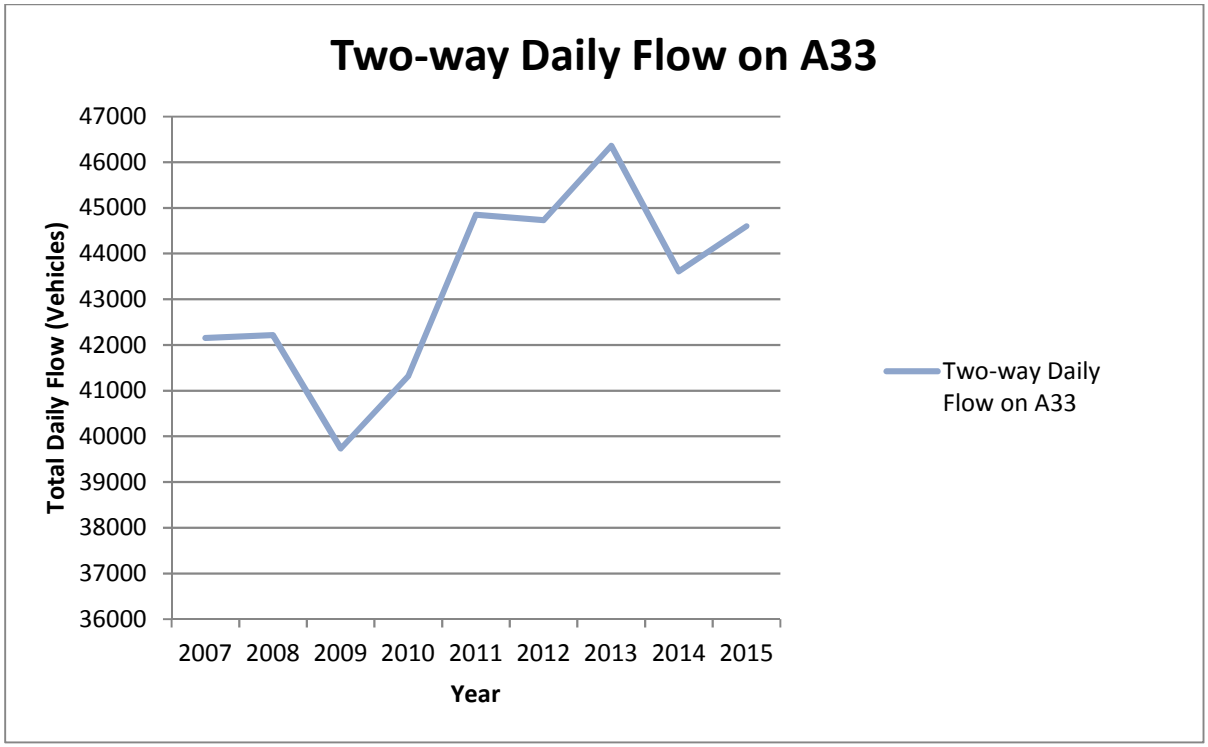

Figure 2-2: Two-way Vehicle Flow on A33 North of Imperial Way

2.1.7 Figure 2-3 shows the profile of the daily traffic flow for inbound and outbound vehicles. In the AM peak period (08:00–09:00), inbound flows are in the region of 2,700 vehicles. Traffic flow reduces between 09:00-16:00 then increases until 18:00 although not to the same levels as shown in the AM peak. The daily traffic flow profile for outbound vehicle trips mirrors that of the inbound traffic profile with the peak occurring in the PM peak period (17:00-18:00).

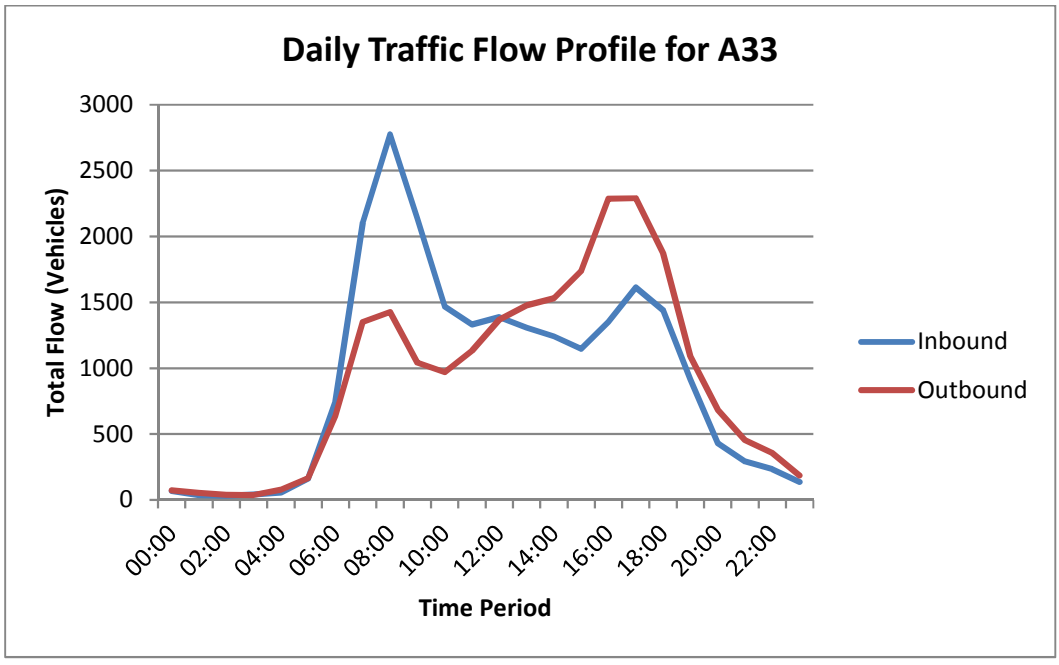

Figure 2-3: Daily Traffic Profile on A33 North of Imperial Way

2.2 Current Bus Services

2.2.1 Existing public transport services that will benefit from the improvements associated with the Phase 3 and 4 schemes include:

- 5: Central Reading – Northumberland Avenue
- 6/A: Central Reading – Whitley Wood
- 7: Central Reading – Aldershot
- 8: Central Reading – Farnborough
- 11: Central Reading – Coley Park
- 21/A: Central Reading – University of Reading – Lower Earley
- 40, 50/A: Central Reading – Kennet Island
- 51, 52: Central Reading –GreenPark- Madejski Stadium
- 53/A/B/X: Central Reading – GreenPark-Madejski Stadium
- 60/A/B/C/E/M/X: Central Reading – Reading International Business Park (RIBP)-Mereoak Park & Ride
- X3: Reading Station – Shinfield Park
- TadRed 1: Reading Station – Baughurst

2.2.2 Further detail of the services including the frequency by time period and operator are shown in Tables 2-3 to 2-7.

Table 2-3: Existing Public Transport Services Travelling Along A33 Basingstoke Road

Service No.	Route	Operator	Number of Buses/hour by Time Period		
			AM Peak (07:00-10:00)	Inter Peak (10:00-16:00)	PM Peak (16:00-19:00)
40 50 50A	Kennet Island – Central Reading	Reading Buses	4	3	2
	Central Reading – Kennet Island		0	3	5
51 52	Madejski Stadium – GreenPark-Central Reading	Reading Buses	0	0	9
	Central Reading – GreenPark-Madejski Stadium		0	0	2
53 53A 53B 53X	Madejski Stadium – GreenPark-Central Reading	Reading Buses	3	5	0
	Central Reading – GreenPark-Madejski Stadium		8	6	2
60 60A 60B 60C 60E 60M 60X	Mereoak P&R – RIBP-Central Reading	Reading Buses	5	6	5
	Central Reading – RIBP-Mereoak P&R		5	5	5
X3	Shinfield Park – Reading Station	Reading Buses	0	0	1
	Reading Station – Shinfield Park		1	0	0
Total	A33 NB		12	14	17
	A33 SB		13	14	14

Table 2-4: Existing Public Transport Services Travelling Along Basingstoke Road A327 Southampton Street

Service No.	Route	Operator	Number of Buses/hour by Time Period		
			AM Peak (07:00-10:00)	Inter Peak (10:00-16:00)	PM Peak (16:00-19:00)
5	Northumberland Avenue – Central Reading	Reading Buses	8	7	8
6 6A	Whitley Wood – Central Reading	Reading Buses	8	8	8
TR1	Baughurst – Reading Station	Mortons Travel	1	1	1

Table 2-5: Existing Public Transport Services Travelling Along A329 London Road Bus Lane

Service No.	Route	Operator	Number of Buses/hour by Time Period		
			AM Peak (07:00-10:00)	Inter Peak (10:00-16:00)	PM Peak (16:00-19:00)
7	Central Reading – Aldershot	Stagecoach	1	1	2
8	Central Reading - Farnborough	Stagecoach	1	0	0
21 21A	Central Reading – University of Reading – Lower Earley	Reading Buses	8	8	8

Table 2-6: Existing Public Transport Services Travelling Along A327 London Street

Service No.	Route	Operator	Number of Buses by Time Period/hour		
			AM Peak (07:00-10:00)	Inter Peak (10:00-16:00)	PM Peak (16:00-19:00)
5	Northumberland Avenue – Central Reading	Reading Buses	8	7	8
	Central Reading – Northumberland Avenue		8	7	8
6 6A	Whitley Wood – Central Reading	Reading Buses	8	8	8
	Central Reading – Whitley Wood		8	8	8
7	Aldershot – Central Reading	Stagecoach	2	1	1
	Central Reading – Aldershot		1	1	2
8	Farnborough – Central Reading	Stagecoach	0	0	2
	Central Reading - Farnborough		1	0	0
11	Coley Park – Central Reading	Reading Buses	3	3	3
	Central Reading – Coley Park		3	3	3
21 21A	Lower Earley – University of Reading – Central Reading	Reading Buses	8	8	8
	Central Reading – University of Reading – Lower Earley		8	8	8
TR1	Reading Station - Baughurst	Mortons Travel	1	1	1
Total	A327 London Street NB		29	27	30
	A327 London Street SB		30	28	30

Table 2-7: Existing Public Transport Services Travelling Along Bridge Street

Service No.	Route	Operator	Number of Buses by Time Period/hour		
			AM Peak (07:00-10:00)	Inter Peak (10:00-16:00)	PM Peak (16:00-19:00)
5	Northumberland Avenue – Central Reading	Reading Buses	8	7	8
6 6A	Whitley Wood – Central Reading	Reading Buses	8	8	8
11	Coley Park – Central Reading	Reading Buses	3	3	3
TR1	Baughurst – Reading Station	Mortons Travel	1	1	1

Future Growth

2.2.3 Reading Borough Council and the business parks along the A33 have made significant investment in expanding the bus services along the corridor, delivering high-quality, low noise and low emission bus services (approx. 600,000 trips per annum).

2.2.4 There is planned growth of some 7,500 jobs and 1,500 homes along the corridor, further three strategic development locations are planned south of the M4 junction 11 (2,500 homes), South Wokingham (2,500 homes) and North Wokingham (1,500 homes), which have policy requirements on the delivery of express bus or mass rapid transit services. Around 50% of the traffic on this corridor is forecast to be associated with planned development by 2026.

2.2.5 This scheme is a long-established element of Reading's strategy to deliver economic growth and housing and has been included in Reading's three Local Transport Plans and Core Strategy.

2.3 Scheme Proposals

2.3.1 Reading Borough Council is promoting the South Reading Mass Rapid Transit (SRMRT) scheme, which has been prioritised for funding from the Thames Valley Berkshire Local Enterprise Partnership (TVBLEP), through the devolved Local Growth Fund (LGF3). The SRMRT scheme has been the subject of several studies, both looking at wider transport options within Reading and the Thames Valley, as well as specifically looking at the southern (A33) corridor into Reading town centre from M4 junction 11.

2.3.1 The South Reading Mass Rapid Transit (MRT) Phases 3 and 4 will provide a series of bus priority measures on the A33 between Rose Kiln Lane and Bennet Road, for bus services operating between central Reading to existing / proposed residential and employment areas to the south of Reading including Green Park and the new Mereoak Park and Ride facility which was delivered in 2015. The scheme will improve the journey times and reliability of bus/MRT services on the main corridor into Reading, whilst reducing forecast congestion and air quality by attracting people to switch to bus travel. The scheme will thus expand on the existing Bus Priority facilities in the A33 Corridor, through the M4 junction 11, as well as SRMRT Phase 1 which is constructed and Phase 2 which is currently being constructed.

2.3.2 Phase 1 of the scheme runs between M4 junction 11 and A33 junction with Longwater Avenue (GreenPark), whilst Phase 2 runs between the A33 junctions with Longwater Avenue (GreenPark) and Island Road.

2.3.3 Phase 3 comprises a northbound 3.25metre minimum width bus lane on the A33, between Longwater Avenue/Bennet Road Gyratory and Island Road. The existing northbound parallel footway will be retained with a minimum width of 2 metres.

2.3.4 Phase 4 of the scheme, consists of a southbound bus lane of 3.25 metres minimum width on the A33 between Rose Kiln (Reading Link Retail Park) to Rose Kiln Lane (Brunel Retail Park). A further southbound bus lane of similar quality and dimensions, will be provided between Rose Kiln Lane (Brunel Retail Park) to Island Road to the south.

2.3.5 MOVA will also be implemented on the approach and intermediate junctions between the bus priority lanes at; Bennet Road gyratory; A33/Island Road junctions; the Oracle roundabout; London Road/Kendrick Road junction; London Road/London Street junction; and at the junction of the Inner Distributor Road (IDR)/London Street junction to optimise the signal operation to reduce delays for buses and will also benefit general traffic leading to more efficient use of available road space.

