

BERKSHIRE LOCAL TRANSPORT BODY (BLTB)

REPORT TO: BLTB

DATE: 15 July 2020

CONTACT OFFICER: Josie Wragg, Chief Executive, Slough Borough Council & Lead Officer to the BLTB

Item 9: Financial Approval Scheme 2.32 Maidenhead: Housing Sites Enabling Works Phase 1 (reprofiled)

Purpose of Report

1. To consider giving financial approval to scheme 2.32 Maidenhead: Housing Sites Enabling Works Phase 1, reprofiled.
2. This scheme was originally submitted for financial approval and conditionally approved by the Berkshire Local Transport Body (BLTB) in [January 2019](#). Since then, the Royal Borough of Windsor and Maidenhead (RBWM) has been required to amend its Local Plan, resulting in a reconfiguration of development site allocations. This has resulted in necessary amendments to the original scheme proposals, as well as revisions to the dependent development 'unlocked' by the scheme. The revised scheme sets out the case for investment in capacity improvements at six key junctions around Maidenhead. The schemes will provide congestion relief associated with background growth in traffic, alongside trips generated by specific residential and commercial development sites within the town centre that have been allocated within the Local Plan.
3. The six junctions are spread across the town centre, as follows across two phases:
Phase 1:
 - A308/ Stafferton Way/ Rushington Avenue (Stafferton Roundabout)
 - A4/ A308 Castle Hill (Castle Hill Roundabout)
 - A4/ B4447 Cookham Road/ Market Street (Cookham Roundabout)
 - A4/ A4094 Ray Mead Road/ Guard Club Road (Ray Mead Roundabout)Phase 2:
 - A308(M)/ A308 The Bingshams (Braywick Roundabout)
 - A4/ B3024 Oldfield Road/ Lassell Gardens (Oldfield Junction)
4. The improvements encompass a range of measures including carriageway widening, signalisation, and junction reconfiguration, with some associated improvements to cycling provision.

Recommendation

1. You are recommended to give scheme 2.32 Maidenhead: Housing Sites Enabling Works Phase 1 reprofiled financial approval in the sum of £4,213,000 from the Local Growth Fund (LGF) and £1,068,000 from the Business Rates Retention Pilot (BRRP) funds in 2020/21 on the terms of the funding agreement set out at paragraph 12 step 5 below.

Other Implications

Financial

5. Scheme 2.32 Maidenhead: Housing Sites Enabling Works Phase 1 is a replacement scheme being funded from the [Thames Valley Berkshire Growth Deal 3ⁱ](#) announced on [2 February 2017ⁱⁱ](#).
6. In July 2018, you re-allocated some previously approved LGF schemes for funding from the Business Rates Retention Pilot. This scheme was submitted as part of the process to reallocate Local Growth Deal allocations. The funding for this scheme is from both the LGF and BRRP.
7. This report recommends that the Royal Borough of Windsor and Maidenhead be authorised to draw down the capital sum £4,213,200 in LGF and £1,068,000 in BRRP from the Local Transport Body funding for this scheme.
8. The funding agreement set out at paragraph 12 step 5 sets out the roles and responsibilities, reporting and auditing arrangements, timing and triggers for payments, contributions from other funders, consequences of delay, consequences of failure, claw back, and evaluation requirements at one and five years on.

Risk Management

9. The risk management arrangements already put in place by the Local Transport Body are as follows:
 - The [Assurance Frameworkⁱⁱⁱ](#) has been drafted following DfT guidance and has been approved by the DfT for use in allocating capital funds for transport schemes
 - Hatch Regeneris have been appointed as Independent Assessors and have provided a full written report (see Appendix 1) on the full business case for the scheme
 - The funding agreement set out at paragraph 11, step 5 makes clear that the financial risk associated with implementation of the scheme rests with the scheme promoter.

Human Rights Act and Other Legal Implications

10. Slough Borough Council will provide legal support for the BLTB should any questions arise.

Supporting Information

11. The scheme will be carried out for the Royal Borough of Windsor and Maidenhead.
12. The full details of the scheme are available from the [Royal Borough of Windsor and Maidenhead^{iv}](#). A summary of the key points is given below:

Task	Timescale
Procurement	July 2019
Detailed designs	July - October 2020
Construction	Phase 1 - start September 2020; phase 2 - start December 2020
Completion	Phase 1 - complete January 2021; phase 2 - complete April 2021

Activity	Funder	Cost (approx)
Scheme development	Royal Borough of Windsor and Maidenhead	£0.738m
Major scheme funding	Berkshire Local Transport Body LGF	£4.213m
Major scheme funding	Berkshire Local Transport Body BRRP	£1.068m
Section 106 agreements	Developers etc	£0.316m
Total		£6.335m

13. The table below sets out the details of this scheme's compliance with steps 1-5 of paragraph 14 of [Assurance Framework](#)^v.

Assurance Framework Check list	2.32 Maidenhead: Housing Sites Enabling Works Phase 1 – reprofiled																																			
	<p>This scheme was originally submitted and conditionally approved by the Berkshire Local Transport Body (BLTB) in January 2019. Since then, RBWM has been required to amend its Local Plan requirements, resulting in a reconfiguration of development site allocations. This has resulted in necessary amendments to the original scheme proposals, as well as revisions to the dependent development 'unlocked' by the scheme.</p> <p>The SEP assessment process was used and the scheme was given 28 points and ranked joint 1st equal of 16 schemes submitted in July 2018 as part of the Growth Deal 3 reallocation process.</p> <table border="1"> <thead> <tr> <th>Factor</th> <th>Raw score</th> <th>Weighting</th> <th>Weighted score</th> </tr> </thead> <tbody> <tr> <td>Strategy</td> <td>3</td> <td>1.5</td> <td>4.5</td> </tr> <tr> <td>Deliverability</td> <td>3</td> <td>2.0</td> <td>6.0</td> </tr> <tr> <td>Economic Impact</td> <td>3</td> <td>4.0</td> <td>12.0</td> </tr> <tr> <td>TVB area coverage</td> <td>2</td> <td>1.5</td> <td>3.0</td> </tr> <tr> <td>Environment</td> <td>2</td> <td>0.5</td> <td>1.0</td> </tr> <tr> <td>Social</td> <td>3</td> <td>0.5</td> <td>1.5</td> </tr> <tr> <td colspan="3" style="text-align: right;">Total</td> <td>28.0</td> </tr> </tbody> </table>				Factor	Raw score	Weighting	Weighted score	Strategy	3	1.5	4.5	Deliverability	3	2.0	6.0	Economic Impact	3	4.0	12.0	TVB area coverage	2	1.5	3.0	Environment	2	0.5	1.0	Social	3	0.5	1.5	Total			28.0
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Step 2: Programme Entry: evolution of the scheme from outline proposal to full business case, external view on the business case, and independent assessment (See paragraphs 15 and 16)	<p>Programme Entry status was given by the BLTB on 19 July 2018.</p> <p>The Royal Borough of Windsor and Maidenhead website^{vi} holds the latest details of the full business case, including the VfM statement certified by the senior responsible officer.</p> <p>Any comments or observations on the scheme received by either TVB LEP or Royal Borough of Windsor and Maidenhead have been fully considered during the development of the scheme.</p> <p>The report of the Independent Assessor is attached at Appendix 1. The Independent Assessor was asked to report as follows:</p> <ul style="list-style-type: none"> • Completeness – has the promoter prepared a complete Full Business Case submission, when judged against the prevailing advice from the DfT 																																			

Assurance Framework Check list	2.32 Maidenhead: Housing Sites Enabling Works Phase 1 – reprofiled
	<ul style="list-style-type: none"> • Accuracy – has the promoter performed the relevant calculations and assessments accurately and without error • Relevance – has the Full Business Case considered all relevant matters, including use of appropriate forecasting models and planning assumptions, and has it included any irrelevant considerations such as unduly-optimistic assumptions or out of date modelling data • Value for Money – does the scheme promoter’s Value for Money assessment comply with the prevailing DfT guidance • Evaluation arrangements – has the scheme promoter made provision for appropriate post-implementation evaluation of the scheme. • Remedies – where the independent assessment reveals a gap between the FBC supplied and the standard anticipated by the DfT guidance, then the advice for the LTB should include recommendations for remedial actions required – e.g., collection of further data, sensitivity tests on particular assumptions etc.
Step 3: Conditional Approval	The Independent Assessor has recommended that in this case full financial approval is appropriate.
Step 4: Recommendation of Financial Approval - High Value for Money - Support of the Independent assessor	The scheme has a Benefit- Cost Ratio (BCR) of 17.1 to 1. DfT has set thresholds of 2.00 (High VfM) and 4.00 (Very High VfM) and schemes with BCRs above these thresholds can be described as having High or Very High Value for Money.
Step 5: Formal Agreement - roles - responsibilities - implementation - reporting - auditing - timing and triggers for payments, - contributions from other funders, - consequences of delay, - consequences of failure, - consequences of change to the design or specification of the scheme - claw back, - evaluation one and five years on	The capital grant of £4,213,200 LGF and £1,068,000 BRRP is a maximum figure which cannot be increased, but may be reduced if savings are achieved during implementation. In the event that Royal Borough of Windsor and Maidenhead wishes to alter the profile of the grant payments, it must seek prior written permission from TVB LEP, having first raised the matter with the BLTB. The grant is made subject to the following: <ul style="list-style-type: none"> • <u>Roles</u>: TVB LEP is a part funder of the scheme. RBWM is the scheme promoter and is the relevant highway and planning authority. • <u>Responsibilities</u>: TVB LEP is responsible for allocating the capital finance in accordance with its Assurance Framework. RBWM is responsible for all aspects of the design, risk management, insurance, procurement, construction and implementation of the scheme, including its responsibilities as highway and planning authority, any other statutory duties, and any financial or other liabilities arising from the scheme. • <u>Implementation</u>: In addition to any reporting requirements within RBWM the scheme promoter will use the proforma supplied by TVB LEP to make reports on progress of the implementation of the capital scheme to each meeting of the BLTB until the build is complete. In particular, RBWM will report on any change in the size, scope or specification of the scheme; and on any substantial savings against the scheme budget whether

Assurance Framework Check list	2.32 Maidenhead: Housing Sites Enabling Works Phase 1 – reprofiled
<p>- other conditions of Local Growth Funds</p>	<p>achieved by such changes to the size, scope or specification of the scheme, or through procurement, or through the efficient implementation of the scheme.</p> <ul style="list-style-type: none"> • <u>Reporting</u>: The scheme promoter must provide accurate, timely, verified and quality assured quarterly monitoring and forecast data, which relate to defined output and outcome indicators agreed between TVB LEP and government as a condition of the Growth Deal. This scheme will not be required to participate in an evaluation as set out in the Growth Deal Monitoring and Evaluation Plan. • <u>Auditing</u>: RBWM will keep financial records such that the expenditure on the scheme is readily identifiable, and if and when BEIS, DfT or other government department or the accountable body for TVB LEP requests access to financial or other records for the purposes of an audit of the accounts, RBWM will co-operate fully. • <u>Timing and Triggers for payments</u>: See the Claim Proforma – available on request. • <u>Contributions from Other Funders</u>: Royal Borough of Windsor and Maidenhead capital programme will contribute £738,000 in 2020/21; in addition, there will be £316,000 of s.106 contributions secured by Royal Borough of Windsor and Maidenhead in 2020/21. In the event that the scheme experiences or it is anticipated that the scheme will experience a shortfall in these contributions, RBWM will be required to notify TVB LEP of these developments. The provisions of clauses 8, Consequences of Delay; 9, Consequences of Change to the Design or Specification of the Scheme; or 10, Consequences of Failure will then be applied. • <u>Consequences of Delay</u>: In the event that the scheme experiences minor delays to its overall Business Case programme (no more than 10 weeks), RBWM will report these delays and the reasons for them, and the proposed remedial action to the next available meeting of the BLTB. In the event that the scheme experiences major delays to its overall Business Case programme (11 weeks or longer) RBWM will be required to seek permission from TVB LEP to reschedule any payments that are due or may be delayed in falling due because of the delay to the overall Business Case programme. • <u>Consequences of Change to the Design or Specification of the Scheme</u>: In the event that RBWM wishes to change the design or specification of the scheme such the scheme delivered will vary in any material aspect from the description given in the overall business case, RBWM will be required

Assurance Framework Check list	2.32 Maidenhead: Housing Sites Enabling Works Phase 1 – reprofiled
	<p>to seek prior written consent from TVB LEP. Failing this permission, no further monies will be paid to RBWM after the change becomes apparent to TVB LEP. In addition, consideration will be given to recovering any monies paid to RBWM in respect of this scheme.</p> <ul style="list-style-type: none"> • <u>Consequences of Failure</u>: As soon as it becomes apparent to RBWM that it will not be possible to deliver the scheme by the end of April 2021, written notice shall be given to the accountable body for TVB LEP. No further monies will be paid to RBWM after this point. In addition, consideration will be given to recovering any monies paid to RBWM in respect of this scheme. • <u>Claw back</u>: If the overall scheme achieves savings against budget, these savings will be shared by TVB LEP and the other funders noted above in proportion to the amounts set out in the Financial Profile. The accountable body for TVB LEP reserves the right to claw back any amounts of grant that have been spent on purposes other than the scheme as approved and any repayments due as a consequence of changes to the design or specification of the scheme or scheme failure. • <u>Evaluation One and Five Years On</u>: RBWM will produce scheme evaluations One and Five years after practical completion that comply with DfT guidance. • <u>Other Conditions of Local Growth Funds</u>: RBWM will acknowledge the financial contribution made to this scheme through Local Growth Funds and follow the ‘<u>Growth Deal Identity Guidelines</u>’ – see link here: http://www.thamesvalleyberkshire.co.uk/getfile/Public%20Documents/Strategic%20Economic%20Plan/Logos%20for%20branding/GROWTH%20EAL%20IDENTITY%20GUIDELINES%20280219.pdf?inline-view=true <p>It will also give due regard to the Equality Act 2010 - Public Sector and with the Public Services (Social Value Act) 2012, particularly through the employment of apprentices across the scheme supply chain.</p>

Conclusion

14. The Independent Assessor believes that the overall case for investment in the scheme appears strong, whilst pointing out that the delivery of the project will need to be carefully managed, particularly in relation to the management of risks and the project programme. However, they recommend full financial approval.

Background Papers

Item 9: BLTB 15 July 2020 Financial Approval 2.32 Maidenhead: Housing Sites Enabling Works Phase 1 reprofiled

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

i https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/589268/170202_Thames_Valley_Berkshire_LEP_GD_factsheet.pdf

ii <https://www.gov.uk/government/news/multi-million-pound-cash-boost-to-help-create-local-jobs-and-growth>

iii <http://www.thamesvalleyberkshire.co.uk/berkshire-strategic-transport-forum>

iv

https://www3.rbwm.gov.uk/info/200133/strategies_plans_and_policies/229/strategic_economic_plan

v <http://www.thamesvalleyberkshire.co.uk/berkshire-strategic-transport-forum>

vi https://www3.rbwm.gov.uk/info/200133/strategies_plans_and_policies/229/strategic_economic_plan

Appendix 1

Thames Valley Berkshire Local Enterprise Partnership

**Independent Assessment Summary Report: Maidenhead Housing
Sites Enabling Work Revised Submission**

July 2020

www.hatchregeneris.co.uk

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Executive Summary

- i. This technical note provides an independent assessment of the Maidenhead Housing Sites Enabling Works (HSEW) Scheme Business Case revised submission to the Thames Valley Berkshire Local Enterprise Partnership.

Scheme Summary

- ii. The full business case submission sets out the case for investment in capacity improvements at six key junctions around Maidenhead. The schemes will provide congestion relief associated with background growth in traffic, alongside trips generated by specific residential and commercial development sites within the town centre that have been allocated within the Local Plan.
- iii. The six junctions are spread across the town centre, as follows:
 - A308(M)/ A308 The Bingham's (Braywick Roundabout)
 - A308/ Stafferton Way/ Rushington Avenue (Stafferton Roundabout)
 - A4/ A308 Castle Hill (Castle Hill Roundabout)
 - A4/ B4447 Cookham Road/ Market Street (Cookham Roundabout)
 - A4/ B3024 Oldfield Road/ Lassell Gardens (Oldfield Junction)
 - A4/ A4094 Ray Mead Road/ Guard Club Road (Ray Mead Roundabout)
- iv. The improvements encompass a range of measures include carriageway widening, signalisation, and junction reconfiguration, with some associated improvements to cycling provision.

Review Findings

Conclusions

- v. The strategic case demonstrates alignment with strategic priorities and provides underlying evidence of the need to deliver highway junction improvements to support Local Plan residential and commercial development across the town. The case for the dependency of specific development site upon these highway improvements is made, along with the specific measures to be introduced. The extent to which the scheme addresses some of the secondary objectives is less clear.
- vi. The approach to modelling the direct economic benefits is generally robust and demonstrates the scheme should deliver very high value for money. The assessment of wider environmental and social impacts is limited and will require clear management through the detailed design process to ensure there are no significant negative impacts.

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- vii. The financial case appears sound and, whilst the information presented does not permit full verification, there is considered to be sufficient contingency to support a robust case for investment. The RBWM funding is included within their Capital Programme for 2020/21 and RBWM have committed to managing any potential cost overruns.
 - viii. The commercial and management cases are generally sound, but some information is limited in nature. The main areas for concern relate to the management of risk and programme delivery.

Recommendations

- ix. It is our conclusion that overall case for investment in the scheme appears strong, albeit there are some areas where the stated secondary objectives may not be met. The delivery of the project will need to be carefully managed, particularly in relation to the management of risks and the project programme.
- x. On this basis, we recommend the scheme for approval.

1. Introduction

- 1.1 This report provides an independent assessment of the revised Full Business Case (FBC) submitted by Royal Borough of Windsor and Maidenhead (RBWM) for a range of capacity improvements at six key junctions around Maidenhead.
- 1.2 This scheme was originally submitted and conditionally approved by the Berkshire Local Transport Body (BLTB) in March 2019. Since then, RBWM has been required to amend its Local Plan requirements, resulting in a reconfiguration of development site allocations. This has resulted in necessary amendments to the original scheme proposals, as well as revisions to the dependent development 'unlocked' by the scheme.
- 1.3 This report considers the revised evidence presented by RBWM and whether the package of measures still presents a robust case for the investment of Thames Valley Berkshire Local Enterprise Partnership (TVB LEP) growth deal funds.
- 1.4 The independent assessment has applied criteria from TVB LEP assurance framework and the requirements for transport scheme business cases set out within the Department for Transport's (DfT) WebTAG.

Submitted Information

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- 1.5 The independent assessment process for the Maidenhead Housing Sites Enabling Works (HSEW) submission has been conducted on the following set of documentation submitted by RBWM and their consultant team (Project Centre):
- Option Assessment Report (18th January 2019)
 - Original Full Business Case Report (18th January 2019)
 - Revised Full Business Case Report (6th July 2020)
- 1.6 Whilst no formal Appraisal Specification Report was submitted by the Applicant, and the overall approach to be adopted, has been discussed at a series of meetings with RBWM, Project Centre and WSP initially in Autumn 2018 and subsequently between January and June 2020.

Report Structure

- 1.7 This Independent Assessors Report responds to the formal submission of documentation, as well as the informal engagement process with RBWM and their consultants, to provide a review of information provided, assess its suitability and robustness against TVB LEPs assurance requirements, and provide recommendations in relation to the approval of LEP funding for the proposed scheme.
- 1.8 The report is structure as follows:
- Section 2: Option Assessment – provides a brief update on the process undertaken to revise the scheme options since they were initially identified.
 - Section 3: Appraisal Specification Report – presents a high-level review of the proposed approach to the full business case appraisal and its acceptability
 - Section 4: Full Business Case Submission – presents a summary of scheme elements included business case submission, alongside the details presented within each of the five ‘cases’ (Strategic, Economic, Financial, Commercial, Management). It also sets out the recommendations to the LEP Local Transport Body relating to the suitability of the scheme for funding.

2. Option Assessment

Overview

- 2.1 The original Option Appraisal Report provided a summary of the options assessed for various junction improvements around Maidenhead to accommodate residential and commercial development identified within the submitted Borough Local Plan. A review of this document was provided within the original Independent Assessors report.
- 2.2 As a result of the required revisions to the Local Plan and a new proposed set of land allocations for residential and commercial development it was necessary for RBWM to revisit the options assessment process. This included detailed traffic modelling of the impacts of all the proposed Local Plan allocations upon the operation of the transport network.

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- 2.3 This modelling work identified 19 junctions across the borough that could potentially be subject to significant congestion as a result of the development related highway trips. Of these 19 junctions, 11 are located in Maidenhead, although one of them (M4 J8/9 junction) is the responsibility of Highways England and so excluded from further local analysis.
- 2.4 Of the remaining ten junctions, the A308 / Broadway junction in the centre of Maidenhead was identified as having significant constraints that limits the potential to develop appropriate mitigation measures. No designs for this junction were developed.
- 2.5 Following a review of the remaining junctions within Maidenhead RBWM concluded that interventions at all nine junctions would not be feasible within the scheme scope, given the budget and time constraints. Therefore, RBWN proposed that the three sites (listed below) are taken forward independently and funded by the RBWM's capital programme;
- No. 1: A308 Holyport Road;
 - No. 5: Shoppenhangers Road/ Norreys Drive; and
 - No. 11: A4/ A404(M) The Thicket Roundabout.
- 2.6 All three are located on the outskirts of Maidenhead and so the main focus of the remaining six scheme is within the core town centre, with the exception of the A308 / A330 Braywick Roundabout. the full list of schemes, is as follows:
- A308(M)/ A308 The Bingham's (Braywick Roundabout)
 - A308/ Stafferton Way/ Rushington Avenue (Stafferton Roundabout)
 - A4/ A308 Castle Hill (Castle Hill Roundabout)
 - A4/ B4447 Cookham Road/ Market Street (Cookham Roundabout)
 - A4/ B3024 Oldfield Road/ Lassell Gardens (Oldfield Junction)
 - A4/ A4094 Ray Mead Road/ Guard Club Road (Ray Mead Roundabout)
- 2.7 Individual design options for each of the six schemes have been produced and an assessment process has identified the preferred design solution for each site.
- 2.8 Most of the junctions had clear preferred scheme options, with the exception of the Braywick Roundabout. this junction is forecast to suffer from the highest levels of congestion; however, there are a range of constraints (utilities, trees, ecology, structures, and land) that affect scheme designs. The solution being proposed within this business case submission includes signalisation of existing roundabout, widening approach and circulatory carriageway lanes. However, a second phase is proposed that would provide a left-turn slip road between the A308(M) and A308 Braywick Road.

Review

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- 2.9 The revised analysis work undertaken in response to the new Local Plan appears robust. It is recognised that the potential scale of residential and commercial development across the borough is significant and that it will require improvements to a large number of junctions.
- 2.10 Given the funding constraints available the process for identifying the six junctions, primarily located within the centre of Maidenhead, is considered a pragmatic approach and it is noted that three other junctions around Maidenhead will be taken forward directly by RBWM alongside these improvements.
- 2.11 The link between the delivery of development growth and the need for improvements at the six nominated junctions is established.
- 2.12 The appraisal framework for identifying the individual preferred scheme options for each junction is considered robust.
- 2.13 Whilst there is an identified benefit from a larger-scale scheme at Braywick roundabout, this cannot be delivered within the current funding available.

3. Appraisal Specification

Overview

- 3.1 Whilst no formal Appraisal Specification Report was submitted by the Applicant, the overall approach to be adopted has been discussed during a variety of meeting with RBWM, Project Centre and WSP, from December 2018 through to June 2020.
- 3.2 These discussions focused upon:
- The description of the scheme and the location of the proposed improvements;
 - The objectives of the scheme;
 - An understanding of Local Plan development proposals (both the original and revised) and how these will impact upon levels of trip generation;
 - An overview of the current and future highway network operating performance; and
 - The proposed appraisal methodology, with a specific focus upon the approach to the Economic Case.

Review

- 3.3 The primary purpose of the discussions were to agree whether the specific development sites identified as benefiting from the junction improvements were specifically 'dependent development' (as defined by WebTAG/MHCLG).

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- 3.4 After initial modelling work was undertaken, it was concluded that the level of trips generated by the developments was unable to be satisfactorily accommodated by the existing highway network.
- 3.5 Scenario modelling with 25% of the development indicated that the majority of the junctions would operate satisfactorily within this level of trip generation and so this was established as the 'deadweight' level of development (development that could occur without the implementation of the six junction schemes).
- 3.6 The allocated site referred to as the 'Triangle' site is recognised as having several constraints which impact upon its deliverability. As such, this site is also removed from consideration as 'dependent development', albeit that it is still anticipated to come forward at some stage.
- 3.7 A set of ten specific development sites were identified as being 'dependent development' and that highway junction improvements were required to "unlock" those developments.
- 3.8 It was agreed that the Applicant would follow the approach outlined within WebTAG Unit A2-2 'Induced Investment' to determine the economic impact of delivering the junction improvements to unlock specific development sites across the town. This will include assessing the uplift in land value for the sites that are unlocked.
- 3.9 It was also emphasised to the Applicant that it will be important to demonstrate the contribution that all selected junctions make to delivering housing and improving the highway network performance.
- 3.10 The rest of the business case submission was understood to follow standard DfT WebTAG protocols and so should, therefore, be acceptable as long as there is sufficient detail to match the scale of the funding ask.

4. Full Business Case

Overview

- 4.1 The full business case submission sets out the case for investment in six key junctions around Maidenhead that will 'unlock' 4,190 residential units and 39,000 sqm of commercial floorspace across the town centre.
- 4.2 In summary, this includes:
- A308(M)/ A308 The Bingham's (Braywick Roundabout)
 - A308/ Stafferton Way/ Rushington Avenue (Stafferton Roundabout)
 - A4/ A308 Castle Hill (Castle Hill Roundabout)
 - A4/ B4447 Cookham Road/ Market Street (Cookham Roundabout)
 - A4/ B3024 Oldfield Road/ Lassell Gardens (Oldfield Junction)
 - A4/ A4094 Ray Mead Road/ Guard Club Road (Ray Mead Roundabout)

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- 4.3 The delivery of these schemes has been deemed necessary to provide sufficient highway network capacity to accommodate the additional vehicle trips associated with the identified residential and commercial development. Without these schemes, the developments could not proceed without causing significant detrimental impact upon the performance of the highway network.

Key Input Assumption and Parameters

- 4.4 The overarching business case is based upon a range of key overarching assumptions around the Local Plan development and junction improvements, as follows:
- That a number of junctions across Maidenhead are, or will be, subject to significant delays that will restrict the ability to delivery residential and commercial development in and around the town centre.
 - That the residential and commercial development will proceed according to the revised Local Plan once the junction improvements have been delivered
 - The RBWM will delivery improvements at three other junctions around Maidenhead in support of the Local Plan development proposals;
 - That a range of other specific highway access measures will be delivered as part of individual site development plans to connect each site to the existing highway network. In particular, the external delivery of access to the Maidenhead Golf Course Development Site.
- 4.5 In addition, the following specific assumptions and data sources underpin the appraisal process:
- All scheme elements will be completed and operational by April 2021
 - Royal Borough of Windsor and Maidenhead Highway Model (RBWMHM2) has been utilised to assess the direct economic benefits, with the following key information:
 - ☐ AM peak hour (08:00-09:00) and PM peak hour (17:00-18:00);
 - ☐ 2016 base model and 2033 future year model
 - ☐ In the absence of a second forecast year, the 2016 base year models has been utilised as a proxy
 - ☐ Traffic growth constrained to National Trip End Model (NTEM) and National Road Traffic Forecast (NRTF) trip growth
 - ☐ Three model scenarios:
 - 1) Do Minimum (Reference)
 - 2) Do Something 1 (without dependent development)
 - 3) Do Something 2 (with dependent development)
 - Annualisation factors:
 - ☐ AM Peak hour = 645
 - ☐ PM Peak hour = 690
 - Costs and benefits discounted to 2010 prices
 - 15% Optimism Bias

Independent Assessor Comment

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- 4.6 From reviewing previous modelling outputs that assessed the impact of the revised Local Plan development upon the operation of the local highway network, it is apparent that the scale of the development, without mitigation, will cause significant congestion and delays. At a strategic level, it is, therefore, clear that much of the proposed revised Local Plan development is dependent upon a package of highway measures being delivered. The following sections of the business case provide the detail as to what scale of development is dependent upon which junction improvements.
- 4.7 Whilst there will always be uncertainty and variation in the delivery of Local Plan growth, the assumption that the growth will proceed once the package of scheme measures have been delivered is considered sound. A standard sensitivity test would be to consider alternative high and low growth projections.
- 4.8 The delivery of the package of junction enhancements will not, in themselves, provide vehicular access to specific development sites. For some of the larger sites, such as Maidenhead Golf Course, specific link roads and junctions are required. The outcomes of this business case are predicated on these highway links being provided and so these are considered to be key dependencies. As a central case assumption, it is considered reasonable to assume the required infrastructure will be delivered.
- 4.9 The application of the RBWMHM2 is considered to be an appropriate tool with which to assess the direct transport impacts of the scheme. Whilst the data collection and local model validation reports have not been reviewed in detail, the evidence provided gives confidence that this is a robust predictive tool.
- 4.10 Whilst it would be typical to have a model year that coincided with the scheme opening year, it is acknowledged that this would have required substantial additional development work. The application of the 2016 model, adjusted accordingly, is considered to be an appropriate proxy for assessing the impacts.
- 4.11 Constraining growth to National Trip End Model (NTEM) and National Road Traffic Forecast (NRTF) trip growth represents correct procedure.
- 4.12 The modelling scenarios were agreed with RBWM and the annualisation factors applied appear realistic. The 15% optimism bias is considered appropriate for a scheme at this stage of development.

Strategic Case

- 4.13 The Strategic Case provides an overview of the strategic context and contribution of the scheme to strategic priorities, as well as a clear presentation of the need for highway investment to enable specific Local Plan residential and commercial development to proceed.

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- 4.14 An overview of the study area context is presented in relation to economic growth and exiting travel patterns. The contribution of the scheme to national, regional and local strategic priorities is set out, specifically highlighting housing need, growth aspirations, and development of Maidenhead Town Centre. This includes a summary of the revised Borough Local Plan (BLP) that was submitted to the Secretary of State for approval in October 2019, and the overall level of residential dwellings proposed within Maidenhead (5,804) and the location of key allocation sites.
- 4.15 The impact of Local Plan growth on the future operation of the highway network is presented. This identified 19 highway junctions where the operation of the network is likely to become heavily constrained as a result of the additional vehicle trips generated from development growth. The process for identifying the six junction schemes to be taken forward within this business case is identified (as summarised within Section 2 of this report), as is the process of assessing 'deadweight' and 'dependent development' (as summarised within Section 3 of this report).
- 4.16 A description of each of the six junctions is presented along with the key issues and constraints.
- 4.17 The primary scheme objective is defined as providing junction capacity to mitigate the cumulative impact of traffic generated for new development by providing additional capacity at constrained sites. Secondary objectives relate to reducing accidents, improving air quality, and improving access for pedestrians and cyclists. A series of measures of success are set out, including comparison of traffic flows and delays to 2016 baseline levels, accident levels, air quality, and pedestrian and cycle counts.
- 4.18 The proposed enhancements for each of the six junction locations are set out, indicating different options and the selected preferred option.
- 4.19 The main constraints in delivering the schemes are stated to relate to the phasing of construction work for both the junctions and the wider development sites.
- 4.20 A discussion on inter-dependencies is included, although it focuses more broadly upon project risks. Key stakeholders who will need to be consulted are listed.