2.3.6 The indicative scheme location is shown in Figure 2-2.

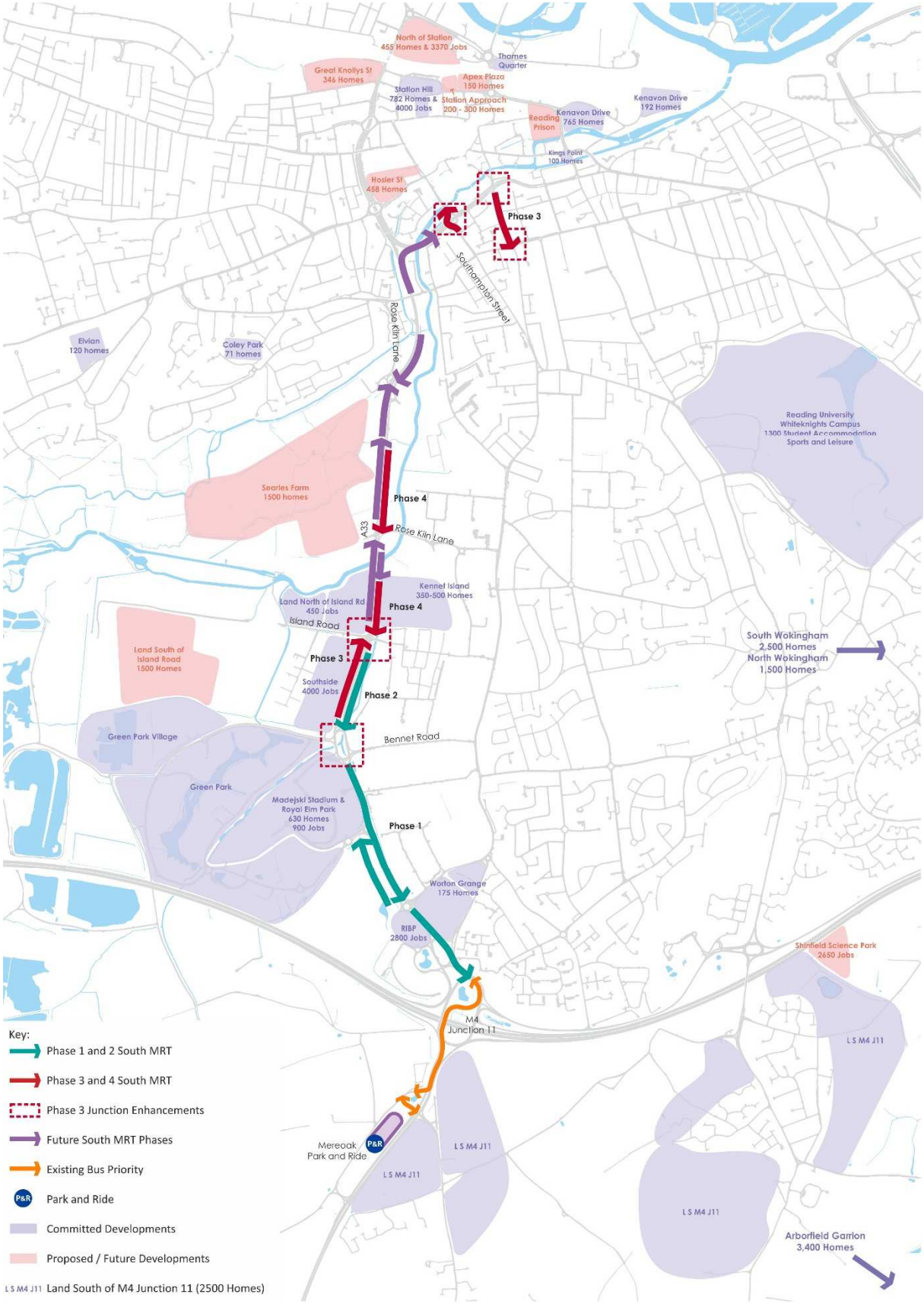

Figure 2-4 – Extent of SRMRT Phases 3 and 4

2.4 Aims and Objectives of Scheme

2.4.1 The aim of the scheme is to improve the connectivity of central Reading with the key employment and development sites along the A33 corridor on a sustainable basis. It will also provide a key north-south link to a future wider Thames Valley Berkshire MRT network.

The scheme is proposed to improve the attractiveness of travelling more sustainably, by reducing journey times and improving reliability of bus/MRT services. Attracting people to switch to bus travel will reduce private car trips, ease forecast congestion and air quality along the heavily congested A33 corridor. A greater use of bus/MRT services will enable a higher level of trips to be accommodated along the corridor to enable economic growth.

3 Strategic Case

3.1 Introduction

3.1.1 This section details how the planned SRMRT Phase 3 and 4 fits into the policy context with reference to national, regional and local policies.

3.2 Business Strategy

3.2.1 As well as providing a good strategic fit with current National Policy a Mass Rapid Transit scheme is included in the following current policies and plans:

- Thames Valley Berkshire LEP Strategic Economic Plan
- Revoked South East Plan, Transport Strategy
- Reading Borough Council's Core Strategy
- Reading Borough Council's Local Transport Plan
- Wokingham Borough Council's Core Strategy
- Wokingham Borough Council's Local Transport Plan

The delivery of a mass rapid transit scheme is also in line with the National Planning Policy Framework

National Planning Policy Framework

3.2.2 The development proposal accords with the Government's National Planning Policy Framework (NPPF), in that it promotes and supports sustainable development. The proposal also supports many of the main objectives of NPPF, for example: "proactively drives and supports sustainable economic development to deliver the homes, business and industrial units, infrastructure and thriving local places that the country needs; promotes mixed use developments, and encourage multiple benefits from the use of land in urban and rural areas, recognising that some open land can perform many functions (such as for wildlife, recreation, flood risk mitigation, carbon storage, or food production); and actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant development in locations which are or can be made sustainable".

Thames Valley Berkshire LEP Strategic Priorities

3.2.3 The LEP seek to *"ensure we have transport infrastructure for the 21st century"*

3.2.4 One of LEP's objectives is:

"to secure investment for Thames Valley Berkshire Strategic infrastructure from public or private sources that will cause barriers to growth in the four areas":

- Housing and Regeneration
- Transport
- Telecommunications

- Utilities

3.2.5 The delivery of SRMRT scheme has been prioritised within the TVB Implementation Plan to enhance urban connectivity.

Reading Borough Council Core Strategy

3.2.6 The adopted Reading Borough Council (RBC) Core Strategy identifies four distinct, but well-connected areas that present themselves as sustainable locations for future development. South West Reading, including the development of Green Park 3, to which the MRT will connect, is one of these areas (para 3.10).

3.2.7 The RBC Core Strategy also states:

"Although this corridor [A33 / South Reading] already has frequent park and ride services into and out of the centre, there are proposals to significantly upgrade the accessibility of this area through the introduction of a dedicated public transport route, new Park and Ride outside the boundaries of the Borough and a new Green Park rail station to the west of Green Park. In the longer term, there are options to upgrade and extend these services to provide a Mass Rapid Transit System (MRT) along a dedicated public transport route linking the southern employment area with the western residential areas, north of the Kennet Valley" (para 3.17).

3.2.8 Policy CS10 of the Core Strategy 'Location of Employment Development' highlights that

"Major office development will take place in the centre of Reading and along the A33 corridor." This focusses development on "a high accessibility corridor…... a new station at Green Park and proposed mass rapid transit links to the south" (para 5.8).

3.2.9 Policy CS21 'Major Transport Projects' states

"As a regional transport hub, priority will be given to the implementation of the priority transport projects identified in the Local Transport Plan, particularly the upgrading of Reading Station Interchange, Park and Ride Sites, Mass Rapid Transit, road improvements, Quality Bus Routes and associated transport improvements. Land needed for the implementation of priority transport projects will be safeguarded from development, to enable their future provision."

Reading Borough Council Local Transport Plan

3.2.10 Reading Borough Council's Local Transport Plan (2011 – 2026) provides the following detail with regards to their Transport Vision for Connecting Reading:

"Transport in Reading will better connect people to the places that they want to go: easily, swiftly, safely, sustainably and in comfort. We will meet the challenges of a dynamic, low-carbon future to promote prosperity for Reading. Whichever way you choose to travel, by foot or bicycle, motorcycle, bus, rail, car or boat whether to work or education, to leisure or the services you need, our transport system will help you get there."

3.2.11 The LTP provides a number of Area Action Plans (AAP's) for the different areas across the borough, with each of these supporting the implementation of MRT through 'Opportunities for Addressing Challenges'.

Southern AAP includes:

- *"the phased introduction of a mass rapid transit providing a fast and reliable connection to central Reading and key destinations"*

- *"To work with the private sector to ensure the delivery of Green Park Station and the integration of the multimodal transport interchange with other relevant transport schemes."*

- *"To work with the private sector to innovate and secure delivery of integrated transport choices associated with new development at Worton Grange, the Berkshire Brewery Site, land south of the M4 (Wokingham LDF) and land north of Manor Farm Road."*

3.2.12 The LTP notes that:

"An MRT system must be designed to meet a set of standards above and beyond a quality local bus. The long-term vision incorporates a network that expands the public transport offer rather than replacing existing networks, and it will be branded as such. The MRT network extends beyond Reading to offer public transport and interchange options to the wider travel to work area. The Park and Ride objectives and policies support the MRT and interchange options, aiming to reduce private transport mileage and improve journey times and air quality on some of Reading's busiest roads."

Wokingham Borough Core Strategy

3.2.13 High Quality express bus services or mass rapid transit along the A4 and A329 corridors are identified as an integral part of Wokingham Borough Council's Core Strategy.

3.2.14 It is highlighted that the proposals to improve accessibility by public transport along both the A33 and A327 should be consistent with the Mass Rapid Transit (MRT) scheme envisaged by Reading Borough.

3.2.15 SRMRT will help assist the planning obligations related to South Wokingham (2500 homes) and North Wokingham (1500 homes):

- "*Measures to improve accessibility by non-car transport modes along the A327 and A33 corridors*

- *High quality express bus services or mass rapid transit along A329 corridor"*

- *High quality express bus services between Green Park and Twyford stations via the Park and Rides in the vicinity of M4 junction 11 and Loddon Bridge and Winnersh Triangle railway stations*

- *Improvements to the quality and frequency of public transport services along any part of the network…High quality express bus services or mass rapid transit along A329 corridor*"

3.2.16 Unimplemented planning permission for around 19,000sqm of B Class floor space in Shinfield will also benefit from the improvements.

Wokingham Local Transport Plan

3.2.17 Policy PT8 Park & Ride: "*The council will promote the use of Park & Ride services and will support the future introduction of new sites in the borough where feasible. Over the life of this plan and the development of the adopted core strategy we will work with Reading Borough council and Bracknell Forest Councils to deliver and retain Park & Ride at the following locations:*

- *Near to Coppid Beech roundabout on the A329 in Wokingham*

- *Park and Ride in the vicinity of the M4 junction 11 (Mereoak)*

- *Relocation or retention of the Park & Ride at Winnersh*
- *Park & Ride located in Thames Valley Park to complement the high quality express bus services or mass rapid transit along the A4 or A329 corridors into central Reading."*

Policy SP1: Support for Major Infrastructure sets out that "*the Council will actively support development of suitable major transport projects that are necessary to support the future growth and success of the Borough. Major Strategic Public Transport, Walking and Cycling Infrastructure includes:*

- *"High quality express bus services or mass rapid transit along the A4 and A329 corridors*
- *High quality express bus services or mass rapid transit between Reading and Woodley town centres*
- *High quality express bus services between Green Park and Twyford stations via the Park & Rides in the vicinity of M4, J11 and Loddon Bridge and Winnersh Triangle Railway Station*
- *Measures to improve accessibility by non-car transport modes along routes to the stations at Green Park and Winnersh Triangle"*

3.2.18 This confirms WBC's aspirations high quality express services to Green Park via the Park & Ride facility.

3.3 Problems Identified and Drivers for Change

3.3.1 Reading is forecast to marginally outperform London to record the highest GVA growth of any UK city through to 2018, at 3.1% (Source: Rebalancing: UK region and city economic forecast. EY). Furthermore, businesses in the Thames Valley are reported to be planning to expand headcount with predictions of a rise to 64% this year (source: DBO's Barometer report).

3.3.2 These forecasts are not surprising when Reading is due to benefit from significant investment in the following strategic networks:

- *Crossrail, which is planned to start running in 2018 and is reported to be generating the most homes of all the new rail lines.*
- *The Western Rail Access to Heathrow (WRAtH) will provide direct access to Heathrow Airport from Reading and is planned to be completed in 2024.*
- *HS2, which should be completed in the next decade, will reduce journey times from London to Birmingham to 49 minutes, making it easier to commute from Britain's second city to the capital. London's rail commuter network will then encompass Brighton, in the south, Southend, in the east, Reading, in the west, and Birmingham, to the north.*
- *M4 Junctions 3-12: Smart Motorway.*

3.3.3 Figure 3-1 shows how the SRMRT connects to the strategic transport infrastructure.

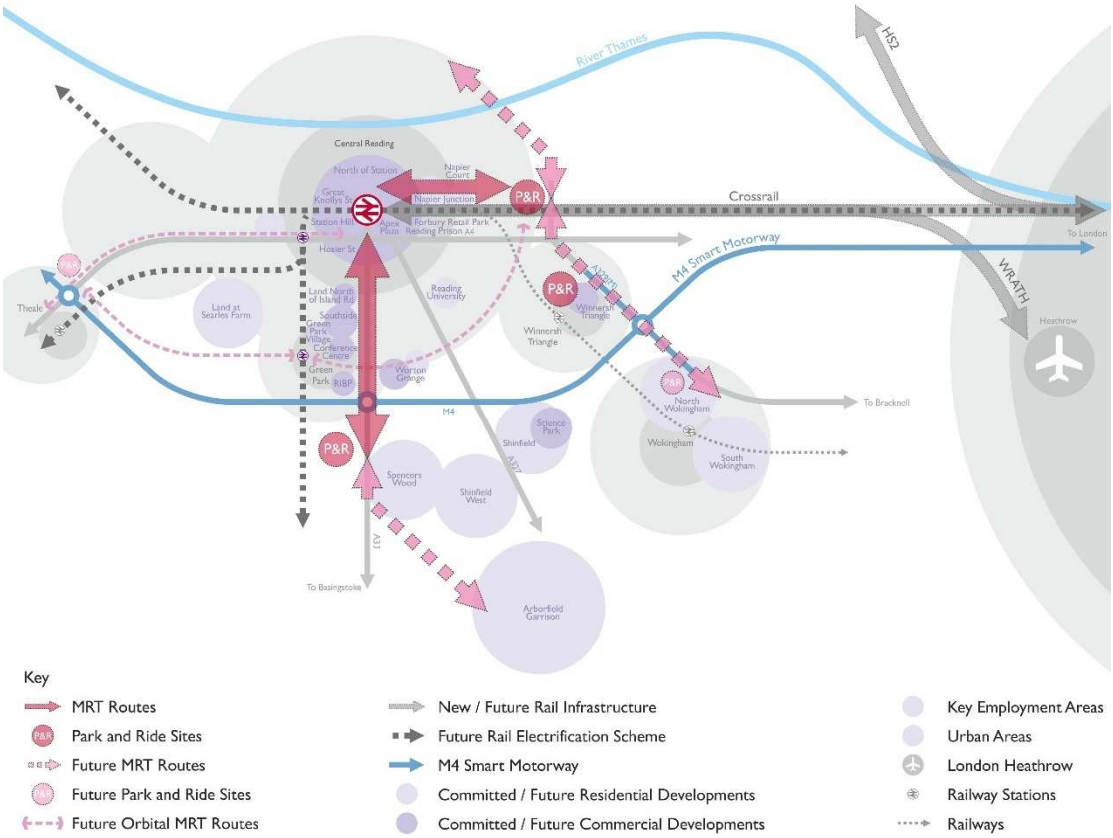

Figure 3-1: Local and Regional Development Connectivity

3.3.4 A growing town must be supported by good transport links, to provide urban connectivity and access to wider strategic networks. Reading's transport links are suffering from the highest levels of congestion outside of London (source: Department for Transport statistics, Table CGN0206b, September 2015) with limited public transport alternative that avoids the congestion. Reading Borough Council (RBC) has made significant headway in delivering its transport strategy (set out in the last three Local Transport Plans), which has been identified to support planned growth, but significant work is still needed. Junction 11 on the M4 has benefitted from capacity increases and bus priority. Reading Station has been improved to remove the rail bottleneck and facilities upgraded to support the capacity increases. Park and Ride sites have been delivered at Mereoak and Winnersh, with another planned at Thames Valley Park. Cycle routes have been delivered along London Road, Wokingham Road, A33, and across the River Thames via a new foot/cycle bridge. Pinch point schemes have relieved bottlenecks.