Independent Assessor Comment

- 4.21 The Strategic Case is considered to present a good overview of the issues, objectives and preferred transport solutions for supporting Local Plan residential and commercial development growth across Maidenhead Town Centre.
- 4.22 The policy context is well established, with a clear understanding of the priorities of national, regional and local bodies, including the Berkshire Local Industrial Strategy and Strategic Economic Plan.

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- 4.23 The summary of the Local Plan development work provides good context around the issues of delivering development. It clearly demonstrates how a series of junctions were identified as requiring enhancements to support growth aspirations.
- 4.24 The strategic transport modelling work demonstrates the impact of increasing levels of development upon the operational performance of the local highway network. The outputs demonstrate the extent to which the full aspirations of the revised Local Plan housing growth could not be delivered without creating significant delays at a series of junctions across the town centre.
- 4.25 Whilst it is noted that the strategic highway model does not accurately represent delays at all of the junctions within the town centre, alternative evidence is presented as part of the process of identifying key junctions for improvement. This is considered acceptable.
- 4.26 The process by which 'deadweight' and 'dependent development' has been undertaken is considered to be acceptable and it is accepted that 25% of the identified Local Plan growth can be considered 'deadweight'.
- 4.27 The established scheme objectives are clear and logical, and the identified measures of success align well with the objectives.
- 4.28 The options assessment section demonstrates that due consideration has been given to the optimum scheme designs for each junction.
- 4.29 The discussion on constraints focuses upon how the series of junction enhancement can be delivered with minimal impact upon the overall operation of the transport network. This is considered particularly important given the additional potential construction impacts from housing and commercial site development and general regeneration of the town centre.
- 4.30 The section on inter-dependencies is not considered to pick up on any wider issues around the delivery of the housing sites, in particular the site-specific highway improvements works associated with the Golf Course site.
- 4.31 In the discussion of stakeholders, there is no indication of the level of engagement to-date with these groups and the level of support for the proposed schemes.
- 4.32 Overall, the Strategic Case is considered to provide sufficient evidence to demonstrate the need to deliver enhancements to the six identified junctions to support delivery of Local Plan residential and commercial development within the town centre. The specific selection of sites that are considered fully dependent upon the capacity improvements is considered robust and there is clear evidence of how the six junction schemes will support the delivery of this development.

4.33 There is limited discussion around how the schemes will deliver against the secondary scheme objectives; however, this is partly referenced within the Economic Case. Given the extent of the residential and commercial development that is 'unlocked' by the scheme, it is not clear whether accident levels and air quality will improve as a result of the interventions.

Economic Case

4.34 The Economic Case sets out the transport modelling approach and the scenarios that have been considered to assess the scheme benefits.

4.35 The approach to transport modelling describes the use of the RBWM Highway Model 2 (RBWM-HM2) to assess the scheme impacts. This is a VISUM model covering two peak periods (AM = 8am to 9am; PM = 5pm to 6pm) and was developed to represent 2016 conditions. Reference is made to a 'Data Collection Report' and a 'Local Model Validation Report' that provide evidence of the robustness of the model.

4.36 A future year 2033 model has been used to assess future year impacts but no other interim model year (e.g. scheme opening 2021) is available and so the base 2016 model has been used as a proxy. Three separate model scenarios are utilised within the assessment:

- Reference Case – Without the junction improvements or the development dependent upon the junction improvements
- Do Something 1 – With the junction improvement but without the development dependent upon the junction improvement
- Do Something 2 – With both the junction improvements and the development dependent upon the junction improvement

4.37 The types of scheme benefit that have been assessed include accident benefits, journey time savings, vehicle operating costs, carbon savings, and the impact upon indirect tax revenues.

4.38 The accident benefits are quantitatively assessed using the COBALT software and demonstrate negative benefits resulting directly from the introduction of the scheme, as well as from the additional development related traffic.

4.39 The transport user benefits (journey times, vehicle operating cost, and carbon impacts) and scheme costs are quantitatively assessed using TUBA software.

4.40 The capital costs of each junction improvement scheme have been estimated. An uplift of 15% for optimism bias has been applied. Taking account of the profile of capital cost expenditure, this generates an estimated Presented Value of Costs (PVC) of around £5.9m.

4.41 A conventional assessment of transport user benefits is assessed by comparing the outcomes between the Do-Something 1 Scenario and the Reference Case to

demonstrate the benefits of the scheme to existing highway users. This estimates a Present Value of Benefits of around £29.6 million. Set against the PVC this generates a basic Benefit Cost Ratio (BCR) of around 5.01 to 1.

- 4.42 A separate assessment of transport external costs is undertaken, comparing Do-Something 2 Scenario against Do-Something 1 to demonstrate the impact of the additional trips generated by the dependent development upon existing highway users. This estimates a negative Present Value of Benefits of around £-106.9 million.
- 4.43 An assessment of land value uplift is presented to determine the economic benefit from “unlocking” the dependent development. This incorporates an allowance for ‘deadweight’ and ‘additionality impact’. The estimated land value uplift is presented as £178.5 million.
- 4.44 Combining the conventional transport user benefits, the transport external costs, and the land value uplift gives an overall forecast assessment of Present Value of Benefits of £104.5 million. Set against the scheme PVC would generate an adjusted BCR of 17.1 to 1, representing extremely high value for money.
- 4.45 It is indicated that the transport external cost would need to be over 84% higher, or the land value uplift to be over 50% lower, for the adjusted BCR to fall below 2 to 1 (high value for money).
- 4.46 A summary of the environmental and social impacts is provided. This indicates that the combination of the junction schemes and the dependent development will have negative impacts upon local air quality and carbon emissions. The physical impact of junction widening are stated as being unlikely to generate significant adverse noise, landscape, townscape, or biodiversity impacts, and that any negative impacts will be sought to be off-set. The social impacts are generally stated to be neutral.
- 4.47 A short Value for Money Statement concludes the Economic Case, summarising the BCRs.

Independent Assessor Comment

- 4.48 The overarching approach adopted within the Economic Case is considered robust, including the modelling approach, scenarios considered, and benefits assessed.
- 4.49 There is no reference to the options assessment process within the Economic Case, but it is acknowledged that it is covered in other areas of the business case.
- 4.50 The modelling tools used are considered appropriate but there is no specific discussion of the accuracy of the model in replicating traffic conditions within Maidenhead Town Centre. It is known that the model is not considered to replicate

delays at the Oldfield Road junction particularly well. Reference is made to separate documentation not included with the business case submission.

- 4.51 No specific traffic model outputs are presented in the Economic Case from the base model, the reference case or the do-something scenarios that demonstrate the overarching issues or impacts of either the scheme measures or the dependent development trips. It is, therefore, not feasible to draw any conclusions where the majority of scheme benefits are being derived.
- 4.52 The overall approach to assessing the types of benefits is considered robust. The application of a 15% optimism bias to the capital costs is considered appropriate.
- 4.53 The assessment of transport user benefits is considered appropriate and the outputs appear consistent. The assessment of transport external cost is also considered appropriate and the level of negative impacts are to be expected for the level of 'dependent development'.
- 4.54 The calculation of land value uplift is detailed and is considered robust, with an appropriate set of assumptions. Whilst a detailed presentation of current land values associated within individual sites is not presented, the overall uplifts appear feasible (e.g. average uplift in value per residential dwelling = £101,000 in 2017 prices).
- 4.55 The overall quantified assessment of value for money appears to demonstrate that the scheme will deliver very high value for money from investment, both in terms of the direct transport user benefits delivered by the scheme, but also the net impact of unlocking development. It should be noted, as set out in Section 4.4, the full realisation of benefits is reliant upon a range of other enhancements being delivered and so the adjusted BCR may not, in reality, be quite as high as projected but will be high, none-the-less.
- 4.56 The economic case covers the key assessment of quantified benefits and provides high level assessment of environmental and social impacts. Given the scale of the investment, the assessment is considered relatively limited and there appears to be a number of areas where the scheme could have negative environmental impacts, including air quality, noise, carbon emissions, townscape, biodiversity and accident levels. These will all need to be carefully managed during the detailed design phase of the project.
- 4.57 An overall Appraisal Summary Table is provided as an appendix; however, it is not fully complete. This should include assessments of all the potential environmental and social impacts, even if only qualitatively.
- 4.58 Whilst no formal sensitivity tests have been undertaken, the FBC does consider the scale of potential change in benefits that would need to result for the BCR to fall below 2 to 1. Given the overall economic case for investment is so strong, this approach is considered acceptable.

Financial Case

- 4.59 The Financial Case provides an overview of scheme capital costs, cost profiles and funding sources.
- 4.60 The overall scheme capital costs are detailed and described as being informed by knowledge, understanding and experience of the quantum of costs required to deliver the proposed scheme, based on preliminary designs. The level of contingency applied is 20% of the base capital costs. Standard allowances for design and preliminaries, totalling 35% of base scheme costs, are included.
- 4.61 Consideration of maintenance costs is presented and it is concluded that these are more likely to decrease than increase as a result of the scheme, as it will refurbish existing carriageway. This is not considered to be an unreasonable assumption.
- 4.62 The profile of costs is set out between 2019/20 and 2020/21. Similarly, the source and profile of funding is set out.

Independent Assessor Comment

- 4.63 The individual scheme costs for each junction are presented and indicate that around half of the investment relates to the Braywick roundabout element. The improvements at junction D (Cookham road Roundabout) and F (Ray Mead Roundabout) are very small scale in nature. The detail of the scheme costs is not presented and so cannot be fully verified.
- 4.64 The level of contingency applied (20%) is considered a robust amount, but again no detail of how this was derived is presented.
- 4.65 There is no specific indication of whether construction inflation has been taken into account within the cost profiling.
- 4.66 The source of match-funding is presented, and it is understood that it is included within RBWM's capital programme for 2020/21. Whilst the risk of higher costs is partly covered by the contingency, RBWM have stated that they will be responsible for managing any further cost overruns and ensure these are minimised, where possible.

Commercial Case

- 4.67 The Commercial Case outlines the procurement strategy for the schemes and provides information on payment mechanisms, risk allocation, contract length and contract management.
- 4.68 Four strategic outcome objectives are listed in relation to achieving cost certainty; ensuring a robust implementation programme is developed; that preparation costs

are minimised; and there is contractor input into risk management. The key deliverables are stated in relation to an output-based specification.

- 4.69 The procurement strategy outlines three long-term framework contracts for delivery of the project. It demonstrates that these contracts were let in 2017 through a rigorous competitive tender process to ensure best value for money.
- 4.70 RBWM conclude that, as the scheme includes standard highway improvements that fit the scope of the construction framework, this is the most appropriate approach to procuring the works at preferential rates. This includes consideration of the timescales required for delivery that would create challenges if a full procurement process was undertaken. Furthermore, delivery through the framework contractor will enable better co-ordination with other works being undertaken across the Maidenhead highway network.
- 4.71 The existing term contracts are based on an NEC3 contract model option B, permitting penalty clauses in relation to over-running. It is stated that payments are made in arrears to the value of 80% of the contract, subject to checks. The final 20% is paid upon completion.
- 4.72 Risk allocation and transfer will be highlighted during contract negotiations with partners and allocated to the party best suited to manage it. The Project Board will primarily manage strategic risk. The Project Manager will have overall responsibility for the risk management process.
- 4.73 The current construction framework contract is stated to run till 2021 but can be extended for job specific projects.
- 4.74 The ability for the contractor to resource the project effectively will be scrutinised at the procurement stage. Design resource is stated as being readily available.
- 4.75 The contracts will be managed through as combination of workshops, reviews, meetings, and day-to-day operation.

Independent Assessor Comment

- 4.76 Overall the commercial case sets out how the scheme can be delivered through existing framework contracts that offer high value for money and an effective and efficient procurement process.
- 4.77 The outputs-based specification details what is to be achieved through the procurement process, as opposed to the specific detail of what the overall contract will need to deliver.
- 4.78 The procurement strategy does not consider any alternative approaches to procurement other than the existing framework contracts. However, the case for

using the frameworks is well made and it is clear that the required construction works clearly fit with the core the specification of the construction framework.

- 4.79 The payment terms, including potential penalty clauses, are well set out for the main construction framework contract.
- 4.80 Whilst there is a useful description of general risk management protocols, more information could be presented on how contract negotiations will ensure risk allocation and transfer will be shared and apportioned to most appropriate partner.
- 4.81 Consideration is also given to contract lengths, human resource issues, and contract management, which provides useful additional understanding of the commercial case.
- 4.82 Overall it is concluded that use of the framework contracts represents an appropriate commercial approach.

Management Case

- 4.83 The Management Case presents information on how the proposal will be successfully delivered and managed.
- 4.84 Several examples of previous transport projects are presented that are considered similar or relevant to the highway schemes being delivered through this project. This is accompanied by evidence of the proposed delivery partners involvement in one of the schemes, alongside other projects they have delivered separately.
- 4.85 A list of project dependencies is set out and centres around ensuring general support and liaison and financial backing. It is stated that none of the schemes are directly dependent upon other projects but that the overall delivery will need to be carefully managed to minimise overall disruption caused by delivering six junction improvements, alongside other transport and regeneration schemes being brought forward in the town.
- 4.86 A detailed account of roles and jobs titles in RBWM management and governance arrangements is included. This includes the use of Microsoft Teams software to manage the project and to provide visibility of the status of the work.
- 4.87 A project plan/programme is referred to within an appendix. A summary of key milestones is set out and describes two separate phases of construction. The A308 Stafferton Way Roundabout, A4 Castle Hill Roundabout, A4 Cookham Roundabout, and A4 Ray Mead Roundabout will be delivered as part of Phase 1, with construction from September 2020 through to January 2021. Phase 2 comprises the more complex, larger sites (A308 Braywick Roundabout, and A4 Oldfield Junction) with construction from December 2020 through to April 2021.

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- 4.88 An assurance and approval plan is set out that includes sign-off procedures by the Project Board. An overarching communications and stakeholder management plan is outlined. This identifies a long-list of key stakeholder who will be kept aware of the schemes progress and will be provided with the opportunities to provide feedback. A series of mechanisms for promoting the scheme are identified.
- 4.89 Responsibilities for programme and project reporting are set out, including the Project Manager and Project Sponsor. In addition, the key workstreams for implementing the project are summarised.
- 4.90 A summary section on risk management is presented, with reference to a risk register in an appendix. Risks are categorised in four areas: Strategic, Design, Financial, Construction. Four main risks, in terms of severity, are highlighted, including any required revisions to scheme costs at detailed design stage, and three issues relating to the potential costs and delays relating to statutory undertakings and unknown services.
- 4.91 A section on benefits realisation sets out a three-stage monitoring and evaluation strategy with key performance indicators specified, with targets, and data collection requirements, as well as a process evaluation process specified.

Independent Assessor Comment

- 4.92 The management case, in general, provides a comprehensive range of information that provides assurance around the delivery arrangements in place for the project.
- 4.93 The evidence of delivering previous projects showcases some schemes that are directly similar in nature to the highway construction works in this project, although others are less directly relevant. The examples provided in relation to delivery partners is also useful and, overall provides sufficient evidence that the project team has sufficient experience to successfully deliver this project.
- 4.94 The project dependencies focus upon the inter-relationships between the six junction schemes themselves, as well as other major schemes (transport and regeneration) occurring in the town. There is no specific reference to enabling works for some of the development sites themselves, including the Golf Course Site, where it is understood new accesses will need to be provided.
- 4.95 The section of governance is considered detailed, although it generally describes generic positions without reference to who will fill these positions and their individual experience.
- 4.96 The project programme is attached within the appendices and provides an overarching programme for all six scheme elements in terms of preliminary design (generally completed), detailed design (June 2020 to November 2020), procurement (August 2020 to January 2020), and construction (September 2020 to April 2021) is

presented. There is no specific reference to any engagement or statutory consultation requirements and how these may impact upon the programme. It is understood that there may be some requirements for amendments to Traffic Management Orders, and these will require statutory consultation, but RBWM consider the risk of objections to be minimal. Overall, the programme appears challenging with limited scope for any delays.