3.3.5 Even with many of these schemes implemented, Reading remains the most congested town/city outside of London, and yet, economic growth is faster than any other city, even London. A step-change is needed to provide connectivity, capacity upgrades and encourage sustainable travel to allow this potential economic growth to be achieved.

3.4 Impact of Not Changing

3.4.1 If nothing is done, congestion on the network would continue to increase and economic growth would be more constrained. In addition, there is a risk that existing businesses would consider relocating out of the GreenPark area and possibly elsewhere in Europe.

3.5 Choice of Scheme

3.5.1 The OAR sets out the process of scheme selection, which considers various routes and the use of various modes of transport. This option utilises available highway and third party land safeguarded for South MRT. It includes extended bus lane at Rose Kiln Lane junction (Brunel Retail Park) to deliver greater journey time savings for the bus services.

3.5.2 Other options are either not affordable and require significant third party land or will not deliver required journey time savings making them ineffective in meeting the objectives of the scheme. The low-cost option will not deliver the necessary capacity increases nor provide adequate journey time savings.

3.6 Objectives

3.6.1 The objectives of the SRMRT scheme have been developed based on an understanding of the current situation, future situation and the need for the intervention.

3.6.2 It is essential that the outcomes and outputs of the scheme align with the strategic objectives set out by the LEP in the Strategic Economic Plan (SEP).

3.6.3 Delivery of the scheme would substantially increase capacity and reduce congestion on the network, enabling additional journeys and reducing journey times to support economic growth.

3.6.4 A key objective of the SEP is to enhance urban connectivity; this is translated into one of the key themes within Package 2. This reflects the polycentric nature of Thames Valley Berkshire (TVB) and provides a stronger economic focus. This scheme will contribute to the functionality of Reading in connectivity terms, making key employment and development sites in central Reading and to the east more accessible on a sustainable basis. In addition, it provides a key north-south spine to a future wider Thames Valley Berkshire MRT network and enhanced access to/from south Reading and Wokingham/West Berkshire to Reading Station.

3.6.5 This project is part of Package 2 – Enhancing Urban Connectivity. It also contributes to Package 1 - Unlocking Housing Development and Package 3 – Encouraging Vibrant Town Centres.

3.6.6 To overcome the problems and issues within the scheme area, the following set of specific objectives have been established which are:

i. Provide a cost-effective solution to accommodate future travel demand on the A33 and Basingstoke Road corridors for local trips;

ii. Increase capacity for movement of people thereby reducing journey times and forecast congestion, as well as improving reliability of journeys along the corridor.

iii. Support economic development in Reading Town Centre, south Reading, Wokingham/West Berkshire and within the Thames Valley.

iv. Develop a high quality, sustainable system which visibly has priority over the private car.

v. Facilitate a future MRT network for the Thames Valley.

vi. Allow access for mobility impaired and pushchairs.

3.7 Measures for success

3.7.1 For each objective set out above, at least one 'indicator of success' has been established to determine what constitutes successful delivery of any transport-related improvements. Indicators and related targets are outlined in Table 3-1.

Table 3-1: Success Indicators

Indicator	Target	Relating to Objective
(1) Provide a high quality, safe, convenient and reliable alternative to the car and improve public perception of transport in Reading	Increase public transport modal split Increase public transport capacity Improve public transport reliability Improve public transport journey times Improve personal security Reduce casualty frequency and severity	(i)
(2) Alleviate the severe congestion on the A33 corridor by allowing better flow of traffic	Improve (or keep to neutral) car journey Times	(il)
(3) Stimulate development, Increase in jobs and resident population in south Reading and Wokingham/West Berkshire and the town centre	Number new jobs created Number homes built	(iii)

3.8 Scope

3.8.1 Phases 3 and 4 are a continuation of the Phases 1 and 2 schemes to the north of Longwater Avenue on the A33 towards Reading town centre along with complementary bus priority measures on London Street. MOVA will also be implemented on the approach and intermediate junctions between the bus priority lanes at; Bennet Road gyratory; the A33/Island Road junction; Oracle roundabout, London Road/Kendrick Road junction, London Road/London Street junction and at the junction of the Inner Distributor Road (IDR)/London Street junction to optimise the signal operation to reduce delays for both buses and general traffic leading to more efficient use of available road space.

3.8.2 The scheme is proposed to improve the attractiveness of travelling more sustainably, by reducing journey times and improving reliability of bus/MRT services. Attracting people to switch to bus travel will reduce private car trips, ease forecast congestion and air quality along the heavily congested A33 corridor. A greater use of bus/MRT services will enable a higher level of trips to be accommodated along the corridor to enable economic growth. The scheme was shown in Figure 2-4 and more detailed drawings are shown in Appendix A.

3.8.3 This southern section will form part of a longer term MRT network for the Thames Valley or operate as a standalone MRT route. Figure 3-3 shows how the scheme provides a critical link for a wider MRT network.

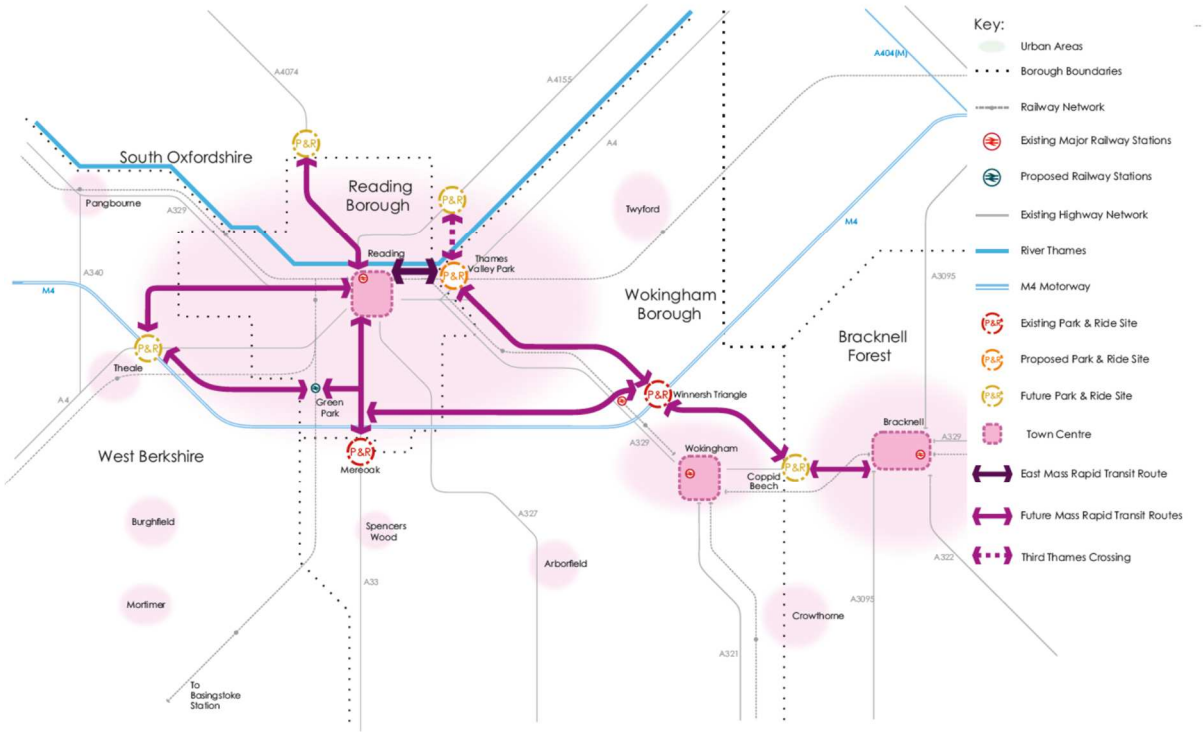

Figure 3-3: Wider Future Thames Valley MRT

3.9 Constraints

3.9.1 The design will be delivered within highway land or land owned by RBC, therefore there is limited constraint to delivery of the scheme.

3.10 Inter-dependencies

3.10.1 Delivery of the scheme is dependent on developer contributions; however, all the required funding is expected to be secured by legal agreements to enable the contributions come to fruition.

3.11 Stakeholders

3.11.1 The principles and elements of the scheme has been consulted upon via a public exhibition on 19th July 2016 and through the consultation of the Local Transport Plans and Core Strategy. The consultation considered the whole of the SRMRT scheme including Phase 3 and 4.

3.11.2 The **Local Enterprise Partnership (LEP)** is responsible for deciding which of the bid schemes receive funding and are therefore fundamental to the successful delivery of the scheme. To date the LEP Local Transport Board has approved the scheme for Programme Entry.

3.11.3 **Members of the public** have been consulted about the scheme where it affects those living in the local area.

3.11.4 **Bus operating companies** have been consulted on scheme design as it progressed**.**

3.12 Options

3.12.1 The OAR sets out clearly the process that has been undertaken to develop and sift options at various stages. The preferred option best meets the scheme objectives, as well as providing economic growth, value for money and practical feasibility. This scheme has the lowest impact on the environment compared to highest ranking options, particularly in relation to ecology, flood risk, visual impact, landscape impact.

4 Economic Case

PV Benefits (£m)	PV Costs (£m)	BCR	Value for Money Category
37.912	11,541	3.29	High

4.1 Introduction

4.1.1 The transport inputs that feed into the SRMRT Phase 3 and 4 scheme economics have been assessed using a validated SATURN Highway model and a spreadsheet based passenger demand model. The following modelling reports have been submitted to support the business case:

i. Reading Transport Model Local Model Validation Report

ii. Reading Transport Model Forecast Model Report

iii. Demand Model Report

4.1.2 Reports i) and ii) set out the development of the SATURN highway model and iii) describes the development of the spreadsheet demand model.

4.1.3 Economic benefits from public transport and highway users, including time saving benefits are calculated within TUBA for the majority of the benefits accrued. Some additional benefits from bus travel and cycle benefits have been included. The Economic Appraisal Report, submitted as part of the business case, includes detail of the benefits included, along with details of additional sensitivity tests undertaken.

4.1.4 The Economic Case set out in this section demonstrates that the proposed SRMRT Phase 3 and 4 offers high value for money and meets the scheme objectives. It presents the costs of delivering the scheme and quantifies, where possible, the key benefits that the scheme will deliver. It should be noted that some significant benefits, for example weekend usage, of the scheme cannot be readily quantified and so are not included in the economic case, but are nevertheless very real effects. These are likely to improve the value for money of the scheme.

4.2 Options Appraised

4.2.1 The South Reading Mass Rapid Transit (MRT) Phases 3 and 4 will provide a series of bus priority measures on the A33 between Rose Kiln Lane and Bennet Road, for bus services operating between central Reading to existing / proposed residential and employment areas to the south of Reading including GreenPark and the new Mereoak Park and Ride facility which was delivered in 2015. The scheme will improve the journey times and reliability of bus/MRT services on the main corridor into Reading, whilst reducing forecast congestion and air quality by attracting people to switch to bus travel. The scheme will thus expand on the existing Bus Priority facilities in the A33 Corridor, through the M4 junction 11, as well as SRMRT Phase 1 which is constructed and Phase 2 which is currently being constructed.

4.2.2 The OAR sets out the process that has been undertaken to develop and sift options at various stages. The preferred option best meets the scheme objectives, as well as providing economic growth, value for money and practical feasibility.

4.3 Appraisal Assumptions

4.3.1 In line with Government advice, the appraisal considers the economic case over 60 years of operation. The opening year of the scheme is 2021 and hence the horizon year is 2080. It has been assumed that the infrastructure measures of the scheme will continue to be in place over the whole of the 60-year appraisal period.

4.3.2 All costs and benefits for the purposes of economic appraisal are converted to 2010 prices and values to match DfT price base year.

4.3.3 The discount rate brings all future year values to a 'Present Value' (PV) in 2010. This is done by adjusting future year values, discounting them at 3.5% for the first 30 years of the scheme and 3.0% for the remaining 30 years. This is carried out to reflect the fact that benefits and costs today are valued more highly than those in future and are taken from WebTAG Databook Table 1.1.1 (DfT July 2017).

4.3.4 The demand calculated through the modelling exercise has been subject to an annualisation factor of 253 to represent the average number of weekdays likely to be used. At this stage, no demand has been calculated for weekend trips, therefore the overall scheme benefits may be underestimated.

4.3.5 Time savings have been converted to monetary values using values of time taken from WebTAG Databook (July 2017).

4.4 Calculation of Scheme Benefits

4.4.1 The Economic Case set out in this section looks to show that the proposed SRMRT Phases 3 and 4 will offer good value for money and will help to meet the scheme objectives.

4.4.2 The Economic Case set out in this section looks to show that the proposed SRMRT Phases 3 and 4 will offer good value for money and will help to meet the scheme objectives. Monetised benefits for the SRMRT Phase 3 and 4 scheme are assumed to include:

i. Additional revenue as a result of increased patronage of Mereoak Park and Ride site due to time savings introduced by scheme

ii. User benefits for existing Park and Ride users – equivalent to the journey time saving with scheme introduced

iii. User benefits for new users – assumed to have switched from car and hence have a saving in generalised cost equivalent to the generalised cost of previously travelling by car without the scheme and new generalised cost with the scheme

iv. User benefit for users of other buses using the SRMRT as a result of journey time savings when the scheme is introduced – these include services between the Reading town centre and Green Park.

v. Highway User Benefits or decongestion benefits – i.e. highway users who may experience benefits due to a reduction in traffic as a result of mode shift from car to Park and Ride or dis-benefit if the SRMRT were to reduce highway capacity, TUBA has been used to produce the bus user and revenue benefits and to calculate the overall economic appraisal including highway benefits.

4.4.3 The following benefits have not been quantified and therefore, the assessment is a conservative estimate of the benefits of the SRMRT Phase 3 and 4:

i. Benefits accrued from benefits for public transport users at weekends

ii. Bus journey time reliability – buses are likely to be far more reliable when the scheme is developed. This is due to services avoiding the main pinch points on the A33 corridor

iii. Additional Non-User Benefits or marginal external costs arising from a reduction in highway trips, which are likely to be relatively small in the case of this scheme. These include;

- Accident benefits;
- Noise; and
- Air Quality;

iv. No increase assumed in the use of bus services from rail (boarding and alighting at Reading Station) to GreenPark, as a result of improved reliability and journey times of the buses, as well as growth in rail use. Any increase in demand from Crossrail has not been considered

v. Event days at Madejski Stadium and/or the committed International Conference Centre.

4.4.4 A logit model has been used to determine the likely patronage of the park & ride with MRT Phase 3 and 4 in place as well as the patronage of bus services in the corridor that would benefit from the scheme. Details of the modelling procedures are provided within the Demand Model Report, which is a spreadsheet based model. The model takes inputs from the RTM SATURN model, details of which are provided within the RTM LMVR and Forecast Reports.

4.5 Scheme Costs

4.5.1 Capital costs for the implementation of the scheme have been calculated at £13.726m in 2010 values and prices. It is assumed that £2.469m at 2010 prices or about 20% will come from developer funding, giving a PVC of £11.503m at 2010 prices. Developer funding is a cost to the private sector and therefore appears as a disbenefit under other business impacts for the purpose of the economic appraisal.

4.5.2 The scheme costs have been subject to a 15% optimism bias that is appropriate for the business case stage and is also consistent with the understanding of risks as informed by the quantified risk assessment (QRA).

4.6 Outputs

4.6.1 Total Present Value of Benefits (PVB) over the 60-year appraisal period have been estimated to be £37.912m.

4.6.2 The calculation of benefits has been compared with the scheme costs over a 60-year appraisal period and results in a **BCR of 3.30** for the SRMRT Phases 3 and 4 schemes, and includes estimates of journey time savings, vehicle operating costs and increase in revenue. Reliability, noise, wider economic benefits, journey ambience and estimates of weekend Saturday public transport benefits and social inclusion benefits are not included. This demonstrates that the scheme would provide 'high value for money'.

5 Financial Case

Overall Cost of Scheme (£m)	LTB Contribution	Local Contribution	Contingent Liabilities
12.7	10.1	2.5	2.7

5.1 Introduction

5.1.1 The SRMRT Phase 3 and 4 proposed in this business case bid is considered affordable, financially sustainable and deliverable by RBC.

5.1.2 The costs, resulting spend profiles and all other financial aspects of the case will be controlled through a financial model that has been used for similar bids in the past.

5.2 Base Cost Estimates

5.2.1 A capital cost estimate for the scheme is shown in Table 5-1. All costs are given in 2016 Quarter 2 prices.

Table 5-1: Scheme Construction Costs – Phase 3 & 4 (2016 Quarter 2 Prices)

Item	Cost (£m)
Phase 3	4.962
Phase 4	7.722
Total	**12.684**

*

5.2.2 The scheme has been prioritised for LGF with additional funding provided from the private sector including through S106 obligations. Existing S106 funding is specifically committed to this scheme. In addition, there have been significant contributions from the local authority to progress the scheme to date, including scheme development costs.

5.3 Funding

5.3.1 The scheme will be funded through the LEP and developer contributions.

5.3.2 Table 5-2 sets out the funding for the scheme on the basis of the indicative funding profile. Under the funding mechanism, the LEP would provide 80% of the scheme funding with the private sector providing 20%.

Table 5-2: Scheme Funding (£m)

Source of funding	2017/18	2018/19	2019/20	Total
Amount from LEP/Local Growth Deal	1.748	5.300	3.100	10.148
Local contributions from:				
- Section 106 agreements/CIL agreements		1.268	1.268	2.536
- Council Capital Programme				
- Other sources	-	-	-	
Total Scheme Cost	**1.748**	**6.568**	**4.368**	**12.684**

5.4 Budgets and Funding Cover

5.4.1 RBC will secure private sector funding from the adjacent and surrounding planned and committed developments via the planning obligation mechanisms.

5.4.2 Planning permission for the scheme and funding approval from the TVBLEP is needed to provide private sector partners with further confidence to invest in the scheme and progress their development plans to trigger the obligations.

5.5 Financial Risks

5.5.1 A Quantified Risk Assessment has been developed to identify the range of cost risks that could impact on the project and suitable mitigation measures to measure them. This is attached as Appendix B. Detailed Scheme cost breakdown is given in Appendix C.

5.6 Accounting Implications

5.6.1 Accounting and budgeting will be in accordance with RBC's financial regulations and standing orders.

6 Commercial Case

6.1 Introduction

6.1.1 The commercial case provides evidence on the commercial viability of the proposal and the procurement strategy that will be used to engage the market. There are a number of procurement methods for the works. Different solutions may suit the scheme and the associated highway works.

6.1.2 Through the project governance structure outlined within the Management Case the Special Projects Vehicle (SPV) for the scheme works and the procurement delivery group (DG) for the highway works will report to the Steering Group (SG). The SG will be charged with delivery of the procurement strategy and associated elements of the risk management strategy (set out below and described in more detail in the management case). One important objective of this group will be to realise the benefits of integration of the works and streamlining processes where valuable and possible.

6.1.3 The procurement process for each package will consider a number of factors to enable best value solutions are robustly identified. In determining the best value solution and appropriate management of relevant risks identification of a procurement route would also need to consider the following factors:

i. Local procurement rules including approved supplier lists and any relevant established procurement mechanisms.

ii. European procurement rules.

iii. Relevant procurement guidance from the Cabinet Office.

iv. Relevant legislation.

v. Package / component scheme geography and the type of work, where applicable.

vi. Synergies / economies of scale in relation to other projects.

6.2 Output Based Specification

6.2.1 The commercial case is based on strategic outcomes and outputs, against which alternative procurement options are assessed. The outcomes which the procurement strategy must deliver are to:

i. Achieve reasonable surety that the scheme can be delivered within the any funding constraints;

ii. Minimising preparation costs through ensuring best value, and appropriate quality in relation to scheme design elements;

iii. Utilise contractor experience and input to the construction programme to enable the preparation of a robust and achievable implementation programme; and

iv. Obtain contractor input to risk management, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk.

6.3 Procurement Strategy

6.3.1 The scheme will be broken down into the two phases of construction, equivalent to phase 3 and 4. OJEU rules will apply to phases 3 and 4, as the construction costs of phase 3 or the combined phases are above the OJEU limits.

6.3.2 The scheme and associated works would be delivered either through a competitively tendering procedure or a competitively tendered local government framework available to RBC, by agreement of the Project Steering Group (SG) as discussed in Section 7.4. The relevant technical specifications and risk allocation approaches would be agreed by the SG. Note: If it is decided that phase 4 would be better tendered separately this would be tendered in compliance with RBC's local procurement rules.

6.4 Sourcing Options

6.4.1 RBC has a range of experienced resources to procure and deliver the SRMRT Phase 3 and 4 programme. This includes officers, legal advisors and supporting partner organisations such as framework consultants. The established resource pool is sufficient in terms of size and experience to effectively deliver the SRMRT Phase 3 and 4 programme.

6.5 Risk Allocation and Transfer

6.5.1 Solutions and services should be procured from contractors who are well placed to own the risks that are close to their businesses. The project sponsor will accept the ownership of those risks which it:

i. has good experience in managing,

ii. is best placed to mitigate the risk, and

iii. is the only entity capable of managing a particular issue?

6.5.2 This balance of risk allocation and transfer between Client and Contracting party will be achieved through selecting the right procurement routes and forms of contract and robustly setting out the intended risk allocation strategy as part of any tendering process. Where appropriate this would include the establishment of risk sharing agreements and/or Employers and Contractors risk registers. Suppliers maybe asked to price and own appropriate risks through the tendering process.

6.5.3 Reference should also be made to the Management Case which outlines the approach to risk management in more detail.

6.6 Contract Length

6.6.1 24 month contracts would be proposed to allow adequate time for detail design and construction. This includes potential for float within the contractor programme.

6.7 Human Resources Issues

6.7.1 No human resource issues have been identified.

6.8 Contract Management

6.8.1 The design and delivery of the scheme will be managed by RBC's Strategic Transport Projects Team. The council has access to a number of specialist consultants to provide additional engineering and transport planning support, if required. Developing the capacity to

actively manage continuous improvement, and to delivery efficiency savings will be a key element of contract management.

6.9 Payment Mechanisms

6.9.1 This section sets out the most likely payment mechanisms that will be negotiated with the providers/contractors. RBC has a wealth of experience of delivering infrastructure projects. Over the years the borough has negotiated payment mechanisms that are linked to performance.

6.9.2 Where practicable, payment mechanisms will be chosen to reflect the opportunities offered by integrated team working. Wherever possible steps will be taken to discourage the potential abuse of retentions within the supply chain such as;

- A tendered fixed price contract will be awarded based on the NEC 3 contract model, which allows for penalty clauses, specifically relating to over running.
- Payments to the contractor will be made in arrears to the value of 60% of the project subject to an independent clerk of works (appointed by the Council) agreeing with the submission made by the contractor.
- Payments made to the contractor will be subject to a further cross checking against the programme to ensure that the absolute minimum over run occurs, if any and if a penalty is due to be applied work with the contractor to rectify/remedy this.
- The final 40% will be paid in stages upon receiving invoices for completed elements of the work.

6.10 Pricing Framework and Charging Mechanisms

6.10.1 This section outlines likely incentives, deductions and performance targets. The delivery agent will have ultimate control of work on site.

6.10.2 Under NEC3, payment options are listed below and it is likely that one of these options will be taken forward

- Priced contract with activity schedule
- Priced contract with bill of quantities
- Target contract with activity schedule
- Target contract with bill of quantities

7 Management Case

7.1 Introduction

7.1.1 Established governance protocols for project delivery exist within RBC and operate effectively between the Berkshire Unitary Authorities and business partners through the Berkshire Strategic Transport Forum and TVBLEP Sections below reflect the basis of a live project management framework and plan as the project moves into its next stage of development. It should be noted that the arrangements proposed reflect tried and tested governance protocols used in the successful delivery of schemes.

7.1.2 RBC is the project sponsor with a number of parties involved the design, delivery and operation, including:

i. Project Sponsor, Highway and Planning Authority - RBC

ii. Landowner(s) /developers– land and funding

iii. Other private sector partners - funding

iv. BLTB - funding

v. Selected designers and contractors – highways

7.1.3 A Project Steering Group (SG) will be set up with representatives from RBC, bus operators, landowner(s) and Thames Valley Berkshire LEP. The SG will be the joint project board for SRMRT Phase 3 and 4, providing the strategic decision making and oversight necessary to successfully deliver the project.

7.1.4 The Senior Responsible Officer will be Cris Butler (RBC, Strategic Transportation Programme Manager). The project owner will be Chris Maddocks (RBC, Transport Planning Manager).

7.1.5 If necessary, escalated decisions from the Steering Group (for example significant spend approvals) would be dealt with by the respective organisations executive boards. For example, in the case of the Council this would be the Councils Policy Committee.

7.1.6 A project working group will be established to manage day to day project delivery. The assigned Project Manager would lead the working group which would be responsible for risk reviews, programme and deliverables, developing and implementing a procurement a stakeholder and communications strategy and monthly reporting to the Steering Group.

7.1.7 The BLTB operates a DfT-approved Assurance Framework which governs the release of project funds.

7.2 Evidence of Similar Schemes

7.2.1 RBC and its partners have experience of delivering a diverse range of public transport schemes from inception to delivery. A proven delivery track record therefore exists. RBC is a joint Client for the delivery of the £1bn Reading Station Rail Capacity and Performance upgrade currently under construction by Network Rail alongside DfT Rail. With Network Rail, DfT Rail and the train operator RBC sit on the Project Delivery Group, providing strategic direction and oversight to the delivery of this nationally significant project.

7.2.2 RBC has also completed the £68m M4 Junction 11 and Mereoak improvement scheme delivered on time and to budget (in partnership with Wokingham Borough Council). The £13.2m Reading Station interchange scheme is also complete and RBC has also delivered

the £35m Reading Urban Area Local Sustainable Transport Fund programme (with ten partner organisations including neighbouring authorities) and a number of Local Authority Pinch Point Schemes. RBC has now completed Phase 1 SRMRT and is now progressing the construction of the Phase 2 SRMRT scheme.

7.3 Programme and Project Dependencies

7.3.1 This project is part of the Infrastructure Package: Enhancing urban connectivity. It also contributes to Unlocking Housing Development and Encouraging Vibrant Town Centres.

7.4 Governance, Organisational, Structure and Roles

7.4.1 A project steering group (SG) will be established to coordinate works and monitor progress. The role of the steering group will be to adhere to and consider project manager and working group reports, update project risks and oversee and manage all key decisions on the programme.

7.4.2 The Sections below reflect the basis of a live project management framework and plan as the project moves into its next stage of development. It should be noted that the arrangements proposed reflect tried and tested governance protocols used in the successful delivery of schemes.

7.4.3 RBC is the project sponsor with several parties involved in the design, delivery and operation.

Cabinet

7.4.4 Reading Borough Councils Cabinet, which meets monthly, is also a senior level decision-making body to which key decisions are referred, if required. Significant spend approvals are examples of such decisions.

Strategic Environment, Planning and Transport Board

7.4.5 The Strategic Environment, Planning and Transport Board (SEPT) acts as the Project Executive for the scheme and receives a regular update report from the project Steering Group. It is responsible for considering the wider programme implications of Transport projects within Reading and cross boundary projects. It considers the impact and resource implications on the Authority and makes informed decisions based across the overall programme rather than scheme specific issues. This ensures that each project receives due consideration with broader decisions made in line with corporate goals and policies. This also ensures a consistent approach as key Members and Officers provide support and continuity.

7.4.6 The SEPT is a cross party, confidential councillor forum used to confirm officer decisions on high-level strategic policy. It will have no direct role in the day-to-day management of the project but will act as a reference point for maintaining high-level awareness of project progress.