- 4.97 The assurance and approval plan provides an acceptable overview of processes.
- 4.98 The communication and stakeholder management plan identifies a comprehensive range of stakeholders and indicates how they will all be engaged. The type of consultation, and any implications of objections to scheme elements, is not directly stated, but it is understood the only requirement may be statutory consultation for minor amendment to Traffic Management Orders. This would take place during the detailed design phase. RBWM consider the risk of objections to be low but this cannot be confirmed at this stage.
- 4.99 The programme/project reporting and the implementation sections provide useful insight into proposed processes. The key workstreams provide additional information around programme elements, but it is not clear at what stages each element will be undertaken, in particular utilities work.
- 4.100 The detailed risk register is attached within the appendices, dated 26th June 2020, although some items listed appear out-of-date. It identifies five risk with potential for 'major' consequences, including: change in political leadership and withdrawal of support; funding not forthcoming from RBWM due to budget pressures; objection to the scheme from stakeholders; unidentified utilities; and environmental issues from loss of vegetation. Whilst mitigation actions are identified, they tend to relate to early consultation and engagement, as opposed to direct mitigation in the event that a risk comes to fruition.
- 4.101 The benefits realisation section does not directly comment upon mechanisms to ensure that the identified benefits of the scheme are delivered and maximised. The monitoring and evaluation plan provides clear target metrics and a process for evaluation, although the reference case against which the scheme will be assessed is not clear.

Summary and Conclusions

Summary

- 4.102 The review of the five cases has identified a series of key summary points:
- The strategic case demonstrates evidence for the need to deliver enhancements to a range of junctions to support delivery of Local Plan residential and commercial development within the town centre. Clear evidence of the level of development directly dependent upon the six

proposed junction enhancements is provided and there is a logical explanation for the selection of these junctions.

- A clear primary objective is established and with overarching evidence of how the package of scheme measures should address this objective, albeit no direct modelling outputs are presented and so it is unclear the extent to which each individual scheme measure contributes to the overall benefits. There is also a set of secondary objectives, relating to accident reduction, air quality, accessibility for walking & cycling. The manner in which these objectives are addressed by the scheme is less well evidenced and, indeed, it appears as though accident levels could rise overall as a result of the scheme and air quality deteriorate (due to the unlocked development).
- The overall economic case assessment has been conducted in an appropriate manner. The conventional assessment of benefits to existing road users demonstrates that the combined package delivers strong benefits. Furthermore, when the impact of additional vehicle trips associated with the 'unlocked' development is considered, alongside the uplift in economic value from the residential and commercial development 'unlocked', the net benefits are even stronger. Overall this demonstrates the scheme should deliver very high value for money from investment.
- Whilst some consideration of environmental and social impacts is included, this is relatively high level and it is challenging to draw any strong conclusions. This is particularly the case for issues around air quality and accessibility for walking and cycling, which are part of the secondary objectives of the scheme. Whilst an overall Appraisal Summary Table is presented, it is not considered complete.
- The overall financial case for the scheme is considered to be relatively robust, at an overarching level, with an appropriate contingency allowance included. More information could be presented around the development of the scheme costs and the degree to which specific risks have been considered. The RBWM funding is committed within their Capital Programme for 2020/21 and RBWM have stated they will take responsibility for managing any potential cost overruns would be covered.
- The commercial case is well presented. Whilst it only focuses upon a single procurement strategy, relating to the use of existing framework contracts, sufficient evidence is presented to demonstrate that this is a reasonable approach to adopt.
- The management case provides a comprehensive range of information around management and delivery protocols. The project programme, whilst indicating component elements, is still relatively high level and there is limited information about any required consultation and if this could affect deliver. More generally the risk register identifies a number of potentially 'major' and it is unclear if comprehensive contingency and mitigation plans are in place.

Conclusions

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- 4.103 The strategic case demonstrates alignment with strategic priorities and provides underlying evidence of the need to deliver highway junction improvements to support Local Plan residential and commercial development across the town. The case for the dependency of specific development site upon these highway improvements is made, along with the specific measures to be introduced. The extent to which the scheme addresses some of the secondary objectives is less clear.
- 4.104 The approach to modelling the direct economic benefits is generally robust and demonstrates the scheme should deliver very high value for money. The assessment of wider environmental and social impacts is limited and will require clear management through the detailed design process to ensure there are no significant negative impacts.
- 4.105 The financial case appears sound and, whilst the information presented does not permit full verification, there is considered to be sufficient contingency to support a robust case for investment. The RBWM funding is included within their Capital Programme for 2020/21 and RBWM have committed to managing any potential cost overruns.
- 4.106 The commercial and management cases are generally sound, but some information is limited in nature. The main areas for concern relate to the management of risk and programme delivery.
- 4.107 It is our conclusion that overall case for investment in the scheme appears strong, albeit there are some areas where the stated secondary objectives may not be met. The delivery of the project will need to be carefully managed, particularly in relation to the management of risks and the project programme.
- 4.108 On this basis, we recommend the scheme for approval.

Appendix 2

Maidenhead Housing Sites Enabling Works Business Case Addendum

Client Name: Royal Borough of Windsor and Maidenhead

Date: May 2020

EXECUTIVE SUMMARY

This report sets out the business case for the 'Maidenhead Housing Sites Enabling Works' to secure Local Growth Deal funding for the scheme.

The scheme consists of a series of junction improvements around Maidenhead, which are necessary to allow new residential and commercial development identified within the submitted Borough Local Plan to come forward. The business case is structured in accordance with the Green Book five-case model, comprising of the following cases: strategic, economic, financial, commercial, and management.

Strategic Case

The Maidenhead Housing Sites Enabling Works scheme will deliver capacity improvements at six key junctions around Maidenhead:

- | A308(M)/ A308 The Bingham's (Braywick Roundabout);
- | A308/ Stafferton Way/ Rushington Avenue (Stafferton Roundabout);
- | A4/ A308 Castle Hill (Castle Hill Roundabout);
- | A4/ B4447 Cookham Road/ Market Street (Cookham Roundabout);
- | A4/ B3024 Oldfield Road/ Lassell Gardens (Oldfield Junction); and
- | A4/ A4094 Ray Mead Road/ Guard Club Road (Ray Mead Roundabout).

The Royal Borough of Windsor and Maidenhead (RBWM) is seeking to improve access by public transport, cycling and walking to encourage more sustainable travel patterns before considering additional capacity on the road network. However, traffic modelling undertaken

to inform the development of the Borough Local Plan shows that there will still be significant additional peak hour congestion as a result of background growth and planned development.

By delivering the junction improvements and increasing capacity, the scheme will enable the delivery of the Borough Local Plan development, accommodating increased traffic flows, reduced journey times and casualties, improving air quality, and increasing pedestrian and cycle movements. Failure to deliver the scheme will result in significant economic, environmental, and social impacts. In particular, regeneration and development activity in and around Maidenhead would be constrained or deferred due to inadequate capacity on the local road network and, RBWM would be unable to achieve its housing targets. The scheme supports the Thames Valley Berkshire Strategic Economic Plan goals with respect to infrastructure. It is also a key element of the Maidenhead Town Centre Area Action Plan, Borough Local Plan and Infrastructure Delivery Plan, supporting regeneration of the town centre and the development of the Maidenhead Golf Course site, as well as enabling commercial development to come forward in other parts of Maidenhead.

Economic Case

The economic benefits generated by the scheme significantly outweigh the costs, with the economic assessment demonstrating the scheme shall produce a Benefit/ Cost Ratio (BCR) of 5.01. When the impacts of dependent development are considered, the benefits of the scheme significantly increase, generating a BCR of 17.13. The economic assessment has been informed by strategic modelling, considering the transport user, accident, and land value impacts of the scheme.

Financial Case

The Maidenhead Housing Sites Enabling Works proposal is a strong fit with local, regional, and national policies and priorities relating to transportation investment and economic growth. Funding is available through the Local Growth Fund (LGF) and Business Rates Retention Pilot (BRRP), which has been provisionally allocated to this project subject to RBWM demonstrating a satisfactory business case.

The cost of the scheme has been further refined through the options assessment process. The total cost of the preferred option is £6,335,000, which includes a 15% allowance for preliminaries, 20% for design and legal fees, and a 20% contingency.

Total LGF funding of £4,213,000 and BRRP funding of £1,068,000 will be required for scheme delivery; with a S106 contribution of £316,000, and capital funding of £738,000 from RBWM.

Commercial Case

RBWM is able to draw on existing long-term framework contracts for delivery of aspects of the project including:

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- I Volker Highways for delivery of highways construction services, traffic signs and road markings;
 - I Project Centre for professional engineering services, including structures, highway planning and design services; and
 - I AA Lighting / Zeta for the design and delivery of street lighting solutions.

The existing contract for construction currently runs to 2021. However, this would be extended for job specific projects under construction for the duration of the scheme. RBWM will undertake signal design using in-house expertise. Delivery of the signal schemes will be through preferred contractors Siemens and Simone Surveys.

The contract follows a traditional NEC 3 format, ensuring that the contractual / commercial arrangement will be well defined. This form of contract is well understood throughout the supply chain and relies on a pre-defined risk register to allocate and manage anticipated risk.

Management Case

RBWM, its consultants, and contractors all have extensive experience of delivering projects of similar cost, scale, and complexity. The scheme is not dependent upon other projects. However, certain elements will need to be carefully programmed to avoid creating unacceptable levels of congestion on key transport corridors. Works will also need to be coordinated with other major transport schemes, which are due to take place over a similar timescale.

The Council has developed sound project management and governance arrangements. This includes regular scrutiny by elected members, as well as oversight by a Project Board consisting of senior officers. A project manager will be appointed who will be responsible for delivering the project on behalf of the Project Board and for managing the Project Team.

Key project milestones include:

- I Business case approval: July 2020;
 - I Detailed design: June – September (Phase 1), November 2020 (Phase 2);
 - I Construction commencement: September 2020 (Phase 1), December 2020 (Phase 2);
- and
- I Construction completion: April 2021.

The scheme monitoring and evaluation plan will consist of three distinct stages:

- I Stage 1 - Pre-Construction Study;
- I Stage 2 – One Year Post Opening Process Evaluation, Q2 2022; and
- I Stage 3 - Five Year Post Opening Impact Evaluation Study, Q2 2026.

A process evaluation will be undertaken as the construction nears completion. The aim will be to: identify factors influencing the extent to which objectives have been achieved; identify and investigate unintended outcomes; and identify lessons learned. After

completion of the monitoring and impact evaluation, an economic evaluation will be undertaken to assess the accountability of the scheme investment.

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1. INTRODUCTION

1.1 Purpose of report

1.1.1 This report sets out the updated business case for the ‘Maidenhead Housing Sites Enabling Works’ scheme, to secure Growth Deal funding from Thames Valley Berkshire Local Enterprise Partnership (LEP). Preliminary designs for the scheme have been completed, following extensive review of options, informed by strategic and localised traffic modelling. The scheme is now in the position to progress to detailed design and construction, subject to approval of this business case.

1.1.2 The scheme consists of a series of junction improvements at six key junctions within Maidenhead – listed below – which are necessary to accommodate and enable the delivery of residential and commercial development allocated within the Borough Local Plan (BLP).

- | A308(M)/ A308 The Bingham's (Braywick Roundabout)
- | A308/ Stafferton Way/ Rushington Avenue (Stafferton Roundabout)
- | A4/ A308 Castle Hill (Castle Hill Roundabout)
- | A4/ B4447 Cookham Road/ Market Street (Cookham Roundabout)
- | A4/ B3024 Oldfield Road/ Lassell Gardens (Oldfield Junction)
- | A4/ A4094 Ray Mead Road/ Guard Club Road (Ray Mead Roundabout)

1.2 Background

1.2.1 Traffic modelling has shown that by 2033 congestion within Maidenhead would reach unacceptable levels, as a result of increases in traffic flows from general background growth, and additional traffic generated from new development. Improvements at the six critical junctions listed above will address this issue by providing additional traffic capacity on the local road network. Opportunities have also been taken to improve facilities for walking, cycling, and public transport.

1.2.2 The cost of the works is estimated at £6.335million. The Royal Borough of Windsor and Maidenhead (RBWM) is seeking £4.213million of Local Growth Fund (LGF) funding and £1.068million Business Rates Retention Pilot (BRRP) funding, with the balance coming from developer funding (£316,000), and the RBWM's capital programme (£737,500).

1.2.3 It is intended that construction will take place between September 2020 and April 2021, so that works are substantially complete in advance of the major town centre regeneration and other major development sites coming on stream.

1.3 Structure of the report

1.3.1 This report has been prepared in accordance with the Department for Transport (DfT)'s Transport Appraisal Guidance (TAG), and HM Treasury five-case model, structured as follows:

- | Section 2 – Strategic Case: describes why the scheme is needed, defines the scope, outcomes to be delivered, and demonstrates how the project aligns with national, regional, and local priorities and plans.
- | Section 3 – Economic Case: presents an appraisal of the likely impacts of a range of options and the resulting value for money of the final scheme.
- | Section 4 – Financial Case: demonstrates that the scheme is affordable, providing details of the cost and funding arrangements.
- | Section 5 – Commercial Case: provides evidence of the commercial viability of the scheme and describes the procurement strategy
- | Section 6 – Management Case: sets out how the delivery of the scheme will be managed, including programme and risk, as well as arrangements for monitoring and post-implementation evaluation.
- | Section 7 – Conclusions: presents a summary and conclusions of the business case.

2. STRATEGIC CASE

2.1 Area description

2.1.1 Maidenhead is located towards the eastern end of Berkshire, around 30 miles to the west of London and around 15 miles to the west of Heathrow Airport.

2.1.2 As one of the two main towns in the Royal Borough of Windsor and Maidenhead, it is a focus for employment, shopping, and leisure trips in the area.

2.1.3 Eighteen of the South-East's top 500 companies now have their main offices in Maidenhead. Key sectors include digital media technology, healthcare, and life sciences. As such, it draws employees from a wide catchment, with significant levels of inbound commuting and longer than average commuting distances.

2.1.4 Similarly, the proximity of Maidenhead to London and other towns within the Thames Valley means that there is also significant outbound commuting. Again, commuter distances are longer than average. Figure 2.1 shows the inbound and outbound commuting patterns, including the top commuter origins and destinations.

Figure 2.1 – Inbound and outbound commuting (2011 Census Data)

2.1.5 Although some of these commuter journeys are well served by public transport (particularly east-west movements by rail), others are much more difficult to serve by public transport, with services having uncompetitive journey times. For these journeys, travel by car is the only viable option (e.g. travel to / from Bracknell, Wokingham, and High Wycombe). As a result, the proportion of single-occupant car trips is particularly high (see Table 2.1), which puts pressure on the local road network, particularly roads such as the A4, A308 that link to the strategic road network.

Table 2.1 – Commuter mode share for people working in RBWM (2011 Census Data)

Mode of Travel	%
Driving a car / van	71.5%
Passenger in car / van	4.9%
Taxi	0.4%
Motorcycle / scooter / moped	0.7%
Train	5.9%
Underground / metro / light rail	0.5%
Bus / minibus / coach	2.5%
Bicycle	2.8%
On foot	10.4%
Other	0.4%

2.1.6 Maidenhead is well served by strategic transport networks, with the M4 and Great Western Main Line providing strong east-west connections between London and the West of England / South Wales, and the A404(M) linking to the M40, which provides excellent road links to the Midlands.

2.1.7 These links will be further enhanced with the introduction of Elizabeth Line (Crossrail) services, which will provide direct rail connections to Central London and the City without the need for passengers to change trains at Paddington.

2.1.8 Also, if the Western Rail Link to Heathrow scheme is delivered, then this will greatly enhance the town's connectivity to this important international hub airport.

2.1.9 Additionally, the M4 Smart Motorway project will deliver increased capacity and improved journey reliability on what is currently one of the most congested sections of the UK's motorway network. Works are scheduled to be complete by spring 2022.

2.1.10 This proximity to London and Heathrow coupled with the excellent and improving transport links mean that Maidenhead is an attractive and sustainable location for investment, and it will be the key focus for housing and commercial development within RBWM going forward.

2.1.11 The town is bounded to the east and north by the River Thames, while the M4 and A404(M) lie to the south and west of the town. The A4 and A308 represent the only main road links through the town in the east-west and north-south directions. These roads carry considerable volumes of traffic and there is currently significant peak hour congestion at major junctions.

2.1.12 The congested traffic conditions have led to the declaration of Air Quality Management Areas (AQMAs) due to elevated levels of Nitrogen Oxides (NOx) from vehicle exhaust emissions. One AQMA has been declared for the whole of Maidenhead Town Centre and the section of the A4 between the town centre and Maidenhead Bridge. Another AQMA has been declared along the A308 in Holyport in the vicinity of the M4 bridge. Plans showing the extent of these AQMAs are provided in Appendix A.

Figure 2.2 – Strategic transport links

2.2 Contribution to National, Regional, and Local Strategic Priorities

Contribution to National Priorities

2.2.1 Government published its Housing White Paper, 'Fixing Our Broken Housing Market', in February 2017. This states that England needs between 225,000 and 275,000 new homes per year to keep up with population growth and start to tackle years of under-supply.

2.2.2 The Royal Borough is seeking to contribute to national targets for housing and economic growth. The Borough Local Plan currently identifies over 5,800 new dwellings in Maidenhead. The affordable homes percentage is set at 30%.

Contribution to Regional Priorities

2.2.3 In response to the Government's Industrial Strategy, published in November 2017, the LEP have developed a Local Industrial Strategy (LIS) which sets out how the LEP shall conform with, and deliver the objectives of the Industrial Strategy. Founded on an evidence base, the LIS sets out the current situation, opportunities, and measures on how the region shall achieve this.

2.2.4 The LIS recognises the strong economic performance of Berkshire, which is linked to the region's accessibility, being well connected to the national transport infrastructure,

through the M4 motorway, Great Western Railway and South West trains. As a result, as outlined earlier, the region generates a significant number of both outbound and inbound commuter trips.

2.2.5 Although this presents economic opportunities, the LIS recognises that the existing transport infrastructure is congested, presenting a burden on the local economy. This strain is likely to be further exacerbated by the introduction of strategic national infrastructure within the region such as Crossrail and the Western Rail Link to Heathrow. This presents issues for achieving the LIS's aspiration of delivering substantial numbers of new homes, with the congested transport infrastructure hindering the delivery of sites. Therefore, preventing the housing pressure issues identified within the LIS, both in terms of numbers and affordability, being addressed.

2.2.6 The Thames Valley Berkshire Strategic Economic Plan (SEP) similarly recognises that the transport and communications infrastructure on which we rely is heavily congested and that this in turn is threatening to undermine our intrinsic growth potential. The SEP acknowledges that it is essential to invest in the transport network in order to deliver new housing and economic growth.

2.2.7 This scheme supports the LEP's goals with respect to infrastructure, set out within both the LIS and SEP, ensuring that:

- | Economic potential is not stifled by labour supply issues by tackling congestion and unlocking new housing development.
- | Ensuring that Berkshire's towns function as 'real hubs' with effective transport infrastructure providing connections within and between towns and supporting town centre regeneration.

Contribution to Local Priorities

2.2.8 The Maidenhead Town Centre Area Action Plan (AAP) was adopted in September 2011. This sets an ambitious strategy focusing on regeneration, setting out how the true potential of Maidenhead town centre can be unlocked.

2.2.9 The AAP identifies six specific Opportunity Areas where comprehensive redevelopment and other improvements will play a key role in regenerating the town centre, including:

- | Broadway,
- | High Street / York Stream,
- | Railway Station,
- | Stafferton Way,
- | West Street, and
- | York Road.

2.2.10 The scheme supports the AAP, by delivering interventions to accommodate traffic generated from planned development. Therefore, enabling and facilitating regeneration of the town centre.

2.3 Local transport priorities

2.3.1 RBWM's priority is to improve access by public transport, cycling and walking to encourage more sustainable travel patterns before considering additional capacity on the road network. A number of major sustainable transport schemes and service enhancements are proposed, including:

- I THE ELIZABETH LINE - The service will be extended to Maidenhead from December 2019 and will provide direct connections to Central London and the City. Forecasts suggest that passenger numbers using Maidenhead Station are set to grow from 4.5 million in 2015/16 to 5.5 million by 2020 and to circa 7 million by 2032.
- I WESTERN RAIL LINK TO HEATHROW – A new 6.5km rail link between the Great Western Main Line and Heathrow Airport – it will improve access to the UK's main international hub airport from the west, with at least two services per hour calling at Maidenhead.
- I MAIDENHEAD STATION ACCESS – Designed to improve access at Maidenhead Station and improve links between the station and the town centre. It involves modal shift away from car use as well as improved pedestrian routes and public realm enhancements within the forecourt. It is programmed to be completed in 2020.
- I MAIDENHEAD MISSING LINKS – This scheme will improve walking and cycling links between the town centre, major development sites and surrounding residential areas, addressing the severance issues associated with the busy A4 that lies immediately to the north of the town centre. The scheme will be delivered by the end of March 2021.

2.3.2 Despite the above investment in sustainable travel initiatives, there will still be significant additional peak hour congestion as a result of background growth and planned development.

2.4 Borough Local Plan and Strategic Highway Model

2.4.1 The revised Borough Local Plan (BLP) was submitted to the Secretary of State for approval in October 2019. This increases the level of development, making provision for at least 14,240 new dwellings over the plan period from 2013 to 2033. Maidenhead is the key focus, with development in and around Maidenhead town centre providing the majority of new dwellings through the redevelopment of existing sites for higher density development.

2.4.2 To inform the development of the BLP, the Council developed a strategic highway model to assess the impacts of planned growth on the local road network. Developed in VISUM, the area of detailed modelling follows the boundary of RBWM plus a 2km buffer. Modelling detail in this area is characterised by representation of all trip movements, small zones, very detailed networks, and junction modelling.

2.4.3 The original model was developed in 2017, however, it was updated in 2019 to include revised development numbers and transport infrastructure, in accordance with the BLP. The results of the modelling are presented in the "Royal Windsor and Maidenhead Local Plan Assessment Using RBWM Strategic Highway Model", October 2019. It is this model which has formed the basis of analysis within this business case.

2.4.4 A 2016 base year model was prepared to replicate current traffic conditions in average weekday AM and PM peak periods. Forecast scenarios for the assessment year of 2033 were also prepared, which included variations of both committed development, sites

with planning permission or likely to be delivered; and, planned development, future development sites allocated within the BLP, as outlined below:

- I Scenario A – includes committed and planned development outside the borough as well as committed residential and employment within the borough, but not planned development; and
- I Scenario B – is based on Scenario A but includes additional traffic from planned development within the borough.

2.4.5 The committed development in the borough included within Scenario A comprises of 3,031 dwellings, a list of which is provided in Appendix I. The planned development included within Scenario B comprises of 7,956 dwellings, of which 5,804 are located in the Maidenhead area, a list of these sites is provided within Appendix J.

2.4.6 Figure 2.3 below illustrates the location of the BLP site allocations within Maidenhead. Plans indicating the location of all the BLP site allocations within the borough are provided within Appendix B of this report.

2.5 Identification of failing junctions

2.5.1 As part of the local plan assessment, the junction Level of Service (LOS) in each scenario was analysed to understand how development in the area would impact on junctions and the traffic network within the borough. LOS is related to the mean delay experience per vehicle, and is categorised as per the thresholds shown in Table 2.2:

Table 2.2 – Level of Service values

LOS	Mean delay/ vehicle	
	Un-signalised junction	Signalised junction
A	0 – 10 sec	0 – 10 sec
B	10 – 15 sec	10 – 20 sec
C	15 – 25 sec	20 – 35 sec
D	25 – 35 sec	35 – 55 sec
E	35 – 50 sec	55 – 80 sec
F	50 + sec	80 + sec

2.5.2 By comparing Scenario B to Scenario A, the impact of the planned development on the existing network can be established. Therefore, as part of the local plan assessment, a direct comparison of junctions with LOS D, E or F for both scenarios was undertaken to fully understand the step change and impact of the development on the surrounding network.

2.5.3 From this comparison, RBWM analysed the junction LOS results and produced a list of failing junctions, which are outlined and illustrated in Table 2.3, and Figure 2.3, respectively.

Table 2.3 – Failing junctions

No.	Name	Area
1	A308 Holyport Road	Maidenhead
2	A308/ A330 Braywick Roundabout	Maidenhead
3	A4 Bridge Road/ Oldfield Road	Maidenhead
4	A4 Bridge Road/ Ray Mead Road	Maidenhead
5	Shoppenhangers Road/ Norreys Drive	Maidenhead
6	B470 High Street/ B376	Datchet

7	A308/ Oakley Green Road	Windsor
8	A308/ Mill Lane	Windsor
9	B3022/ Keats Lane	Windsor
10	B3022/ Clewer Hill Road	Windsor
11	A4/ A404 (M) The Thicket Roundabout	Maidenhead
12	A332/ A329 Heatherwood Roundabout	Ascot
13	A308/ Broadway	Maidenhead
14	Windsor Road/ Winkfield Road	Windsor
15	M4 J8/9 Highway England	
16	A308/ A404	Bisham
17	A4/ Cookham Road	Maidenhead
18	A308/ Castle Hill	Maidenhead
19	A308/ Stafferton Way	Maidenhead

Figure 2.4 – Failing junction locations

2.5.4 No. 15: M4 Junction 8/9 is a Highways England junction outside the control of RBWM as Highway Authority. Therefore, has been removed from further consideration for this scheme.

2.5.5 In addition, following a design review, it was identified that there are three sites (No. 13: A308/ Broadway, No. 14: Windsor Road/ Winkfield Road, No. 16: A308/A404) where interventions cannot be proposed that address the LOS issues due to site and funding constraints. Therefore, these sites have also been removed from further consideration for this scheme.

2.5.6 The following sites are located outside the spatial scope of Maidenhead, therefore have also been excluded from the scope of this scheme:

- | No. 6: B470 High Street;
- | No. 7: A308/ Oakley Green Road;
- | No. 8: A308/ Mill Line;
- | No. 9: B3022/ Keats Lane;
- | No. 10: B3022/ Clewer Hill Road; and
- | No. 12: A332/ A329 Heatherwood Roundabout.

2.5.7 Following a review of the remaining junctions within Maidenhead it was identified that interventions at all nine junctions would not be feasible within the scheme scope, given the budget and time constraints. Therefore, it is proposed that the three sites listed below are taken forward independently and funded by the RBWM's capital programme:

- | No. 1: A308 Holyport Road;
- | No. 5: Shoppenhangers Road/ Norreys Drive; and
- | No. 11: A4/ A404(M) The Thicket Roundabout.

2.5.8 The six junctions therefore agreed to take forward as a package relating to Maidenhead Housing Sites scheme are:

Table 2.5 – Proposed junctions within scheme scope

No.	Name	Area
2	A308/ A330 Braywick Roundabout	Maidenhead
3	A4 Ray Mead Road	Maidenhead

4	A4 Oldfield Road	Maidenhead
17	A4 Cookham Roundabout	Maidenhead
18	A4 Castle Hill Roundabout	Maidenhead
19	A308 Stafferton Way Roundabout	Maidenhead

2.5.9 The following strategic analysis and updated data therefore only relates to these six junctions, this is on the basis that:

- I Significant localised modelling and preliminary design development has been undertaken, in line with the programme delivery deadline; and,
- I The current funding package and timeframe agreed would not be sufficient to deliver the three additional junctions.

2.6 Assessment of deadweight and dependent development

2.6.1 The Maidenhead Housing Sites modelling (within the previous business case), accounted for 0%, 25%, 50%, 75% and 100% planned development so that an estimate of dependent development could be made. With 0% and 100% planned development representing Scenario A and B, respectively. The outputs confirmed that the network could permit up to 25% of the BLP planned development without the network failing.

2.6.2 On this basis, the model has been re-run, without junction improvements, to account for 25% and 100% (Scenario B) of the planned development within the revised BLP. Table 2.7 below shows the maximum LOS and delay at each junction for 25% and 100% planned development.

2.6.3 Table 2.7 demonstrates that:

- I locations 1, 3 and 4 (Braywick, Castle Hill and Cookham Roundabout) already have one or more arm at LOS D and above with only 25% of planned development; and
- I locations 1, 3, 4 and 6 (Braywick, Castle Hill, Cookham and Ray Mead Road roundabout) have at least one arm at LOS F at 100% of planned development.

2.6.4 It should be noted that location 5 (Oldfield Road junction) does not show an average LOS across all turns of LOS D or above even at 100% planned development with all trips included. This location was input as a new node for the strategic modelling output and a review of the model shows that there is a significant redistribution of traffic away from this junction in the model that is the cause of this.

2.6.5 In addition, the strategic model highlights that of all the junctions, Braywick Roundabout has significant delays. With all four arms experiencing poor LOS with both 25% and 100% planned development.

2.6.6 Further local modelling has been carried out to validate the strategic model; determine dependent and deadweight development; and, to test the proposed designs to take forward and support the options assessment accompanying this business case.

2.6.7 Table 2.8 below outlines the additional trips generated at the respective junctions as a consequence of the 100% planned development scenario.

Table 2.7 – Total of planned development trips at each junction

Ref.	Junction	AM total vehicles	PM total vehicles
A	A308, Braywick Roundabout	2012	2265
B	A308, Stafferton Way Roundabout	1040	1157

C	A4, A308 Castle Hill Roundabout	1131	1229
D	A4, B4447 Cookham Rd Roundabout	978	1034
E	A4, Oldfield Rd Junction	507	483
F	A4, Ray Mead Rd Roundabout	395	335
	Total	6063	6503

2.6.8 At the junction level it can be seen that there is an uneven distribution of additional trips across the network with there being significantly fewer additional trips added at location F, A4 Ray Mead Road roundabout than at location A, Braywick Roundabout. Braywick Roundabout has an increase of over 2,000 local trips in the AM and PM, almost twice that of any other site which indicates that it should be prioritised based on traffic volumes. More than half of the additional trips at Braywick Roundabout are generated from one site: AL14, west of Ascot Road and north of the M4 – known as the Triangle site.

2.6.9 However, there are several constraints associated with the site which impact on its deliverability. One of these being that the site is located within the flood plain, a concern raised by Highways England. In addition, should the site be delivered, the proposed access locations will significantly influence traffic movements through Braywick Roundabout. Therefore, to avoid the consideration and delivery of redundant assets, this site has been removed from the dependent development and deadweight analysis. Should the Triangle Site come forward, given the direct impact on Braywick Roundabout, interventions shall be sought as part of the development to ensure the impact of any additional traffic is mitigated.

2.6.10 In addition, there are differences between the AM and PM totals, with location A, Braywick Roundabout having 10% more vehicles in the PM. This is mainly due to the Maidenhead Golf Course development and banned movements which direct traffic away from this location for traffic leaving Maidenhead in the morning but enable it returning in the evening.

2.6.11 Analysis of the individual development flows through each junction shows that there are a number of development sites which have a small impact on the operation of the highway network.

2.6.12 Based on the data showing that the junctions collectively can take around 25% more vehicle movements without improvements being needed, the deadweight development - development that can be accommodated without interventions – can be identified.

2.6.13 With the Triangle Site excluded, the total additional trips generated from 100% planned development in the AM and PM peaks are 4,331 and 4,740 trips, respectively. As a 25% proportion of this, we can state that 1,082 AM trips and 1,185 PM trips can be accommodated on the existing network. Therefore, representing the deadweight development.

2.6.14 The remaining developments, which generate more traffic through the selected junctions, will be considered as being dependent on the junction improvements. Table 2.9 and 2.10 show the individual development flows through each junction in the AM and PM peak hours, respectively. The sites highlighted in red are the sites with a combined trip generation of less than 200. The combined total trips generated from these sites equates to 1082 and 896 in the AM and PM peak periods, respectively; and, can therefore be reasonably classified as the deadweight development. Plans indicating the location of the sites are provided within Appendix B of this report.