Project Steering Group

7.4.7 The Steering Group (SG) is the Project Board for this scheme. Alison Bell (RBC, Director of Environment & Neighbourhood) chairs the Steering Group and is the Project Sponsor and Senior Responsible Officer in charge of the project. The Project Owner is Chris Maddocks (Transport Planning Manager). The group meets monthly to consider the Update Report from the Project Manager along with other reports as required. An updated risk register is considered each month within the Update Report. This group is responsible for managing all key decisions on the project, usually based on recommendations from working groups and individuals.

7.4.8 The role of the Steering Group is to:

i. Determine the parameters within which the project is delivered.

ii. Monitor and review the delivery of project objectives.

iii. Control project delivery by monitoring progress, quality, and costs.

iv. Enable communications and consultations to be effective.

v. Ensure that regular reports are presented to the Strategic Transport Programme Board.

vi. Promote the project within the Council.

7.4.9 The project Steering Group would be aligned with other project Steering Groups currently operating where the relevant people are present, to maximise efficiencies.

Local Economic Partnership Project Group

7.4.10 The Local Economic Partnership Project Group (LEP PG) is chaired by Cris Butler (RBC, Strategic Transportation Programme Manager). This group will manage different project components and interfaces on a day-to-day level. Interfaces will include those stakeholders referenced in Section B12. Delivery teams in turn are responsible for the technical delivery. Project design and delivery will be undertaken by framework consultants Peter Brett Associates.

Decision Making

7.4.11 Each decision is made at the appropriate level by the Project Sponsor, the Project Owner, and Project Manager, or is escalated to the Steering Group. As appropriate decisions with a strategic significance will be communicated to (and involve if necessary) the STPB. Where a formal decision is required in order to satisfy Standing Orders as part of the Council's Constitution, a report will be taken to Cabinet or Full Council as required.

7.5 Project Plan

7.5.1 A detailed project programme will be developed for the scheme and a project management manual will be produced and used as a live document by the team as one management tool. A high level project delivery programme is attached in Appendix C. The project plan envisages start of construction in May/June 2018, with completion in June/July 2020.

7.6 Assurances and Approvals Plan

7.6.1 Any funding awarded to this project from the Local Growth Fund (LGF) process will be managed by the LTB. The LTB operates a DFT- approved Assurance Framework which governs the release of project funds.

7.7 Communications and Stakeholder Management

7.7.1 As part of effective project management and risk mitigation strategy both a communication and stakeholder management plan would be prepared going forward. These would be live documents that establish key protocols and basic information in relation to:

(i) The communication with all relevant parties internal and external to the project components, including the media and

(ii) The role, involvement, communication, contact details and approvals associated with relevant stakeholders.

7.7.2 An appropriate stakeholder management plan will be developed and agreed through the project Steering Group. This will identify Stakeholder requirements, communication arrangements and key project and programme interfaces. Where appropriate, Stakeholder communications will be aligned with other projects and established forums. Contract documentation will carry forward any relevant Contractor interfaces into the implementation stage. A summary of Stakeholders, influences and interests is presented below:

i. Statutory Undertakers: Work will be undertaken in proximity to services and diversions of some services will be required. Project planning and working methods will require agreement through the New Roads and Street Works Act process coordinated with RBC's street works manager.

ii. RBC: Key partners in design development, planning and technical approvals will be required.

iii. Transport Operators: Bus and taxi operator interfaces will be through existing forums for other projects.

iv. Members / Public: Relevant Council Member interfaces will be important to project development and public communication and expectation management during construction. Through a number of communication interfaces, including relevant community and transport user forums advertising the works will be essential in managing related construction risks.

v. Emergency Services: Interests similar to transport operators.

vi. Business local to works: Interests similar to Members / Public.

vii. Any other statutory consultees e.g. Highways England

7.8 Project Reporting

7.8.1 Governance protocols will include appropriate progress reports to Local Authority Councillors and the appropriate LEP meetings.

7.9 Key Issues for Implementation

7.9.1 The implementation of work streams and key issues for implementation are included in Appendix D.

7.10 Contract Management

7.10.1 Monitoring during implementation will be undertaken by the RBC Senior Responsible Officer and will manage the delivery/implementation of the mitigation measures identified in the risk register.

7.10.2 The monitoring of activity during the construction will be embodied in a Construction Management Plan (CMP) to be prepared and operated by the scheme promoter (i.e. the planning authority) and adhered to by the contractor. Similarly, a site waste management plan would be prepared, in accordance with environmental regulations, to address requirements for waste handling and disposal, which would be adhered to during the construction phase.

7.10.3 Local authority environmental health officers' stipulations in respect of air, noise, operating hours and waste would also be incorporated into the contractor's monitoring procedures and plans as part of a construction code of practice.

7.11 Risk Management Strategy

7.11.1 A risk register will be maintained by the project manager throughout the project, and will form part of the project plan and early warning system to manage risks and implement mitigation. Each risk will be assigned an owner to allow the management actions to be identified and implemented. The project risk register will be made available to the Steering Group for review with key related issues and actions flagged.

7.12 Benefits Realisation Plan

7.12.1 The project working group will be responsible for the realisation of the benefits associated with the proposed improvements. The benefits realisation strategy (to be approved by the project Steering Group) is formed by the following components:

- The identification of tangible and intangible benefits arising from the improvements
- Establishing the baseline and measuring the benefits against the baseline
- A timeline identifying the relevant measurement and reporting points
- Reporting and governance structure associated with benefits realisation
- Post project review and evaluation

7.13 Monitoring and Evaluation

7.13.1 The purpose of the Monitoring and Evaluation Plan is to identify how scheme delivery, including wider scheme impacts, construction and budget management, will be evaluated.

7.13.2 The Monitoring and Evaluation Plan will include a Post – Implementation Review approximately one year after scheme opening and further assessment 5-years after opening.

7.13.3 Assessment of value for money of the project will be undertaken utilising the outcome information to inform an economic appraisal spreadsheet framed around the scheme appraisal undertaken for the business case submission. Key elements will include the following;

- Capital Costs – outcome from procurement of the scheme;
- Operating Costs – outcome from commercial agreement on the services;
- Demand / Revenue – derived from ticket sales data and surveys;
- New Users
- User Benefits – derived from the data collection / passenger surveys;
- Wider Economic benefits – informed from the analysis of sub-factors;
- Improved Labour Supply – evidence of increased commuter trips and take up of jobs.

7.13.4 The analysis will compare the outcomes with the business case assumptions to determine where the outcomes differ from expectations and the resultant impact on the value for money of the scheme.

7.13.5 Data requirements would include;

- Bus Patronage – to measure passenger numbers against predictions
- Interview surveys – to measure the level of mode shift – employer surveys at local businesses
- Traffic flows on local highway network to measure whether any change as a result of scheme – Automatic traffic counters on A33 and Basingstoke Road
- Journey times on key routes – RBC Bluetooth monitoring data
- Employment numbers – actual numbers will be monitored against numbers stated in business case
- Population numbers – from census or Office for National Statistics

7.14 Contingency

7.14.1 A programme and financial details are provided as part of this business case. This includes current funding arrangements. If the scheme implementation was to be delayed, the funding profile would need to be revised which may need updates to the business case submission. Any changes to the scheme programme and funding profile will be reported as soon as it is identified.

7.14.2 At this early stage, risks to contingency are works to utilities apparatus and unforeseen works to the proposed highway structures.

7.14.3 Subjective, but informed provision in contingency (£2.7m) has been made to include utilities diversion/protection works, unforeseen works to highway structures and/or higher costs construction methods.

7.15 Options

7.15.1 The scheme is currently being project managed by the Council's Strategy Team who are leading on the delivery of the business case and the options appraisal. As the project develops to final approval, contract management will be the responsibility to the delivery team, with continued overall project management remaining with the Strategy Team for continuity.

Appendix A Drawings

KEY

- FOOTWAY (2.0M MINIMUM)
- MRT LANE (3.25M MINIMUM)
- MRT PHASE 2 - ASSUMED TO BE COMPLETED

Mark	Revision	Date	Drawn	Chkd	Appd
A	MINOR AMENDMENTS	06.10.17	SF	DN	

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

FOR INFORMATION

SOUTH READING - MRT
PHASE 3
N.BOUND BETWEEN LONGWATER AVENUE AND ISLAND ROAD

Client

Reading Borough Council
Working better with you

Date of 1st Issue	Designed	Drawn
15/02/2016	GS	GS
A1 Scale	Checked	Approved
1:1000		-

Drawing Number: 28791/5510/012

Revision: A

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READING
Tel: 0118 950 0761

File Location: j:\28791 rbc bitb la scheme\02 south reading mrt\transport\drawings, gis, photos and video\cad\dwgs\28791-5510-012 - a.dwg

KEY

FOOTWAY (2.0M MINIMUM)

BUS LANE (3.25M MINIMUM)

Mark	Revision	Date	Drawn	Chkd	Appd
A	MINOR AMENDMENTS	06.10.17	SF	DN	

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

FOR INFORMATION

SOUTH READING - MRT
PHASE 3
COMPLEMENTARY BUS PRIORITY
SOUTHAMPTON ST / LONDON ST

Client: Reading Borough Council — Working better with you

Date of 1st Issue	Designed	Drawn
	GS	GS
A0 Scale	Checked	Approved
1:1000		-

Drawing Number: 28791/5510/013

Revision: A

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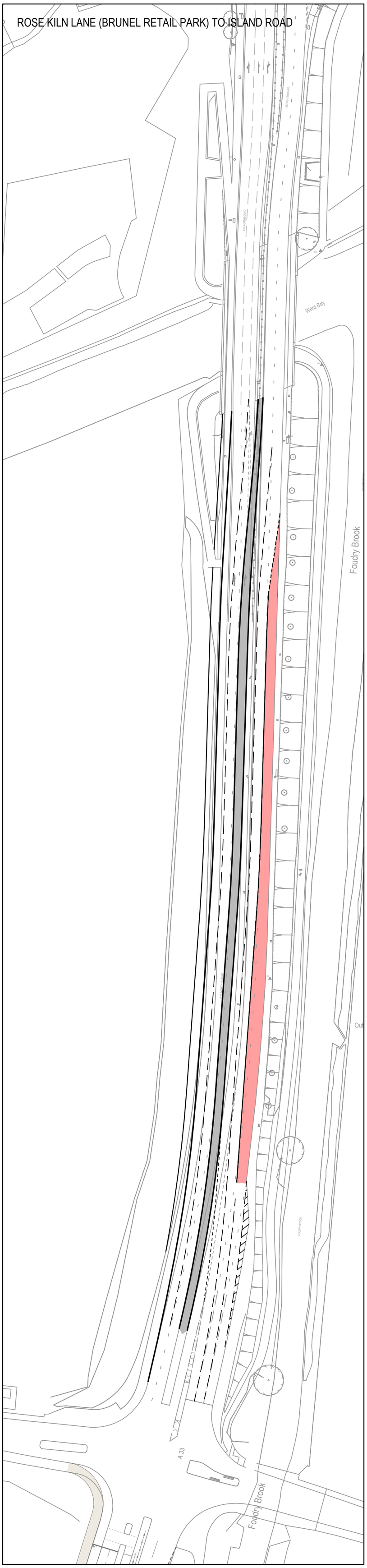
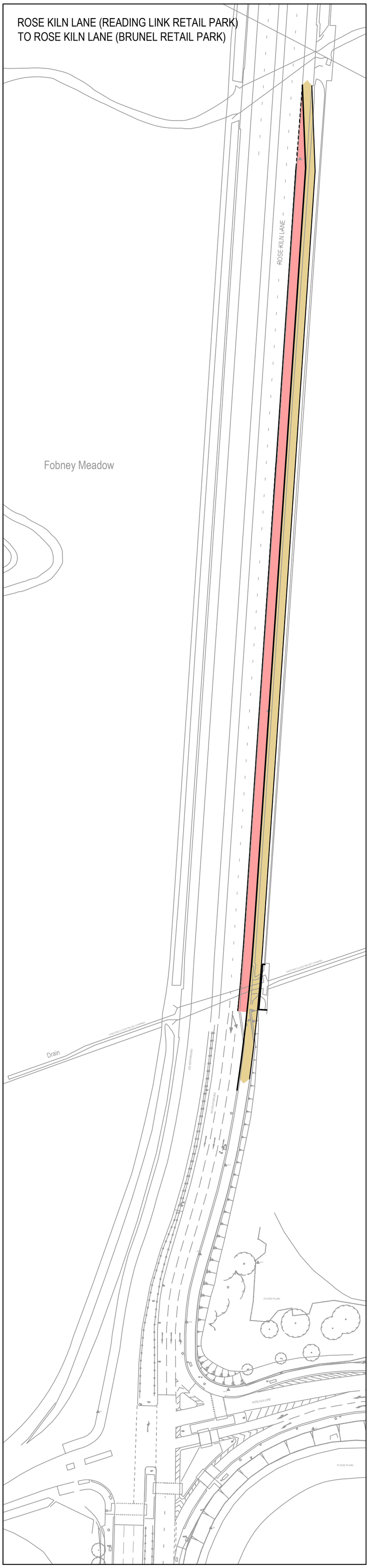
READING
Tel: 0118 950 0761

ROSE KILN LANE (BRUNEL RETAIL PARK) TO ISLAND ROAD



ROSE KILN LANE (READING LINK RETAIL PARK)
TO ROSE KILN LANE (BRUNEL RETAIL PARK)



KEY

FOOTWAY (2.0M MINIMUM)

MRT LANE (3.25M MINIMUM)

N

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.

UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

FOR INFORMATION

SOUTH READING - MRT
PHASE 4
S.BOUND BETWEEN READING LINK RETAIL PARK AND ISLAND ROAD

Client

Reading Borough Council
Working better with you

Date of 1st Issue	Designed	Drawn
15/02/2016	GS	GS
A2 Scale	Checked	Approved
1:1000		-

Drawing Number	Revision
28791/5510/014	-

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Appendix B Quantified Risk Assessment

South Reading Mass Rapid Transit Phase 3 (Town Centre) - Risk Register

Review Date:	15/06/2017	Prepared by:	LC
Checked by:	SE	Approved by:	SE

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
1.1	Stakeholder	Unknown requirements related to public rights of way, key constraints missed.	T, C	3	3	9	Agenda item for relevant stakeholders, PRoW officers etc	Designer / Local Authority	1	2	2	30,000	15%	£ 4,500
1.2	Stakeholder	Stakeholder and public consultation outcomes significantly affect project and options, with potential also to influence Client Reputation.	T, C	2	3	6	Consider Consultation / Community engagement strategy once options more defined (an also how information may need to be presented), including any potential need to engage with lobby groups, businesses and emergency services. Stakeholder and public consultation excercise will seek to inform and manage any objections.	Designer / Local Authority	1	3	3	35,000	15%	£ 5,250
1.3	Stakeholder	Objections from local residents/businesses during works phases.	T, C	2	3	6	Ensure local residents/businesses aware of scheme progress and early liaision is undertaken.	Designer / Local Authority	1	2	2	30,000	15%	£ 4,500
1.4	Stakeholder	Objections through the TRO process/Planning and Consultation Process (including the Environment Agency)	T, C	2	2	4	Outline work has progressed. The scheme is within highway or safeguarded land. The principle of MRT has been consulted upon through preparation of various policy documents. Detailed transport assessment work is planned. Early engagement with EA essential.	Designer / Local Authority	1	2	2	30,000	15%	£ 4,500
1.5	Stakeholder	TM restrictions on works operations.	T, C	3	3	9	Liasion with third party land owners ref access and permission to utilise 'work zones', thus potentially decreasing TM required on mainline A33.	Designer / Local Authority	2	3	6	50,000	30%	£ 15,000
2.0	Design	Discrepancies with level / survey information to accurately determine geometry leading to incorrect assumptions	T, C, Q	3	2	6	Topographical survey to be obtained. Ensure survey stations are established on-site and any discrepancies identified to the / by the design team to be resolved early.	Designer	1	2	2	30,000	15%	£ 4,500
2.1	Design	Insufficent interface with adjacent road junctions (requiring additional junction alteration works)	T, C, Q	3	3	9	Ensure wider area and detail established during design stage	Designer	2	2	4	40,000	30%	£ 12,000
2.2	Design	Unable to achieve design parameter standards based on existing site constraints	T, C, Q	3	5	15	Ensure any departures identified during design stage and inform Client. Assess associated safety implications is necessary,	Designer	2	3	6	50,000	30%	£ 15,000
2.3	Design	Work scope increase	T, C	3	5	15	Scope & concept early sign-off. Phased approach to design so as to limit potential for project creep	Designer	2	3	6	50,000	30%	£ 15,000
3.1	Utilities	Unforseen statutory undertakers apparatus (including drainage) impacted by proposals (i.e. diversions), affecting deliverabiliy, programme and cost.	T, C, Q	3	5	15	Statutory Undertaker information to be obtained during detailed design following NRSWA process. Review of utility information previously obtained from schemes undertaken within the area early in scheme design.	Designer	4	5	20	89,000	85%	£ 75,650
3.2	Utilities	Major disruption to residents during utility diversion works	T, C	3	3	9	Ensure utility diversion plan is established and works co-ordinated to minimise potential impact to local residents.	Designer	2	3	6	50,000	30%	£ 15,000
3.3	Utilities	Unplanned 'emergency' works to statutory undertakers apparatus (Time related) within the local area (non scheme related)	T, C	2	3	6	Given scheme location is on a primary route all works should be planned with Local Authority.	Local Authority	1	3	3	35,000	15%	£ 5,250
4.1	Construction	Works impacted by Events	T, C, Q	3	3	9	Local Authority would be party to any major events and can programme/inform of events/works/closure date constraints to minimise impact. Local events and constraints gererally known and understood by design team based on local knowledge of area (Reading FC matches, etc).	Local Authority	2	1	2	30,000	30%	£ 9,000
4.2	Construction	Local area vehicle height / weight / width restrictions may impact on transport strategy and site access restrictions.	T, C	2	3	6	Review and include on constraints plans (keep planning requirements and legal processes under review)	Designer	1	2	2	30,000	15%	£ 4,500
4.3	Construction	Change in working hours legislation	T, C, Q	3	3	9	Legislation changes will be known in advance and as such can be built into the programme and contingencies.	Designer / Local Authority	1	3	3	35,000	15%	£ 5,250
4.4	Construction	Legislation changes will be known in advance and as such can be built into the programme and contingencies.	T, C	3	3	9	Inclusion of preliminaries and contingency within project total. Seek to adress, if not alternative materials and methods will be considered to minimise budgetory increase.	Designer / Local Authority	1	3	3	35,000	15%	£ 5,250
4.5	Construction	Poor weather conditions delay work	T, C, Q	3	3	9	Weather dependent items can be programmed for more clement weather periods, if possible. Robust Programming.	Contractor	2	4	8	55,000	30%	£ 16,500
4.6	Construction	Scheme costs significantly increase.	T, C, Q	3	5	15	Costs have been reviewed in detail since previous submissions and contingency has been built into the overall scheme cost.	Designer / Local Authority	2	4	8	55,000	30%	£ 16,500

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
4.7	Construction	Noise Impact - during works	T, C, Q	3	3	9	Contractor to follow working hours/guidlelines stated within Contract Documents. If occurring, will be assessed and mitigated through design process and suitable means of mitigation such as fencing, windows, bunding etc. in line with industry guidance.	Contractor / Local Authority	1	3	3	35,000	15%	£ 5,250
4.8	Construction	Air Quality - Dust, etc during works	T, C, Q	3	3	9	Prevention measures to be adopted during works.	Contractor / Local Authority	1	3	3	35,000	15%	£ 5,250
														£ 243,850

South Reading Mass Rapid Transit Phase 3 (Southside) - Risk Register

Review Date:	15/06/2017	Prepared by:	LC
Checked by:	SE	Approved by:	SE

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
1.1	Planning	Additional or changed permanent land take compared to reference case, leading to additional costs and CPO / Order Process impacts	T, C	2	5	10	1. Pre determination of land ownership. 2. Land safeguarded. 3. Early identification of risks/issues and scheme progressed sufficiently at planning stage.	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
1.2	Planning	Additional or changed temporary land take compared to reference case, leading to additional cost and CPO / Order process impacts	T, C	2	3	6	1. Ensure land footprint confirmed / safeguarded early during preliminary / detailed design. 2. Determine exact land footprint requirements for scheme based on topographical survey/detailed land ownership records.	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
1.3	Planning	Compensation risks increase due to alignment variance	T, C	2	3	6	As above	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
1.4	Planning	Inadequate early consideration of key environmental factors which later impacts on planning and statutory consent processes and cost.	T, C	3	3	9	1. Stakeholder consultation and local knowledge (review factors considered for previous schemes in local area) to identify and scope key issues that may impact on option development. 2. Review and development of planning strategy at appropriate project stage and seek Screening opinion where necessary, with pre app discussions.	Designer	1	2	2	45,365	15%	£ 6,805
1.5	Planning	Permanent Scheme: Change to Environmental Impact, Mitigation Requirements and risk levels: Archaeology, Noise, Vibration, Contamination, Geology / Hyrdogeology.	T, C, Q	3	3	9	Early survey work. Monitor and control as necessary	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
1.6	Planning	Consents / Approvals (Planning condition sign off (Safeguarded Land)) delayed	T, C	3	3	9	1. Ensure timescales for consents/approvals met. 2. Importance of scheme to be understood by all parties.	Local Authority	2	3	6	75,000	30%	£ 22,500
2.1	Stakeholder	Unknown requirements related to public rights of way, key constraints missed.	T, C	3	3	9	Agenda item for relevant stakeholders, PRoW officers etc	Designer / Local Authority	1	2	2	45,365	15%	£ 6,805
2.2	Stakeholder	Stakeholder and public consultation outcomes significantly affect project and options, with potential also to influence Client Reputation.	T, C	2	3	6	Consider Consultation / Community engagement strategy once options more defined (an also how information may need to be presented), including any potential need to engage with lobby groups, businesses and emergency services. Stakeholder and public consultation excercise will seek to inform and manage any objections.	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
2.3	Stakeholder	Objections from local residents/businesses during works phases.	T, C	2	3	6	Ensure local residents/businesses aware of scheme progress and early liaision is undertaken.	Designer / Local Authority	1	2	2	45,365	15%	£ 6,805
2.4	Stakeholder	Objections through the TRO process/Planning and Consultation Process (including the Environment Agency)	T, C	2	2	4	Outline work has progressed. The scheme is within highway or safeguarded land. The principle of MRT has been consulted upon through preparation of various policy documents. Detailed transport assessment work is planned. Early engagement with EA essential.	Designer / Local Authority	1	2	2	45,365	15%	£ 6,805
2.5	Stakeholder	Developers propose amendments to safeguarding	T, C	3	3	9	Early engagement with developers to be undertaken.	Designer / Local Authority	3	2	6	75,000	65%	£ 48,750
2.6	Stakeholder	TM restrictions on works operations.	T, C	3	3	9	Liasion with third party land owners ref access and permission to utilise 'work zones', thus potentially decreasing TM required on mainline A33.	Designer / Local Authority	2	3	6	75,000	30%	£ 22,500
3.1	Design	Discrepancies with level / survey information to accurately determine geometry leading to incorrect assumptions	T, C, Q	3	2	6	Topographical survey to be obtained. Ensure survey stations are established on-site and any discrepancies identified to the / by the design team to be resolved early.	Designer	1	2	2	45,365	15%	£ 6,805
3.2	Design	Delay, cost escalation and change of scheme scope due to unknown ground conditions and geoenvironmental considerations.	T, C, Q	2	3	6	Review of risks and potential work scope with geotechnical specialists - discuss with team and Client - agree and implement scope where / if necessary.	Designer	1	2	2	45,365	15%	£ 6,805
3.3	Design	Insufficent interface with adjacent road junctions (requiring additional junction alteration works)	T, C, Q	3	3	9	Ensure wider area and detail established during design stage	Designer	2	2	4	55,000	30%	£ 16,500
3.4	Design	Unable to achieve design parameter standards based on existing site constraints	T, C, Q	3	5	15	Ensure any departures identified during design stage and inform Client. Assess associated safety implications is necessary,	Designer	2	3	6	75,000	30%	£ 22,500
3.5	Design	Work scope increase	T, C	3	5	15	Scope & concept early sign-off. Phased approach to design so as to limit potential for project creep	Designer	2	3	6	75,000	30%	£ 22,500
3.6	Design	Patronage forecasts are overestimated	T, C	3	3	9	Models have been based upon the most recent available local data and not assumed from generic data	Designer	1	2	2	45,365	15%	£ 6,805

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
3.7	Design	Traffic management proposals unacceptable to Client.	T,C	3	3	9	Ensure traffic mangement propoals are discussed and agreed with Local Authority	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
4.1	Utilities	Unforseen statutory undertakers apparatus (including drainage) impacted by proposals (i.e. diversions), affecting deliverabiliy, programme and cost.	T, C, Q	3	5	15	Statutory Undertaker information to be obtained during detailed design following NRSWA process. Review of utility information previously obtained from schemes undertaken within the area early in scheme design.	Designer	4	5	20	320,000	85%	£ 272,000
4.2	Utilities	Major disruption to residents during utility diversion works	T, C	3	3	9	Ensure utility diversion plan is established and works co-ordinated to minimise potential impact to local residents.	Designer	2	3	6	75,000	30%	£ 22,500
4.3	Utilities	Unplanned 'emergency' works to statutory undertakers apparatus (Time related) within the local area (non scheme related)	T, C	2	3	6	Given scheme location is on a primary route all works should be planned with Local Authority.	Local Authority	1	3	3	51,000	15%	£ 7,650
5.1	Ecology	Proposed scheme has potential to impact protected species which may require a design or mitigation response	T, C	4	5	20	Ensure ecology surveys are undertaken ASAP and relevant mitigation measures are incoporated. Local knowledge of the area obtained from previous scheme ecological surveys (M4 J11, Island Road and A33 Improvements). Previous studys to be reviewed and potential impacts assessed.	Designer	2	3	6	75,000	30%	£ 22,500
5.2	Ecology	Proposed scheme has potential to impact valued habitats (i.e. species-rich grassland) which may require a design or mitigation response	T, C	3	5	15	Ensure ecology surveys are undertaken ASAP and relevant mitigation measures are incoporated. Local knowledge of the area obtained from previous scheme ecological surveys (M4 J11, Island Road and A33 Improvements). Previous studys to be reviewed and potential impacts assessed.	Designer	1	3	3	51,000	15%	£ 7,650
6.1	Construction	Works impacted by Events	T, C, Q	3	3	9	Local Authority would be party to any major events and can programme/inform of events/works/closure date constraints to minimise impact. Local events and constraints gererally known and understood by design team based on local knowledge of area (Reading FC matches, etc).	Local Authority	2	1	2	45,365	30%	£ 13,610
6.2	Construction	Local area vehicle height / weight / width restrictions may impact on transport strategy and site access restrictions.	T, C	2	3	6	Review and include on constraints plans (keep planning requirements and legal processes under review)	Designer	1	2	2	45,365	15%	£ 6,805
6.3	Construction	Unforeseen Ground Conditions / Contaminated material. Site for MRT South (Southside) previously a greyhound stadium. Associated foundations, etc may still be present.	T, C, Q	3	5	15	Undertake geotechnical ground study - early investigations. Pre contract surveys will determine existing conditions and allowances for localised soft spots will be included. Early investigations to be undertaken.	Designer	2	4	8	95,000	30%	£ 28,500
6.4	Construction	Change in working hours legislation	T, C, Q	3	3	9	Legislation changes will be known in advance and as such can be built into the programme and contingencies.	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
6.5	Construction	Legislation changes will be known in advance and as such can be built into the programme and contingencies.	T, C	3	3	9	Inclusion of preliminaries and contingency within project total. Seek to adress, if not alternative materials and methods will be considered to minimise budgetory increase.	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
6.6	Construction	Poor weather conditions delay work	T, C, Q	3	3	9	Weather dependent items can be programmed for more clement weather periods, if possible. Robust Programming.	Contractor	2	4	8	95,000	30%	£ 28,500
6.7	Construction	Scheme costs significantly increase.	T, C, Q	3	5	15	Costs have been reviewed in detail since previous submissions and contingency has been built into the overall scheme cost.	Designer / Local Authority	2	4	8	95,000	30%	£ 28,500
6.8	Construction	Noise Impact - during works	T, C, Q	3	3	9	Contractor to follow working hours/guidlelines stated within Contract Documents. If occurring, will be assessed and mitigated through design process and suitable means of mitigation such as fencing, windows, bunding etc. in line with industry guidance.	Contractor / Local Authority	1	3	3	51,000	15%	£ 7,650
6.9	Construction	Air Quality - Dust, etc during works	T, C, Q	3	3	9	Prevention measures to be adopted during works.	Contractor / Local Authority	1	3	3	51,000	15%	£ 7,650
6.10	Construction	Existing pavement construction is in poor condition / requires maintenance / not suitable for MRT route.	T, C, Q	3	3	9	Allow suitable cost contingency within scheme budgets.	Designer	3	3	9	-	65%	£ -
6.11	Construction	Delay at key access points (Reading Gate Retail Park, Green Park, Madjeski, Tesco Distribution Centre) due to works TM leading to significant disruption and need for increased off-peak (including night) working.	T, C, Q	3	5	15	Early engagement with stakeholders to understand operations and agree individuals requirements.	Designer / Local Authority	2	5	10	164,000	30%	£ 49,200
6.12	Construction	Conflicts with other local area schemes on the network. TM methodology inadequate / requires amendment - TM scope increases during construction. Road closures and TTM Closure of M4 due to RTA, etc causes congestion along A33.	T, C	2	3	6	Understand early the timeline for other possible construction schemes proposed in the local vicinity and programme accordingly. Contractor to be proactive in providing TM methodology and layouts, and identifying / confirming phasing to suit TTRO's	Designer / Contractor / Local Authority	3	3	9	-	65%	£ -