Table 2.8 – Total additional trips per development site during AM peak

Ref.	Site name	A308, Braywick Rbt		A308, Stafferton Way A4, Castle Hill A4, Cookham Rd Rbt			A4, Oldfield Rd Jct		A4, Ray Mead Rd Rbt		Total
AL1	Nicholsons Centre	79	96	224	90	63	58	610			
AL9	St Cloud Way, Maid.	26	26	146	243	52	36	529			
AL7	Maidenhead Station	71	147	41	12	37	29	337			
AL1	Nicholsons Centre	63	79	99	24	24	20	309			
AL2	West Street, Maid.	18	23	83	132	22	16	294			
AL8	St Cloud Gate, Maid.	11	12	70	126	31	27	277			
AL5	West Street Opp Maid.		15	19	66	106	18	13	237		
AL13	Harvest Hill Rd, Maid.	124	30	32	14	18	14	232			
AL13	Harvest Hill Road, Sth	91	30	49	17	14	12	213			
AL10	Stafferton Way RP, Maid.		39	116	17	8	18	13	211		
AL11	Crossrail West Depot	31	68	20	9	26	23	177			
AL25	Spencer's Farm, Maid.		27	21	25	49	24	20	166		
AL21	Windsor, A308	46	23	15	7	9	0	100			
AL7	Maidenhead Station	20	31	16	5	6	5	83			
AL37	Long Lane, Cookham	15	11	14	25	10	8	83			
AL3	St Mary's Walk, Maid.	12	14	13	16	7	6	68			
AL13	Harvest Hill Rd, Maid.	34	5	8	2	3	3	55			
AL4	York Road	9	12	11	8	5	4	49			
AL24	Woodlands Pk. Ave. Maid.		1	8	20	13	5	1	48		
AL26	Bray Lake, Bray	23	6	4	1	5	2	41			
AL12	Braywick Rd, Maid.	7	21	5	0	3	3	39			
AL6	Methodist Church, Maid.		7	10	10	3	3	2	35		
AL13	Harvest Hill Rd, Maid.	11	1	12	5	2	2	33			
AL13	Harvest Hill Rd, Maid.	16	2	3	1	2	2	26			
AL23	St. Marks Hosp, Maid.	2	3	11	6	2	1	25			
AL36	Gasholder Station, Cook.		4	3	3	6	2	2	20		
AL22	Maidenhead Rd Windsor		4	2	2	0	1	0	9		
AL38	Strande Lane, Cook.	1	1	2	3	1	1	9			
AL35	Sunningdale Park	3	2	0	0	1	0	6			
AL16	Ascot Centre	2	1	0	1	0	4				
AL20	Heatherwood Hosp, Ascot		2	1	0	0	0	0	3		
AL29	Minton Place, Windsor		1	1	0	0	0	0	2		
AL31	King Edward VII Hosp, Windsor			1	0	0	0	0	0	1	
AL17	St Georges Lane, Ascot		0	0	0	0	0	0	0		
AL18	Ascot Station Car Park	0	0	0	0	0	0	0			
AL34	London Road, Sunningdale		0	0	0	0	0	0	0		
AL30	Windsor and Eton Riverside Station		0	0	0	0	0	0	0	0	
AL19	Englemere Lodge, Ascot		0	0	0	0	0	0	0		
AL33	Sunningdale Broomhall Centre			0	0	0	0	0	0	0	
AL39	London Road, Datchet		0	0	0	0	0	0	0		
AL40	Queen Mother Reservoir		0	0	0	0	0	0	0		
AL32	London Road, Ascot		0	0	0	0	0	0	0		

TOTAL 816 825 1021 931 415 323 4331

Table 2.9 - Total additional trips per development site during PM peak

Ref.	Site name	A308, Braywick Rbt Cookham Rd Rbt	A308, Braywick Rbt A4, Oldfield Rd Jct	A308, Stafferton Way A4, Ray Mead Rd Rbt	A4, Castle Hill A4	Total				
AL1	Nicholsons Centre	142	167	295	121	42	26	793		
AL9	St Cloud Way, Maid.	18	26	151	226	42	33	496		
AL7	Maidenhead Station	50	66	76	51	17	10	270		
AL1	Nicholsons Centre	48	65	115	43	23	22	316		
AL2	West Street, Maid.	10	12	75	123	22	19	261		
AL8	St Cloud Gate, Maid.	9	10	45	109	19	15	207		
AL5	West Street Opp Maid.		6	9	60	98	17	16	206	
AL13	Harvest Hill Rd, Maid.	354	99	77	40	48	28	646		
AL13	Harvest Hill Road, Sth	259	54	51	17	31	22	434		
AL10	Stafferton Way RP, Maid.		50	112	16	5	18	14	215	
AL11	Crossrail West Depot	46	67	10	6	13	8	150		
AL25	Spencer's Farm, Maid.		12	15	17	35	27	20	126	
AL21	Windsor, A308	36	21	7	6	8	1	79		
AL7	Maidenhead Station	12	33	9	3	10	8	75		
AL37	Long Lane, Cookham	7	9	10	19	11	7	63		
AL3	St Mary's Walk, Maid.	6	8	12	15	8	8	57		
AL13	Harvest Hill Rd, Maid.	7	2	2	1	1	0	13		
AL4	York Road	6	7	12	4	6	6	41		
AL24	Woodlands Pk. Ave. Maid.		2	5	31	27	2	1	68	
AL26	Bray Lake, Bray	17	3	2	0	4	3	29		
AL12	Braywick Rd, Maid.	9	19	2	0	2	2	34		
AL6	Methodist Church, Maid.		2	5	18	6	3	3	37	
AL13	Harvest Hill Rd, Maid.	24	17	10	3	6	4	64		
AL13	Harvest Hill Rd, Maid.	2	0	1	0	0	0	3		
AL23	St. Marks Hosp, Maid.	0	3	3	1	0	0	7		
AL36	Gasholder Station, Cook.		1	3	3	5	3	2	17	
AL22	Maidenhead Rd Windsor		3	1	0	0	0	0	4	
AL38	Strande Lane, Cook.	0	0	1	2	0	0	3		
AL35	Sunningdale Park	3	1	0	0	0	0	4		
AL16	Ascot Centre	5	2	1	0	1	0	9		
AL20	Heatherwood Hosp, Ascot		4	3	1	0	1	0	9	
AL29	Minton Place, Windsor		0	0	0	0	0	0	0	
AL31	King Edward VII Hosp, Windsor			1	0	0	0	0	0	1
AL17	St Georges Lane, Ascot		1	1	0	0	0	0	2	
AL18	Ascot Station Car Park	1	0	0	0	0	0	1		
AL34	London Road, Sunningdale		0	0	0	0	0	0	0	
AL30	Windsor and Eton Riverside Station		0	0	0	0	0	0	0	
AL19	Englemere Lodge, Ascot		0	0	0	0	0	0	0	
AL33	Sunningdale Broomhall Centre		0	0	0	0	0	0	0	
AL39	London Road, Datchet		0	0	0	0	0	0	0	

AL40	Queen Mother Reservoir	0	0	0	0	0	0	0
AL32	London Road, Ascot	0	0	0	0	0	0	0
	TOTAL	1153	845	1113	966	385	278	4740

2.6.15 Based on the categorisation of each development as either deadweight or dependent development, it is possible to understand what percentage of the additional flows through the junction are deadweight. This has been calculated and outlined in Table 2.11 below.

Table 2.10 – Total percentage of deadweight trips at each junction

	A	B	C	D	E	F		
	Development type	A308, Braywick Rbt			A308, Stafferton Way		A4, Castle Hill	A4,
	Cookham Rd Rbt	A4, Oldfield Rd Jct		A4, Ray Mead Rd Rbt		Tot.		
AM	Deadweight	34.2%	29.9%	19.0%	17.1%	28.4%	26.3%	25.0%
	Dependent	65.8%	70.1%	81.0%	82.9%	71.6%	73.7%	75.0%
PM	Deadweight	18.0%	26.6%	13.7%	13.8%	27.5%	26.3%	18.9%
	Dependent	82.0%	73.4%	86.3%	86.2%	72.5%	73.7%	81.1%

2.6.16 Table 2.11 identifies that the overall impact of deadweight is greatest at Stafferton Way Roundabout, and Oldfield Road Junction; and lowest at Castle Hill Roundabout and Cookham Road Roundabout.

2.7 Junction descriptions and key issues

2.7.1 The main issues and constraints affecting each of the proposed junction improvement schemes are outlined below. Plans showing the current layout of each of the junctions are provided in Appendix C.

Location A: A308, Braywick Roundabout

2.7.2 This is a large, conventional roundabout located to the south of Maidenhead. The A308(M) and A308 Braywick Road towards Maidenhead are dual-carriageways, while the other approaches are all single carriageways. With the exception of The Bingham's, the existing flows are fairly well balanced on all arms.

2.7.3 The A308(M) forms part of the Strategic Road Network (SRN) under the control of Highways England. It provides a direct connection to the M4 and A404(M) motorways and is a dual-carriageway with two lanes in each direction.

2.7.4 The A308 runs from Marlow through to Kingston-upon-Thames. It provides the main north-south route through Maidenhead and provides a direct connection between Maidenhead and Windsor. It is a dual-carriageway to the north of the junction and a single carriageway to the south. There is a short section of two lanes on the southern approach, but this is not well used. There are no lane signs / markings on any of the approaches.

2.7.5 The A330 provides a direct connection between Maidenhead and Ascot and is a single carriageway along its length. The Bingham's is a small, residential cul-de-sac, which has very low flows relative to the other arms.

2.7.6 This five-arm roundabout already experiences significant congestion in both the morning and evening peak periods. Traffic movements through the roundabout are forecast to increase significantly due to traffic associated with Maidenhead town centre regeneration and nearby developments on Maidenhead Golf Course, Land South of Harvest Hill Road and Land South of Manor Lane. Also, the submitted Borough Local Plan identifies

the triangle of land between the M4, A308(M) and A330 for warehouse development in the longer-term – if implemented, this is likely to access directly onto the A330 to the south of the junction. Modelling shows that under the 2032 forecast scenario, two arms are forecast to have a Level of Service of F (total breakdown) during the AM peak, and three arms with Level of Service F in the PM peak.

2.7.7 A footway runs around the outside of the roundabout with uncontrolled crossings on all arms of the junction. This links to a footway/cycleway along the eastern side of the A308, which runs between Maidenhead and Windsor. There are also footways on the east side of the A330 and both sides of The Bingham.

2.7.8 Although no formal counts of pedestrians and cyclists have been undertaken at the junction, observations suggest that the number of pedestrian movements through the junction is low. However, it is acknowledged that the A308 corridor is a key route for local cyclists. The existing shared-use path is of a sub-standard width and there are numerous accesses and side-roads where cyclists are required to give way. As such, more confident cyclists often choose to remain on-carriageway.

2.7.9 There have been 7 recorded crashes at the junction over a five-year period between 2013 and 2017, all of which resulted in slight injuries. There are no clear trends apart from two cyclists being hit by vehicles at the A308(M) entry.

2.7.10 A small river, known as The Cut, runs through the middle of the junction. This is subject to rapid level changes in the event of heavy rainfall.

Location B: A308, Stafferton Way Roundabout

2.7.11 This large roundabout is located immediately to the south-west of Maidenhead town centre. The A308 and Stafferton Way form the western and southern arms of the ring road around the town centre.

2.7.12 There are significant disparities in the traffic flows through the junction, which are dominated by north and southbound movements along the A308. Although movements out of Stafferton Way are much lower than southbound movements along the A308, traffic signals at the Shoppenhangers Road and King Street / Queen Street junctions create natural gaps in the traffic.

2.7.13 At peak periods, traffic queuing from the signal-controlled junctions at A308 / Queen Street and A308 / Shoppenhangers Road often block back through the Stafferton Way roundabout.

2.7.14 Its proximity to Maidenhead town centre means that it will be significantly affected by traffic from the town centre regeneration. Also, Rushington Avenue has been identified as an access point for the proposed development of 2,000 homes on the Maidenhead Golf Course site.

2.7.15 There are footways on both sides of all approach roads. Although there are refuge crossings on the northern, western, and eastern arms of the junction it is only really the one across Stafferton Way that is used.

2.7.16 A shared-use footway/cycleway runs along the east side of the A308, which links Maidenhead to Windsor. This is well used by cyclists. National Cycle Network Route 4 runs along Stafferton Way between York Stream and the multi-storey car park access road where it heads north and then west towards the station. A series of toucan crossings caters for pedestrian and cycle movements to and from the rail station.

2.7.17 There have been three crashes recorded at the junction in the last three years that have resulted in personal injuries and no clear trend.

Location C: A4, Castle Hill Roundabout

2.7.18 This is one of the busiest junctions in Maidenhead, lying at the intersection of the main east-west and north-south routes through the town, with the A4 and A308 forming half of the ring-road around Maidenhead town centre.

2.7.19 The junction takes the form of a large, conventional roundabout. A4 Bad Godesberg Way and A308 Frascati Way are both dual carriageways, while A4 Castle Hill and A308 Marlow Road are single carriageway roads. Arm flows are well-balanced.

2.7.20 The junction already experiences significant congestion, with traffic often queuing back on the Castle Hill approach during the AM peak in particular. The junction lies within the Maidenhead Air Quality Management Area (AQMA).

2.7.21 Traffic movements through the junction are forecast to increase significantly, due to its proximity to the town centre regeneration sites and the Maidenhead Golf Course development site. Traffic modelling shows that by 2032, at least one arm of this junction will experience 'Level of Service F' (total breakdown) during the PM peak period.

2.7.22 There is a zebra crossing over the A308 Marlow Road to the north of the roundabout and a subway beneath the A4 Bad Godesberg Way to the east of the junction – both are well-used. There is also an uncontrolled crossing on A4 Castle Hill immediately to the west, which is very lightly used. There are no cycle facilities at the junction.

2.7.23 There have been 7 recorded crashes at the junction in the last 3 years, with no clear trends, although two shunts were recorded on the Bad Godesberg Way and Frascati Way approaches.

2.7.24 The junction is quite constrained, with little room for widening to the outside of the circulatory carriageway or on the approaches.

Location D: A4, Cookham Road Roundabout

2.7.25 This mid-size roundabout junction is situated immediately north of Maidenhead town centre with the Magnet Leisure Centre to the north-east and Kidwells Park to the north-west. Some congestion currently occurs at peak periods, and the junction is within the Maidenhead AQMA.

2.7.26 Both the A4 and B4447 are heavily trafficked, while the Market Street arm is relatively lightly trafficked, only catering for trips to and from Providence Place and West Street.

2.7.27 Traffic movements through the junction are forecast to increase significantly, due to its proximity to the town centre regeneration sites, particularly the St Cloud Way and West Street developments. Traffic modelling shows at least one turn with a 'Level of Service F' (total breakdown) by 2032 during the PM peak.

2.7.28 Footways are present on the east side of B4447 Cookham Road and Market Street and on both sides of A4 St Cloud Way. There is a pedestrian subway to the east of the junction, beneath St Cloud Way that connects the Magnet Leisure Centre to Sainsbury's piazza. There is also a pelican crossing to the north of the junction on Cookham Road. There are no cycling facilities at the junction.

2.7.29 There have been four recorded crashes resulting in personal injuries at this junction in the last three years, with no clear trends.

Location E: A4, Oldfield Road Junction

2.7.30 This is a small roundabout located to the east of Maidenhead town centre. It was converted from a priority junction in 2015 as part of the Stafferton Way Link Road project.

2.7.31 The A4 and B3028 form the northern and eastern arms of the ring road around the town centre. Both are single carriageway roads at this point. The arm flows are not well-balanced, with movements along the A4 significantly higher than flows on the B3028. Flows out of Lassell Gardens are negligible.

2.7.32 Although the traffic model did not show such a severe congestion issue as at the other junctions for the 2032 scenarios, it does already experience significant congestion, with traffic backing up on Oldfield Road during peak periods. Like the other A4 junctions, this falls within the Maidenhead AQMA.

2.7.33 Maidenhead Town Centre Regeneration will generate additional traffic movements through the junction and there is a clear need for capacity improvements.

2.7.34 There are footways on both sides of all approaches to the junction, with a shared use path on the west side of B3028 Oldfield Road and the south side of A4 Bridge Road to the west of the junction. There are pedestrian refuges on both A4 approaches and the B3028 approach, with an uncontrolled crossing across the Lassell Gardens arm. There is also a pelican crossing to the west of the junction.

2.7.35 There have been three reported collisions at the junction in the most recent five-year period. These occurred before the junction was converted to a roundabout.

Location F: A4, Ray Mead Road Roundabout

2.7.36 This small roundabout is located on the eastern fringe of Maidenhead just before Maidenhead Bridge. Although out of the town centre, it still falls within the Maidenhead AQMA.

2.7.37 The flows through the junction are imbalanced, with eastbound and westbound movements along the A4 considerably higher than the flows on the A4094. Movements in and out of Guards Club Road are negligible.

2.7.38 There is currently limited peak hour traffic congestion, with poor lane discipline leading to a minor reduction in capacity. However, traffic modelling indicates that by 2033, at least one turn with a Level of Service of F (total breakdown) will be over-capacity during the AM and PM peak periods.

2.7.39 Footways are present on both sides of the A4 and A4094. There are no footways present on either side of Guards Club Road, which is public highway at the northern end and a private road at the southern end. There is a zebra crossing on A4094 just north of the junction and uncontrolled crossing points to the east and south of the junction. There are no dedicated cycle routes through the junction, but Guards Club Road forms part of a signed quiet cycle route leading through to Oldfield Road.

2.7.40 The STATS19 database shows that there has been one collision at the junction in the last 3 years.

2.7.41 The junction lies within the Maidenhead Riverside Conservation area and Maidenhead Bridge is a Grade 1 listed structure.

2.8 Scheme objectives and success criteria

2.8.1 By improving capacity at key junctions on the local road network, the project will help increase the potential capacity of existing development sites, as well as unlocking new development opportunities.

2.8.2 The primary objective of the scheme is to mitigate the cumulative impact of traffic generated from new development, by providing additional vehicular capacity at key junctions which have one or more turns rated as having an unacceptable Level of Service.

Therefore, ensuring development can be accommodated and does not unduly impact on traffic congestion and journey times within Maidenhead.

2.8.3 Achievement of these objectives will be measured in terms of increased traffic flow and reduced queue lengths at the affected junctions and reduced journey times on key corridors compared to the 2016 baseline.

2.8.4 Secondary objectives include:

- | To reduce the number of casualties incurred at the junctions;
- | To improve air quality within the Maidenhead Air Quality Management Area, contributing to achievement of national air quality objectives; and
- | To improve access for pedestrians and cyclists to Maidenhead town centre and other local destinations and increase the number of journeys made by active travel modes.

2.9 Measures of success

2.9.1 Successful delivery against the scheme objectives will be monitored as part of the post construction scheme evaluation, details of which are discussed in Section 6 (the Management Case) of this report.

2.9.2 A programme of monitoring will be put in place prior to construction, then again at one-year and five-year post construction. It is envisaged that monitoring will include 'before and after' conditions in relation to:

- | Traffic flows on key corridors;
- | Journey time surveys on key corridors;
- | Road traffic casualties at treated junctions;
- | Air quality within the Maidenhead AQMA; and
- | Pedestrian, and cycle cordon counts around Maidenhead town centre.

2.9.3 Objectives relating to economic growth through investment in commercial development and housing are more difficult to measure. Also, there are numerous other factors that will impact on how and when development comes forward, such as macro-economic conditions and competing opportunities in alternative locations. However, longer term evaluation will seek to monitor economic, employment and housing growth.

2.10 Proposed junction enhancements

2.10.1 The proposed scheme includes enhancements at six junctions around Maidenhead. These are described below, and the accompanying scheme drawings are shown in Appendix D. Several options have been considered for each junction throughout the design development. A separate Options Assessment Report (OAR) has been prepared and submitted to the LEP for review. The outcomes of this assessment are summarised below.

2.10.2 An initial set of options were proposed by PBA and WSP as part of the modelling undertaken to inform the Borough Local Plan. These were principally focused on delivering additional traffic capacity at junctions. Project Centre has undertaken a further exercise to identify and sift options for each of the junctions, considering existing casualty records and pedestrian / cycle movements as well as traffic capacity. This process has been informed by observations, modelling, casualty analysis and a detailed knowledge of the area.

2.10.3 Scheme options include a 'do minimum' scenario in which the road layout remains unchanged. Options have been developed for each junction which have been assessed individually as well as cumulatively using the strategic traffic model. Table 2.12 below outlines the options considered.

Table 2.11 – Junction options reviewed	Option	Description
A308, Braywick Roundabout	Do minimum	As existing with background growth plus traffic from committed and planned development.
Option 1 (preferred)	I	Signalisation of existing roundabout, widening approach and circulatory carriageway lanes.
Option 2	I	Option 1 plus free-flow left turn slip lane from A308(M) to A308 Braywick Road.
Option 3	I	Option 2 plus free-flow left-turn slip lane from A330 Ascot Road to A308(M)
A308, Stafferton Roundabout	Do minimum	As existing with background growth plus traffic from committed and planned development.
Option 1 (preferred)	I	Carriageway widening to accommodate additional circulatory lane on the western side of the roundabout. Improved advanced lane markings and directional signage.
I		Parallel zebra crossings on eastern arm of the roundabout to provide pedestrian and cycle route connectivity.
A4, Castle Hill Roundabout	Do minimum	As existing with background growth plus traffic from committed and planned development.
Option 1 (preferred)	I	Realignment of roundabout circulatory and approaches, including circulatory carriageway widening; and, widening on Frascati Way northbound approach to the roundabout.
Option 2	I	Option 2 plus signalisation of the A308 Marlow Road and A308 Frascati Way arms.
A4, Cookham Road Roundabout	Do minimum	As existing with background growth plus traffic from committed and planned development.
Option 1 (preferred)	I	Resurfacing and relining of existing roundabout with advance lane markings and directional signage to improve lane discipline.
Option 2	I	Replacing the existing roundabout with signal-controlled junction accommodating pedestrian and cycle crossings.
A4, Oldfield Road Junction	Do minimum	As existing with background growth plus traffic from committed and planned development.
Option 1	I	Replacing existing roundabout with signal-controlled junction, with two westbound exit lanes, and one eastbound exit lane on A4.
Option 2	I	Replacing existing roundabout with signal-controlled junction, with one westbound exit lane, and two eastbound exit lanes on A4.
Option 3 (preferred)	I	Option 2 with eastbound exit merge.
A4, Ray Mead Road Roundabout	Do minimum	As existing with background growth plus traffic from committed and planned development.
Option 1 (preferred)	I	Widening the westbound carriageway on Maidenhead Bridge to improve existing flare on roundabout approach.

-
- Option 2 | Option 1 with greater widening to accommodate additional lane on roundabout approach.
 - Option 3 | Replacing existing roundabout with signal-controlled junction within existing land ownership.
 - Option 4 | Replacing existing roundabout with signal-controlled junction with land take.

2.10.4 Options have been assessed by applying a strategic appraisal framework and reviewing a variety of quantitative and qualitative factors such as buildability, land availability, impact on traffic and aesthetic / environmental benefits. Further details of which are provided in the OAR.

2.10.5 Of the six junctions, Braywick Roundabout experiences the greatest delays. However, there are several delivery constraints associated with this site, namely: utilities, trees, ecology, structures, and land. These factors have been considered and informed the selection of the preferred option, given the current time and budget constraints. The preferred option, Option 1, provides core improvements to the roundabout, which can be delivered within the current scheme scope.

2.10.6 However, it is proposed that a second phase of the scheme is delivered in the future, providing a left-turn slip road between the A308(M) and A308 Braywick Road. Designs for this are incorporated into Option 2. Although funding for the second phase is not sought as part of this scheme, acceptance for the principle of the scheme is sought in order to support a potential funding bid for the scheme in the future. Therefore, a stand-alone economic appraisal has been undertaken on the second phase to demonstrate the benefits. Further details of economic appraisal are provided within Section 3 (Economic Case) of this business case.

2.10.7 Further details of the preferred junction enhancements proposed are provided in Table 2.12 below.

Table 2.122 – Proposed junction enhancements Junction Enhancements

A308, Braywick Roundabout		Signalisation – Introducing traffic signals to the roundabout circulatory and A308 (M) and A308 approaches to the roundabout.
		Circulatory Carriageway – Widening the circulatory carriageway to accommodate two lanes for all dominant movements. Resulting in a circulatory carriageway varying from two to four lanes wide.
		A308 Braywick Road – Widening the southbound carriageway to three lanes on the approach to the roundabout with advanced lane markings and signage.
		A308 Windsor Road – Widening the northbound carriageway to two lanes on the approach to the roundabout with advance lane markings and signage.
		A330 Ascot Road – Widening the carriageway to accommodate a two-lane southbound exit from the roundabout; and, a two lane, flaring to three lane northbound approach to the roundabout with advance lane markings and signage.
		A308 (M) - Widening the eastbound carriageway to three lanes on the approach to the roundabout with advance lane markings and signage.
A308, Stafferton Way		Roundabout

-
- I Circulatory Carriageway – Widening of the western section of the circulatory carriageway to provide three-lanes. Enabling right-turning traffic to pass tailbacks from the northbound exit.
 - I Stafferton Way Carriageway – Realignment of westbound approach to the roundabout with advance lane markings and signage. Increasing flare length and improving lane discipline.
 - I Stafferton Way Crossings – Parallel zebra crossings across eastern arm of the roundabout. Providing safe, continuous pedestrian and cycle route along the A308.

A4, Castle Hill Roundabout

- I Circulatory Carriageway – Widening of the western section of the circulatory carriageway to accommodate three lanes. Realignment and re-lining of the circulatory, allocating lanes to the dominant movements and improving lane discipline.
- I A308 Marlow Road – Realignment of southbound approach with advance lane markings and signage. Increasing approach flare length and improving lane discipline.
- I A4 Bad Godesberg Way - Realignment of westbound approach with advance lane markings and signage. Increasing approach flare length and improving lane discipline.
- I A308 Windsor Road – Widening the northbound carriageway to three lanes on the approach to the roundabout with advance lane markings and signage.
- I A4 Castle Hill – Realignment of eastbound approach with advance lane marking and signage. Increasing approach flare length and improving lane discipline.

A4, Cookham Road Roundabout

- I Approaches and circulatory – Re-surfacing and re-lining of the existing roundabout with advance lane markings and signage. Improving lane discipline.

A4, Oldfield Road Junction

- I New Junction Layout – Replacing the existing roundabout with a signal-controlled junction, accommodating controlled crossings on all arms of the junction.
- I B3028 Oldfield Road – Removal of the central hatching, providing two northbound lanes on approach to the junction.
- I A4 Bridge Road (west) – Removal of central hatching, providing two eastbound approach lanes to the junction and one westbound exit lane.
- I A4 Bridge Road (east) – Removal of central hatching and widening into northern side of A4, providing two westbound lanes on the approach to the junction from Ray Mead Roundabout; and, two eastbound exit lanes, merging to one, from the junction.

A4, Ray Mead Road Roundabout

- I A4 Maidenhead Bridge – Widening the westbound carriageway to increase existing flare length and width on the approach to the roundabout.
- I Approaches and circulatory – Re-surfacing and re-lining of the existing roundabout with advance lane markings and signage. Improving lane discipline.

2.11 Constraints

2.11.1 Potential constraints exist for the scheme and these have been considered within the risk assessment in Appendix E, which also describes proposed mitigation measures. Key constraints include:

- | Constraints on working hours and simultaneous working imposed by traffic sensitive street designations; and
- | The need to coordinate with regeneration / development activity in and around Maidenhead town centre to minimise the impact of construction traffic.

2.11.2 The project team have taken every effort to ensure that there are no technical, technological or buildability issues with the scheme design.

2.11.3 The project plan has been developed to allow individual elements to be progressed without unduly impacting on traffic movements through Maidenhead. The programme has been provided in Appendix F.

2.11.4 A construction management plan will be produced in discussion with planners to mitigate for the potential disruption and coordinate with third party schemes. This will also ensure that critical path elements are fully understood and properly managed.

2.12 Inter-dependencies

2.12.1 Potential inter-dependencies have been considered within the risk register in Appendix E.

2.12.2 The delivery of the scheme to the stated programme is dependent on these risks either not arising or being sufficiently mitigated so that scheme delivery remains unaffected.

2.12.3 There are certain risks for which the likelihood of their occurring, or their impact, is so low that the scheme cannot be defined as truly dependent upon their negation.

2.12.4 For the purposes of this section of the business case, it is sufficient to summarise the key areas of risk / inter-dependency – these include:

- | Budget costs are inadequate to deliver the scheme;
- | Failure to complete works necessary to divert / protect utility companies' apparatus in advance of highway works; and
- | The development of a detailed risk log, and the time already devoted to mitigating some of these risks (e.g. through detailed modelling and design work, and early stakeholder consultation) means that the risk to scheme delivery is relatively low.

2.12.5 The project team will, however, continue to monitor these risks / inter-dependencies throughout scheme development to ensure the smooth delivery against the programme.

2.13 Stakeholders

2.13.1 Stakeholders to be consulted as part of the scheme's development include:

- | Courtney Buses;
- | First Buses;
- | National Trust;
- | Developers;
- | Affected residents (including relevant residents' associations);
- | Bray Parish Council;
- | Cox Green Parish Council; and
- | Thames Valley Berkshire Local Enterprise Partnership.

3. ECONOMIC CASE – UPDATE WITH WSP MODELLING.

3.1 Introduction

3.1.1 The Economic Case assessment is undertaken to fulfil one of the Department of Transport's five-case business case models for demonstrating value for money.

3.1.2 The Economic Case identifies and assesses all the impacts of the scheme to determine its overall value for money. It takes account of the costs of developing and building the scheme, and a full range of its impacts. These include those impacts which can be monetised. The economic case considers the extent to which the scheme's benefits will outweigh its costs.

3.1.3 In December 2018/ January 2019 an economic assessment was conducted, which analysed the potential highway benefits that would arise from the Maidenhead Housing Sites Enabling Works schemes. The schemes would deliver capacity improvements at a number of key junctions around Maidenhead.

3.1.4 The assessment utilised the Royal Borough of Windsor and Maidenhead Highway Model (RBWM-HM2) to generate time and distance cost skims for the forecasting year of 2032 with and without the junction upgrades. The comparison between the outturn change in flows and time was used within TUBA software to calculate the potential scheme benefits. The economic assessment was carried out in the context of dependent development to ensure that the calculated benefits were a true reflection of the situation.

3.1.5 In Autumn 2019 RBWM updated its Borough Local Plan (BLP), setting out the vision, objectives, and spatial strategy for the borough up to 2033. Following this, the economic assessment has been revisited in the context of the revised BLP. The results of this assessment are presented in this Chapter.

3.1.6 Information will be presented on the following items:

- | Modelling approach;
- | Scenarios appraised;
- | Scheme benefits; and
- | Value for Money.

3.2 Modelling approach

3.2.1 The Royal Borough of Windsor and Maidenhead Highway Model (RBWM-HM2) has been utilised to assess the impact of the scheme proposals. The RBWM-HM2 consists of a highway model built using VISUM version 15.00-08.

3.2.2 The RBWM-HM2 covers the following time periods:

- | AM peak hour (08:00-09:00); and
- | PM peak hour (17:00-18:00).

3.2.3 The RBWM-HM2 was developed to represent 2016 transport conditions. The base year model development has been described in the following documents:

- | "RBWM Strategic Highway Model (RBWM-HM2). Data Collection Report", June 2017; and
- | "RBWM Strategic Highway Model (RBWM-HM2). Local Model Validation Report", June 2017.

3.2.4 Forecast models for RBWM-HM2 were developed for a year of 2033. The forecast model development is fully described within the following document:

- | "Royal Borough of Windsor and Maidenhead Local Plan Assessment Using RBWM Strategic Highway Model", October 2019.