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	**Risk Category**	**Risk Description**	**Time [T], Cost [C], Quality [Q]**	**likelihood [1-5]**	**Impact [1-5]**	**Overall Risk Rating**	**Proposed Mitigating Actions**	**Mitigation Risk Owner**	**likelihood [1-5]**	**Impact [1-5]**	**Overall Risk Rating**	**Total Risk Estimate (£)**	**Probability of Occurrence (%)**	**Total Risk Allowance (£)**
6.13	Construction	Fill material for embankments - large volumes required cannot be sourced locally thus increasing cost.	T, C, Q	3	3	9	Investigate potential sources of materials.	Contractor / Designer	2	2	4	55,000	30%	£ 16,500
6.14	Construction	TM leads to significant delays, resulting in complaints from the public	T, C	3	3	9	Relates to item 3.9. 1. Scheme traffic management to be carefully considered. 2. PR strategy to be developed. 3. Utilise local knowledge of traffic management implications from schemes previously undertaken on A33. 4. Possibility that certain elements of the works can be undertaken from thrird party land (adjacent to the A33) - subject to agreement, to reduce traffic management implications.	Designer / Contractor / Local Authority	2	3	6	75,000	30%	£ 22,500
7.1	Maintenance	Poor road surface conditions for MRT vehicles. The roads running around the Madjeski Stadium may suffer from landfill settlement. Long term maintenance maybe a problem - unacceptable operationally and significant maintenance costs.	T, C, Q	3	3	9	Allow suitable maintenance cost contingency.	Designer / Local Authority	1	3	3	51,000	15%	£ 7,650
8.1	Archaeological	Archaeology impacted as a result of the scheme leading to possible delays	T, C	2	2	4	Engage and arrange for Archaeologist to attend site during site clearance / excavation works.	Designer / Local Authority	1	2	2	45,365	15%	£ 6,805
														£ 820,253

South Reading Mass Rapid Transit Phase 4 - Risk Register

Review Date:	15/06/2017	Prepared by:	LC
Checked by:	SE	Approved by:	SE

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
1.1	Planning	Additional or changed permanent land take compared to reference case, leading to additional costs and CPO / Order Process impacts	T, C	2	5	10	1. Pre determination of land ownership. 2. Land safeguarded. 3. Early identification of risks/issues and scheme progressed sufficiently at planning stage.	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
1.2	Planning	Additional or changed temporary land take compared to reference case, leading to additional cost and CPO / Order process impacts	T, C	2	3	6	1. Ensure land footprint confirmed / safeguarded early during preliminary / detailed design. 2. Determine exact land footprint requirements for scheme based on topographical survey/detailed land ownership records.	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
1.3	Planning	Compensation risks increase due to alignment variance	T, C	2	3	6	As above	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
1.4	Planning	Inadequate early consideration of key environmental factors which later impacts on planning and statutory consent processes and cost.	T, C	3	3	9	1. Stakeholder consultation and local knowledge (review factors considered for previous schemes in local area) to identify and scope key issues that may impact on option development. 2. Review and development of planning strategy at appropriate project stage and seek Screening opinion where necessary, with pre app discussions.	Designer	1	2	2	75,000	15%	£ 11,250
1.5	Planning	Permanent Scheme: Change to Environmental Impact, Mitigation Requirements and risk levels: Archaeology, Noise, Vibration, Contamination, Geology / Hyrdogeology.	T, C, Q	3	3	9	Early survey work. Monitor and control as necessary	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
1.6	Planning	Consents / Approvals (Planning condition sign off (Safeguarded Land)) delayed	T, C	3	3	9	1. Ensure timescales for consents/approvals met. 2. Importance of scheme to be understood by all parties.	Local Authority	2	3	6	95,000	30%	£ 28,500
2.1	Stakeholder	Potential loss of floodplain - Consultation with EA required. Change of design maybe required i.e. cantilevered footway solution.	T, C	3	5	15	1. Early consulation with Environmnent Agency required. 2. Undertake design work early to explore feasibility of alternative design solutions in order ro reduce impact to floodplain. 3. Follow design assumptions ascertained from previous schemes within the area.	Designer	3	2	6	95,000	65%	£ 61,750
2.2	Stakeholder	Unknown requirements related to public rights of way, key constraints missed.	T, C	3	3	9	Agenda item for relevant stakeholders, PRoW officers etc	Designer / Local Authority	1	2	2	75,000	15%	£ 11,250
2.3	Stakeholder	Inadqueate consideration of future maintenance and access both to infrastructure and adajcent buildings - impacts on deliverability and future operational liability.	T, C, Q	2	3	6	Early discussion with maintaining authority on requirements, accessibility review and liaison with developers.	Designer	1	2	2	75,000	15%	£ 11,250
2.4	Stakeholder	Stakeholder and public consultation outcomes significantly affect project and options, with potential also to influence Client Reputation.	T, C	2	3	6	Consider Consultation / Community engagement strategy once options more defined (an also how information may need to be presented), including any potential need to engage with lobby groups, businesses and emergency services. Stakeholder and public consultation excercise will seek to inform and manage any objections.	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
2.5	Stakeholder	Objections from local residents/businesses during works phases.	T, C	2	3	6	Ensure local residents/businesses aware of scheme progress and early liaision is undertaken.	Designer / Local Authority	1	2	2	75,000	15%	£ 11,250
2.6	Stakeholder	Objections through the TRO process/Planning and Consultation Process (including the Environment Agency)	T, C	2	2	4	Outline work has progressed. The scheme is within highway or safeguarded land. The principle of MRT has been consulted upon through preparation of various policy documents. Detailed transport assessment work is planned. Early engagement with EA essential.	Designer / Local Authority	1	2	2	75,000	15%	£ 11,250
2.7	Stakeholder	Developers propose amendments to safeguarding	T, C	3	3	9	Early engagement with developers to be undertaken.	Designer / Local Authority	3	2	6	95,000	65%	£ 61,750
2.8	Stakeholder	TM restrictions on works operations.	T, C	3	3	9	Liasion with third party land owners ref access and permission to utilise 'work zones', thus potentially decreasing TM required on mainline A33.	Designer / Local Authority	2	3	6	95,000	30%	£ 28,500
3.1	Design	Discrepancies with level / survey information to accurately determine geometry leading to incorrect assumptions	T, C, Q	3	2	6	Topographical survey to be obtained. Ensure survey stations are established on-site and any discrepancies identified to the / by the design team to be resolved early.	Designer	1	2	2	75,000	15%	£ 11,250
3.2	Design	Delay, cost escalation and change of scheme scope due to unknown ground conditions and geoenvironmental considerations.	T, C, Q	2	3	6	Review of risks and potential work scope with geotechnical specialists - discuss with team and Client - agree and implement scope where / if necessary.	Designer	1	2	2	75,000	15%	£ 11,250

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
3.3	Design	Insufficent interface with adjacent road junctions (requiring additional junction alteration works)	T, C, Q	3	3	9	Ensure wider area and detail established during design stage	Designer	2	2	4	85,000	30%	£ 25,500
3.4	Design	Unable to achieve design parameter standards based on existing site constraints	T, C, Q	3	5	15	Ensure any departures identified during design stage and inform Client. Assess associated safety implications is necessary,	Designer	2	3	6	95,000	30%	£ 28,500
3.5	Design	Work scope increase	T, C	3	5	15	Scope & concept early sign-off. Phased approach to design so as to limit potential for project creep	Designer	2	3	6	95,000	30%	£ 28,500
3.6	Design	Increases in structural scope of works - strengthening of existing structures required (culverts etc.) due to additional lanes being added to the carriageway and also changes to retaining wall requirements due to widening works adjacent to existing ditches / watercourses / headwalls	T, C	2	5	10	1. Design to be progressed early in order to mitigate any potential issues and allow alternative solutions to be progressed (if possible). 2. As-built structural drawings and inspection records to be assesed to identify and foresee any potential issues.	Designer	3	4	12	210,000	65%	£ 136,500
3.7	Design	Increase in structural foundation design / retaining structure design.	T, C	3	3	9	Undertake early site investigation works / Ensure AIP process is followed.	Designer	3	2	6	95,000	65%	£ 61,750
3.8	Design	Patronage forecasts are overestimated	T, C	3	3	9	Models have been based upon the most recent available local data and not assumed from generic data	Designer	1	2	2	75,000	15%	£ 11,250
3.9	Design	Traffic management proposals unacceptable to Client.	T,C	3	3	9	Ensure traffic mangement propoals are discussed and agreed with Local Authority	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
4.1	Utilities	Utility works unable to be undertaken within the contractors proposals / programme and requires a variation in order leading to cost/programme impacts	T, C, Q	3	3	9	Place orders ASAP with those Statutory Undertakers affected. Early liasion/co-ordination required. Contractor to mitigate against programme /cost risks.	Designer / Local Authority	2	3	6	95,000	30%	£ 28,500
4.2	Utilities	Unforseen statutory undertakers apparatus (including drainage) impacted by proposals (i.e. diversions), affecting deliverabiliy, programme and cost.	T, C, Q	3	5	15	Statutory Undertaker information to be obtained during detailed design following NRSWA process. Review of utility information previously obtained from schemes undertaken within the area early in scheme design.	Designer	4	5	20	400,000	85%	£ 340,000
4.3	Utilities	Major disruption to residents during utility diversion works	T, C	3	3	9	Ensure utility diversion plan is established and works co-ordinated to minimise potential impact to local residents.	Designer	2	3	6	95,000	30%	£ 28,500
4.4	Utilities	Unplanned 'emergency' works to statutory undertakers apparatus (Time related) within the local area (non scheme related)	T, C	2	3	6	Given scheme location is on a primary route all works should be planned with Local Authority.	Local Authority	1	3	3	80,000	15%	£ 12,000
5.1	Ecology	Proposed scheme has potential to impact protected species which may require a design or mitigation response	T, C	4	5	20	Ensure ecology surveys are undertaken ASAP and relevant mitigation measures are incoporated. Local knowledge of the area obtained from previous scheme ecological surveys (M4 J11, Island Road and A33 Improvements). Previous studys to be reviewed and potential impacts assessed.	Designer	2	3	6	95,000	30%	£ 28,500
5.2	Ecology	Proposed scheme has potential to impact valued habitats (i.e. species-rich grassland) which may require a design or mitigation response	T, C	3	5	15	Ensure ecology surveys are undertaken ASAP and relevant mitigation measures are incoporated. Local knowledge of the area obtained from previous scheme ecological surveys (M4 J11, Island Road and A33 Improvements). Previous studys to be reviewed and potential impacts assessed.	Designer	1	3	3	80,000	15%	£ 12,000
6.1	Construction	Works impacted by Events	T, C, Q	3	3	9	Local Authority would be party to any major events and can programme/inform of events/works/closure date constraints to minimise impact. Local events and constraints gererally known and understood by design team based on local knowledge of area (Reading FC matches, etc).	Local Authority	2	1	2	75,000	30%	£ 22,500
6.2	Construction	Local area vehicle height / weight / width restrictions may impact on transport strategy and site access restrictions.	T, C	2	3	6	Review and include on constraints plans (keep planning requirements and legal processes under review)	Designer	1	2	2	75,000	15%	£ 11,250
6.3	Construction	Unforeseen Ground Conditions / Contaminated material.	T, C, Q	3	5	15	Undertake geotechnical ground study - early investigations. Pre contract surveys will determine existing conditions and allowances for localised soft spots will be included. Early investigations to be undertaken.	Designer	2	4	8	120,000	30%	£ 36,000
6.4	Construction	Change in working hours legislation	T, C, Q	3	3	9	Legislation changes will be known in advance and as such can be built into the programme and contingencies.	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
6.5	Construction	Legislation changes will be known in advance and as such can be built into the programme and contingencies.	T, C	3	3	9	Inclusion of preliminaries and contingency within project total. Seek to adress, if not alternative materials and methods will be considered to minimise budgetory increase.	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
6.6	Construction	Flooding of floodplain areas preventing access and works being untaken	T, C	3	3	9	All flooding records to be obtained and provided within Contract Documents. Probability to be assessed and Contractor to mitigate against flooding where possible. Mitigation measures to be written into Contract Documents.	Designer / Contractor	2	4	8	120,000	30%	£ 36,000
6.7	Construction	Poor weather conditions delay work	T, C, Q	3	3	9	Weather dependent items can be programmed for more clement weather periods, if possible. Robust Programming.	Contractor	2	4	8	120,000	30%	£ 36,000

Risk Identification			Impact	Risk Rating (Pre Mitigation)			Risk Management		Risk Rating (After Mitigation)			Contingency (After Mitigation)		
Ref	Risk Category	Risk Description	Time [T], Cost [C], Quality [Q]	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Proposed Mitigating Actions	Mitigation Risk Owner	likelihood [1-5]	Impact [1-5]	Overall Risk Rating	Total Risk Estimate (£)	Probability of Occurrence (%)	Total Risk Allowance (£)
6.8	Construction	Scheme costs significantly increase.	T, C, Q	3	5	15	Costs have been reviewed in detail since previous submissions and contingency has been built into the overall scheme cost.	Designer / Local Authority	2	4	8	120,000	30%	£ 36,000
6.9	Construction	Noise Impact - during works	T, C, Q	3	3	9	Contractor to follow working hours/guidlelines stated within Contract Documents. If occurring, will be assessed and mitigated through design process and suitable means of mitigation such as fencing, windows, bunding etc. in line with industry guidance.	Contractor / Local Authority	1	3	3	80,000	15%	£ 12,000
6.10	Construction	Air Quality - Dust, etc during works	T, C, Q	3	3	9	Prevention measures to be adopted during works.	Contractor / Local Authority	1	3	3	80,000	15%	£ 12,000
6.11	Construction	Existing pavement construction is in poor condition / requires maintenance / not suitable for MRT route.	T, C, Q	3	3	9	Allow suitable cost contingency within scheme budgets.	Designer	3	3	9	150,000	65%	£ 97,500
6.12	Construction	Delay at key access points (Reading Gate Retail Park, Green Park, Madjeski, Tesco Distribution Centre) due to works TM leading to significant disruption and need for increased off-peak (including night) working.	T, C, Q	3	5	15	Early engagement with stakeholders to understand operations and agree individuals requirements.	Designer / Local Authority	2	5	10	160,000	30%	£ 48,000
6.13	Construction	Conflicts with other local area schemes on the network. TM methodology inadequate / requires amendment - TM scope increases during construction. Road closures and TTM Closure of M4 due to RTA, etc causes congestion along A33.	T, C	2	3	6	Understand early the timeline for other possible construction schemes proposed in the local vicinity and programme accordingly. Contractor to be proactive in providing TM methodology and layouts, and identifying / confirming phasing to suit TTRO's	Designer / Contractor / Local Authority	3	3	9	150,000	65%	£ 97,500
6.14	Construction	Fill material for embankments - large volumes required cannot be sourced locally thus increasing cost.	T, C, Q	3	3	9	Investigate potential sources of materials.	Contractor / Designer	2	2	4	85,000	30%	£ 25,500
6.15	Construction	TM leads to significant delays, resulting in complaints from the public	T, C	3	3	9	Relates to item 3.9. 1. Scheme traffic management to be carefully considered. 2. PR strategy to be developed. 3. Utilise local knowledge of traffic management implications from schemes previously undertaken on A33. 4. Possibility that certain elements of the works can be undertaken from thrird party land (adjacent to the A33) - subject to agreement, to reduce traffic management implications.	Designer / Contractor / Local Authority	2	3	6	95,000	30%	£ 28,500
7.1	Maintenance	Poor road surface conditions for MRT vehicles. The roads running around the Madjeski Stadium may suffer from landfill settlement. Long term maintenance maybe a problem - unacceptable operationally and significant maintenance costs.	T, C, Q	3	3	9	Allow suitable maintenance cost contingency.	Designer / Local Authority	1	3	3	80,000	15%	£ 12,000
8.1	Archaeological	Archaeology impacted as a result of the scheme leading to possible delays	T, C	2	2	4	Engage and arrange for Archaeologist to attend site during site clearance / excavation works.	Designer / Local Authority	1	2	2	75,000	15%	£ 11,250
														£ 1,620,000

Appendix C Scheme Cost Breakdown

APPROXIMATE CONSTRUCTION COST ESTIMATE				
28791 - South Reading MRT Phase 3 Town Centre Works Construction cost estimate	***Quantity***	***Unit***	***Rate***	**Total**
SUMMARY				
SERIES 200 - SITE CLEARANCE				£19,000.00
SERIES 400 - ROAD RESTRAINT SYSTEM				£1,200.00
SERIES 500 - DRAINAGE AND SERVICE DUCTS				£4,500.00
SERIES 600 - EARTHWORKS				£18,000.00
SERIES 700 - PAVEMENTS				£119,000.00
SERIES 1100 - KERBS, FOOTWAYS AND PAVED AREAS				£18,200.00
SERIES 1200 - TRAFFIC SIGNS AND ROAD MARKINGS				£197,000.00
SERIES 1300 - ROAD LIGHTING COLUMNS, BRACKETS AND CCTV MASTS				£5,000.00
SERIES 1400 - ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS				£13,000.00
SERIES 2600 - STRUCTURES				£105,000.00
SERIES 3000 - LANDSCAPE AND ECOLOGY				£3,921.00
Sub-total				**£503,821.00**
5% Added to sub-total rates for assumed inflation				**£25,191.05**
Preliminaries (20%)				**£105,802.41**
Site investigations:				
Topographical Survey				**£6,000.00**
GPR Surveys				**£4,000.00**
Contingency (40%) - Utilities unknown				**£243,849.00**
Sub-total				**£888,663.46**
Professional Fees (10% of construction cost)				**£88,866.35**
TOTAL				**£977,530**

ASSUMPTIONS / ADDITIONAL NOTES:

THE DEVELOPMENT OF COSTS FOR INFRASTRUCTURE COMPONENTS HAS BEEN BASED UPON AN ASSESSMENT OF CURRENT TENDERED RATES FOR SIMILAR REGIONAL SCHEMES (2015/2016).

NO LAND COSTS / LEGAL FEES ARE INCLUDED.

COSTS EXCLUDE VAT.

NO TOPOGRAPHICAL SURVEY SUPPLIED.

NO PROVISION MADE FOR UTILITY DIVERSIONS IN THE ABSENCE OF C2 STATUTORY UNDERTAKER RETURNS.

NO INFORMATION ON SITE / GROUND CONDITIONS.

NO ALLOWANCE MADE FOR REMOVAL OF CONTAMINATED MATERIAL

ALLOWANCE HAS BEEN MADE FOR RESURFACING LANE 1 AS PART OF THE WORKS. RED SURFACE TREATMENT HAS ONLY BEEN ACCOUNTED FOR AT JUNCTION INTERFACES.

ASSUMED THAT ALL WORKS ARE WITHIN THE PUBLIC HIGHWAY (SAFEGUARDED LAND FOR MRT).

APPROXIMATE CONSTRUCTION COST ESTIMATE				
28791 - South Reading MRT Phase 3 - Southside **Construction cost estimate**	***Quantity***	***Unit***	***Rate***	**Total**
SUMMARY				
SERIES 200 - SITE CLEARANCE				£190,000.00
SERIES 300 - FENCING				£30,000.00
SERIES 400 - ROAD RESTRAINT SYSTEM				£90,000.00
SERIES 500 - DRAINAGE AND SERVICE DUCTS				£50,000.00
SERIES 600 - EARTHWORKS				£250,000.00
SERIES 700 - PAVEMENTS				£715,000.00
SERIES 1100 - KERBS, FOOTWAYS AND PAVED AREAS				£150,000.00
SERIES 1200 - TRAFFIC SIGNS AND ROAD MARKINGS				£200,000.00
SERIES 1300 - ROAD LIGHTING COLUMNS, BRACKETS AND CCTV MASTS				£25,000.00
SERIES 1400 - ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS				£25,000.00
SERIES 2600 - STRUCTURES				£50,000.00
SERIES 3000 - LANDSCAPE AND ECOLOGY				£20,000.00
UTILITIES - ASSUMPTION				£250,000.00
Sub-total				£2,045,000.00
5% added to sub-total rates for assumed inflation				£102,250.00
Preliminaries (30%)				**£644,175.00**
Site investigations				
Topographical Survey				**£4,750.00**
Geotechnical Survey				**£6,000.00**
GPR Surveys				**£6,000.00**
Contingency (30%)				**£820,253.00**
Sub-total				**£3,628,428.00**
Professional Fees (10% of Construction Cost)				£356,042.00
TOTAL				**£3,984,470.00**

ASSUMPTIONS / ADDITIONAL NOTES:

THE DEVELOPMENT OF COSTS FOR INFRASTRUCTURE COMPONENTS HAS BEEN BASED UPON AN ASSESSMENT OF CURRENT TENDERED RATES FOR SIMILAR REGIONAL SCHEMES (2015/2016).

NO LAND COSTS / LEGAL FEES ARE INCLUDED.

COSTS EXCLUDE VAT.

NO TOPOGRAPHICAL SURVEY SUPPLIED - ASSESSMENT OF COST BASED ON SITE WALKOVER UNDERTAKEN 26.01.16.

NO INFORMATION ON SITE / GROUND CONDITIONS.

NO ALLOWANCE MADE FOR REMOVAL OF CONTAMINATED MATERIAL.

ASSUMED THAT ALL WORKS ARE WITHIN THE PUBLIC HIGHWAY (SAFEGUARDED LAND FOR MRT).

APPROXIMATE CONSTRUCTION COST ESTIMATE				
28791 - South Reading MRT Phase 4 (Rose Kiln Lane (Brunel Retail Park) to Island Road Construction Cost Estimate	***Quantity***	***Unit***	***Rate***	**Total**
SUMMARY				
SERIES 200 - SITE CLEARANCE				£9,030.00
SERIES 500 - DRAINAGE AND SERVICE DUCTS				£14,480.00
SERIES 600 - EARTHWORKS				£104,000.00
SERIES 700 - PAVEMENTS				£124,120.00
SERIES 1100 - KERBS, FOOTWAYS AND PAVED AREAS				£65,075.00
SERIES 1200 - TRAFFIC SIGNS AND ROAD MARKINGS				£11,600.00
SERIES 1300 - ROAD LIGHTING COLUMNS, BRACKETS AND CCTV MASTS				£25,000.00
SERIES 2600 - STRUCTURES				£1,038,500.00
SERIES 3000 - LANDSCAPE AND ECOLOGY				£47,650.00
UTILITIES - ASSUMPTION				£390,000.00
Sub-total				**£1,829,455.00**
5% Added to sub-total rates for assumed inflation				**£91,472.75**
Preliminaries (30%)				**£576,278.33**
Site investigations:				
Topographical Survey				**£4,000.00**
Geotechnical Survey				**£4,500.00**
GPR Surveys				**£5,000.00**
Contingency (30%)				**£753,211.82**
Sub-Total				**£3,263,917.90**
Professional Fees (10% of construction cost)				**£326,391.79**
TOTAL				**£3,590,309**

ASSUMPTIONS / ADDITIONAL NOTES:

THE DEVELOPMENT OF COSTS FOR INFRASTRUCTURE COMPONENTS HAS BEEN BASED UPON AN ASSESSMENT OF CURRENT TENDERED RATES FOR SIMILAR REGIONAL SCHEMES (2015/2016).

NO LAND COSTS / LEGAL FEES ARE INCLUDED.

COSTS EXCLUDE VAT.

NO TOPOGRAPHICAL SURVEY SUPPLIED - ASSESSMENT OF COST BASED ON SITE WALKOVER UNDERTAKEN 26.01.16.

NO INFORMATION ON SITE / GROUND CONDITIONS.

NO ALLOWANCE MADE FOR REMOVAL OF CONTAMINATED MATERIAL

ALLOWANCE HAS BEEN MADE FOR RESURFACING LANE 1 AS PART OF THE WORKS. RED SURFACE TREATMENT HAS ONLY BEEN ACCOUNTED FOR AT JUNCTION INTERFACES.

ASSUMED THAT ALL WORKS ARE WITHIN THE PUBLIC HIGHWAY (SAFEGUARDED LAND FOR MRT).

APPROXIMATE CONSTRUCTION COST ESTIMATE				
28791 - South Reading MRT Phase 4 Rose Kiln Lane (Reading Link Retail Park) to Rose Kiln Lane (Brunel Retail Park) Construction Cost Estimate	***Quantity***	***Unit***	***Rate***	**Total**
SUMMARY				
SERIES 200 - SITE CLEARANCE				£23,120.00
SERIES 500 - DRAINAGE AND SERVICE DUCTS				£21,200.00
SERIES 600 - EARTHWORKS				£102,000.00
SERIES 700 - PAVEMENTS				£207,540.00
SERIES 1100 - KERBS, FOOTWAYS AND PAVED AREAS				£62,600.00
SERIES 1200 - TRAFFIC SIGNS AND ROAD MARKINGS				£11,250.00
SERIES 1300 - ROAD LIGHTING COLUMNS, BRACKETS AND CCTV MASTS				£40,000.00
SERIES 2600 - STRUCTURES				£1,065,000.00
SERIES 3000 - LANDSCAPE AND ECOLOGY				£40,000.00
UTILITIES - ASSUMPTION				£533,000.00
Sub-total				**£2,105,710.00**
5% Added to sub-total rates for assumed inflation				**£105,285.50**
Preliminaries (30%)				**£663,298.65**
Site investigations:				
Topographical Survey				**£5,000.00**
Geotechnical Survey				**£5,000.00**
GPR Surveys				**£5,000.00**
Contingency (30%)				**£866,788.25**
Sub-Total				**£3,756,082.40**
Professional Fees (10% of construction cost)				**£375,608.24**
TOTAL				**£4,131,691.00**

ASSUMPTIONS / ADDITIONAL NOTES:

THE DEVELOPMENT OF COSTS FOR INFRASTRUCTURE COMPONENTS HAS BEEN BASED UPON AN ASSESSMENT OF CURRENT TENDERED RATES FOR SIMILAR REGIONAL SCHEMES (2015/2016).

NO LAND COSTS / LEGAL FEES ARE INCLUDED.

COSTS EXCLUDE VAT.

NO TOPOGRAPHICAL SURVEY SUPPLIED - ASSESSMENT OF COST BASED ON SITE WALKOVER UNDERTAKEN 26.01.16.

NO INFORMATION ON SITE / GROUND CONDITIONS.

NO ALLOWANCE MADE FOR REMOVAL OF CONTAMINATED MATERIAL

ALLOWANCE HAS BEEN MADE FOR RESURFACING LANE 1 AS PART OF THE WORKS. RED SURFACE TREATMENT HAS ONLY BEEN ACCOUNTED FOR AT JUNCTION INTERFACES.

ASSUMED THAT ALL WORKS ARE WITHIN THE PUBLIC HIGHWAY (SAFEGUARDED LAND FOR MRT).

Appendix D Project Programme

South Reading Mass Rapid Transit - Phase 3 and 4
Indicative 'High Level' Programme

Task	2017												2018												2019												2020											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Phase 3 Town Centre Works																																															
Detailed Design																																															
Procurement																																															
Contract Award																																															
Construction																																															
Phase 3 and 4 (A33 Works)																																															
Site / Early Investigation Work																																															
Preliminary Design																																															
Detailed Design Stage (Ph 3 and 4)																																															
Procurement (Ph 3 and 4)																																															
Contract Award																																															
Construction (Phase 4)																																															
Construction (Phase 3)																																															

Appendix E Key Issues for Implementation

Key Issues for Implementation

Risk	Likelihood (H / M / L)	Severity (H / M / L)	Mitigating actions
1. Utilities diversions impact on scheme cost	High	Medium	Progress with utility searches early to establish constraints upon scheme delivery. Undertake early liaison with affected Statutory Undertakers. Develop scheme to avoid any major diversion works (if possible).
2. Potential loss of floodplain as a result of the scheme.	Medium	Medium	Early consultation with EA required. Undertake design work early to explore feasibility of cost effective alternative design solutions in order to reduce impact to floodplain. Follow design assumptions ascertained from previous schemes within the area.
3. Land ownership and safeguarded routes not available to deliver parts of the scheme	High	Medium	Early investigation of land ownership boundaries and confirmation of safeguarded routes, followed by negotiation to determine whether land is available. Develop scheme to avoid third party land where no agreements can be made.