3.2.5 All the documents are available on the council's website.

3.2.6 The 2033 RBWM-HM2 ‘with scheme’ forecast network was updated to include the latest development proposals for the six junctions of interest.

3.2.7 To ensure consistency with national projections, the forecast demand matrices were also constrained to National Trip End Model (NTEM) and National Road Traffic Forecast (NRTF) trip growth. The growth rates were applied to each RBWM-HM2 zone depending on its location.

3.2.8 It was established in the Strategic Case that several of the Local Plan development sites in Maidenhead are dependent on the highway improvement scheme. The schemes have therefore been assessed in the context of dependent development.

3.2.9 As outlined within the Strategic Case, the Triangle site has been excluded from this assessment.

3.2.10 In the absence of a second forecast year, it has been agreed with Hatch to use the 2016 base year models, and either include or exclude the proposed junction improvements to generate 2016 ‘with scheme’ and ‘without scheme’ models.

3.3 Scenarios appraised

3.3.1 In order to assess the transport impacts of the junction improvement schemes, three transport scenarios have been modelled to inform the scheme appraisal. The three scenarios are set out in Table 3.13 below.

Table 3.13: Six junction improvement schemes – Options appraised

Scenarios	Description
Do Minimum (Reference)	
I	This option models the existing highway network at the selected junctions, with no highway improvements assumed at these sites
I	Dependent development in Maidenhead has been excluded
Do Something 1 (without dependent development)	
I	This option considers improvements to the selected junctions
I	Dependent development in Maidenhead has been excluded
Do Something 2 (with dependent development)	
I	As per Do Something 1 above but additionally includes dependent development in Maidenhead

3.3.2 In addition to the six junction improvement schemes appraised in the above scenarios, a further assessment has been completed to determine the benefits associated with the proposed slip road between the A308(M) and the A308 Windsor Road, which comprises a second phase of improvements at Braywick Roundabout.

3.3.3 Table 3.14 below details the scenarios which have been modelled to appraise the second phase of improvements at Braywick Roundabout.

Table 3.14: Braywick Roundabout phase 2 - Options appraised

Scenarios	Description
Do Minimum (Braywick P2)	
I	This option includes the first phase of improvements at Braywick Roundabout (signalisation) only
I	Local Plan development in Maidenhead has been included, but the Triangle development site has been excluded
Do Something (Braywick P2)	

- I This option includes the second phase of improvements at Braywick Roundabout (slip road between the A308(M) and the A308 Windsor Road)
- I Local Plan development in Maidenhead has been included, but the Triangle development site has been excluded

3.4 Scheme benefits

COST AND BENEFIT TO ACCIDENTS – LIGHT TOUCH (COBALT)

3.4.1 COBALT is a computer program developed by the Department for Transport (DfT) to undertake the analysis of the impact on accidents as part of economic appraisal for a road scheme. It uses detailed inputs of separate road links and road junctions impacted by the scheme.

The assessment is based on a comparison of accidents by severity and associated costs across an identified network in 'Without-Scheme' and 'With-Scheme' forecasts, using details of link and junction characteristics, relevant accident rates and costs and forecast traffic volumes by link and junction.

- I The scheme data from the model input into COBALT included:
 - o Link Classification;
 - o COBALT link type (matched with the VISUM model link types);
 - o Link length; and
 - o Speed limit.
- I Link Flow:
 - o Base Year Annual Average Daily Traffic (AADT) flows; and
 - o Without and with scheme AADT flows.

3.4.2 The COBALT assessment has been undertaken using links and junctions combined.

3.4.3 Automatic Traffic Counts (ATCs) in the study area were used to derive adjustment factors to calculate Annual Average Daily Traffic (AADT) flows.

3.4.4 In the absence of accident data, default accident rates from COBALT have been used. Six junction improvement schemes

3.4.5 To estimate the accident savings from the six junction improvement schemes the COBALT assessment has been undertaken for the following scenario:

- I Scenario 1: Do Something 1 (without dependent development) vs Do Minimum

3.4.6 The COBALT output for Scenario 1 is shown in Table 3.15. The introduction of the six junction improvement schemes is expected to give £0.94m of accident costs, since the additional junction capacity attracts more vehicles onto the strategic routes around Maidenhead.

Table 3.15: COBALT output Scenario 1
Scenario 1 (DS1 vs DM)

Total without scheme accident costs	£243,784,500
Total with scheme accident costs	£244,721,100
Total accident benefits saved by scheme	-£936,600

3.4.7 It was established above that several Local Plan development sites in Maidenhead are dependent on the scheme. An additional scenario has been undertaken in COBALT to assess the accident cost associated with the dependent development:

- I Scenario 2: Do Something 2 (with dependent development) vs Do Something 1 (without dependent development)

3.4.8 The output from the COBALT assessment for Scenario 2 is summarised in Table 3.16. The dependent development will result in £14.09m of accident costs as it introduces more traffic to the network.

Table 3.16: COBALT output scenario 2

Scenario 2 (DS2 vs DS1)	
Total without dependent development accident costs	£244,904,900
Total with dependent development accident costs	£258,993,600
Total accident benefits saved by dependent development	-£14,088,700

Braywick Roundabout phase 2

3.4.9 A COBALT assessment has also been undertaken to appraise the second phase of improvements at Braywick Roundabout. To estimate the accident savings from the second phase of improvements at Braywick Roundabout a COBALT assessment has been completed for the following scenario:

- I Scenario 3: Do Something (Braywick P2) vs Do Minimum (Braywick P2)

3.4.10 The output from the COBALT assessment for Scenario 3 is summarised in Table 3.17. The introduction of the slip road at Braywick Roundabout will result in £0.36m of accident benefits.

Table 3.17: COBALT output scenario 3

Scenario 3 (DS BP2 vs DM BP2)	
Total without dependent development accident costs	£258,652,000
Total with dependent development accident costs	£258,292,800
Total accident benefits saved by dependent development	£359,200

3.4.11 The results from the COBALT assessments have been included as part of the wider economic assessment below.

TRANSPORT USER BENEFIT APPRAISAL (TUBA)

3.4.12 Scheme benefits have been assessed using the Department for Transport's TUBA software. This is an industry-standard tool for undertaking economic appraisal in accordance with guidelines published in TAG Unit A1 (May 2018). The full economic assessment methodology adopted including choice of parameters, definition of inputs, discounting and reporting is compliant with TAG Unit A1 (May 2018).

3.4.13 The current version of the TUBA software is Version 1.9.13. The software carries out the appraisal of the following economic elements associated with the scheme (excluding those accrued during construction and maintenance):

- I Time savings;
- I Vehicle operating costs;
- I Carbon savings;
- I Scheme costs; and
- I Indirect tax revenues.

3.4.14 The RBWM-HM2 2016 and 2033 forecast models were used as the basis for the economic assessment in TUBA. TUBA interpolates growth between these years, and after 2033 the default TUBA assumption of no growth beyond this point has been retained, in the absence of more detailed information. Calculated benefits are therefore likely to represent a conservative estimate. The assessment has been completed for a 60-year appraisal period.

3.4.15 Analysis of the 'Typical traffic' facility within Google Maps showed that the level of congestion at the junctions in the AM and PM shoulder peaks (07:00 – 08:00, 09:00 – 10:00, 16:00 – 17:00, 18:00 – 19:00) is comparable to congestion levels in the peak hours (08:00 – 09:00, 17:00 – 18:00). Automatic Traffic Counts (ATCs) in the study area were used to derive adjustment factors to convert the benefits from the AM and PM peak hours (08:00 – 09:00 and 17:00 – 18:00) to the AM and PM peak periods (07:00 – 10:00 and 16:00 – 19:00). A factor of 2.55 was applied to convert AM peak hour into AM peak period and similarly a factor of 2.73 was applied to convert PM peak hour into the evening peak period.

3.4.16 Annualization factors were then applied to calculate the scheme benefits across a whole year. A factor of 253 was applied to both time periods, representing the number of weekdays in a year (excluding bank holidays). The annualization factors applied are shown in Table 3.18 below.

Table 3.18: Annualization factors

Time period	Peak hour to peak period factor	Number in year	Annualization factor
AM	2.55	253	645
PM	2.73	253	690

3.4.17 The benefits at weekends and bank holidays have not been considered, therefore the calculated benefits are likely to represent a conservative estimate.

3.4.18 The five VISUM demand segments have been matched to the appropriate TUBA user class. The input TUBA user classes are set out in Table 3.19.

Table 3.19: TUBA user classes

UC	VISUM demand segment		TUBA UC		Vehicle Type	Purpose	Person
UC1	Car	Commute	Commuting	Car	Commuting	All	
UC2	Car	Employers	Business	Business	Car	Business	All
UC3	Car	Other	Other	Car	Other	All	
UC4	LGV	LGV	Freight	LGV	Freight	Business	Driver
UC5	HGV	HGV	HGV	Business	Driver		

3.4.19 In the absence of a second forecast year, 2016 base year models 'with the scheme' and 'without the scheme' have been used. It has therefore been assumed that the scheme opening year is 2016.

3.4.20 The full scheme cost for the six junction improvements is £6,334,951 excluding taxes (2020 prices). The breakdown of scheme costs is shown in Table 3.20.

Table 3.20: Scheme cost – six junction improvements

Junction	Cost (£)
Braywick Rbt	£3,100,562
A4, A308 Castle Hill Rbt	£989,198
A4, B4447 Cookham Rd Rbt	£50,001
Oldfield Rd Jct	£1,649,341
A4, Ray Mead Rd Rbt	£107,799
A308 Braywick Rd, Stafferton Way, Rushington Ave Rbt	£438,051

Total	£6,334,951
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3.4.21 The full scheme cost for the Braywick Phase 2 improvements is £1,605,526 excluding taxes (2020 prices).

3.4.22 A 15% optimism bias has been included on top of the scheme costs, which takes the final scheme costs to £7,284,892 for Option 1 (six junctions including Braywick Phase 1) and £1,846,354 for Option 2 (Braywick Phase 2).

3.4.23 A GDP deflator of 119.51 has been assumed in the TUBA assessment, as taken from the TAG Data Book (May 2020).

Six junction improvement schemes

Conventional transport user benefits

3.4.24 To estimate the conventional user benefits arising from the six junction improvement schemes the TUBA assessment has been undertaken for the following scenario:

I Scenario 1: Do Something 1 (without dependent development) vs Do Minimum

3.4.25 The results for Scenario 1 are shown in Table 3.21 below. Table 3.21 shows that the Present Value of Benefits (PVB) is approximately £29.56m, with a Present Value of Costs (PVC) of £5.90m and a Benefit to Cost Ratio (BCR) of 5.01, which according to WebTAG represents Very High Value for Money. All values are discounted to 2010 prices.

Table 3.21: Scenario 1- Analysis of Monetised Costs and Benefits

Benefit Scenario 1 (DS1 vs DM)	
Total accident benefits saved by scheme	-£936,600
Greenhouse Gases	£377,000
Economic Efficiency: Consumer Users (Commuting)	£18,552,834
Economic Efficiency: Consumer Users (Other)	£2,396,602
Economic Efficiency: Business Users and Providers	£10,054,258
Wider Public Finances (Indirect Taxation Revenues)	-£888,852
Present Value of Benefits (PVB)	£29,555,242
Broad Transport Budget	£5,901,000
Present Value of Costs (PVC)	£5,901,000
Net Present Value (NPV)	£23,654,242
Benefit to Cost Ratio (BCR)	5.01

3.4.26 Since the initial BCR is very strong, separate sensitivity testing has not been undertaken. Instead, it has been calculated that the PVB would need to fall by approximately £17.8m (60%) for the initial BCR to fall below 2.

Transport external costs

3.4.27 Since there are a number of dependent developments in Maidenhead, the 'transport external cost' of the developments has been assessed. To understand the costs imposed by dependent transport users on existing users the following scenarios have been compared:

I Scenario 2: Do Something 2 (with dependent development) vs Do Something 1 (without dependent development)

3.4.28 The impact of the dependent development is summarised in Table 3.22. Transport external costs for Scenario 2 is -£106.93m. This represents the additional costs to the existing users because of the dependent development.

Table 3.22: PVB Scenario 2- Transport External Costs

Benefit Scenario 2 (DS2 vs DS1)

Total accident benefits saved by scheme	-£14,088,700
Greenhouse Gases	-£822,000
Economic Efficiency: Consumer Users (Commuting)	-£61,927,201
Economic Efficiency: Consumer Users (Other)	-£7,703,026
Economic Efficiency: Business Users and Providers	-£24,515,877
Wider Public Finances (Indirect Taxation Revenues)	£2,127,881
Present Value of Benefits (PVB)	-£106,928,923

3.4.29 External to external movements have been masked in the TUBA results presented above to remove the benefits and disbenefits not attributed to the junction improvement schemes. Greenhouse gas benefits and disbenefits however have not been masked since they are not available as sector to sector benefits in TUBA.

3.4.30 The TUBA summary tables are provided in Appendix G, and the Appraisal Summary Tables (AST) are provided in Appendix H.

Land value uplift

3.4.31 TAG Unit A2.2 “Induced Investment” (May 2018) states that in the case of dependent developments, the user benefits can be supplemented with an estimate of the change in land value. The land value uplift associated with 4,190 dependent dwellings and 39,002 sqm of net commercial development in the borough is calculated below.

3.4.32 The proposed land use is a mix of residential and commercial. In total 7,956 dwellings and 76,409 sqm are proposed, of which 4,190 dwellings and 39,002 sqm are dependent on the delivery of the junction improvements. Developable housing land area is 36.59 hectares, and the average site density is 116.3 units per hectare.

3.4.33 All the sites have previously been developed and their current use represents a mix of retail, office, leisure and assembly. The exact values of each of the existing sites planned for development is unknown. Golf Course site (leisure) has previously been estimated at around £250,000, which is £186,005 in 2010 market values and prices. The value has been pro-rated to the total developable area resulting in estimate of £291,743.

3.4.34 Ministry of Housing, Communities & Local Government (2017) provides guidance on land value estimates for residential, industrial, commercial and agriculture land.

3.4.35 For the proposed residential land use, land value estimate was based on South East Region and Windsor and Maidenhead Local Authority, which is £6.84m per hectare.

3.4.36 For the commercial development, land values were based on the Thames Valley Local Economic Partnership (LEP) area, which RBWM is part of, and the guidance provides two values:

l City centre offices - assumed to be £5,285 per sq.m. (GIA)

l Out of town offices - assumed to be £851 per sq.m. (GIA)

3.4.37 The following factors were considered in calculating net land value uplift:

l Deadweight

l Leakage, and

l Displacement

3.4.38 Estimating the net land value of the development requires any value, which would have been generated anyway (deadweight), to be subtracted from the gross estimates. The level of deadweight was estimated through a formal assessment undertaken using RBWM-HM2 and described in the Strategic Case. The net land value is only associated with dependent development (4,190 dwellings and 39,002 sqm of commercial development) and therefore no further allowances for the deadweight are made.

3.4.39 The leakage effect has also been considered as part of the calculation of net land value uplift. The leakage effect accounts for the proportion of the housing supply which will be occupied by those outside of the target group or area. Whilst a reasonably high proportion of the development is expected to be occupied by the target group, a noticeable proportion of the development will be occupied by those outside of the target group or area. A medium level of level of leakage of 25% has been assumed.

3.4.40 There is expected to be some form of displacement effect. Whilst the immediate adjoining areas will see most of the displacement effects, since the area of influence covers a wider area, some impacts will be felt at the borough level. Because of the high demand for housing in the south east coupled with larger differences in the house price to income ratios, 25% displacement has been assumed. This is in line with the City Challenge (2000) study which indicates a displacement of 19% for immediately adjoining area and 38% at district level.

3.4.41 The resultant net residential and commercial development, which is used in the additionality assessment, is shown in Table 3.23, Table 3.24 and Table 3.25.

Table 3.23: Additionality Assessment. Residential Development, dwellings

A	Gross Direct housing units	4,190
D	Deadweight	0
N=A-D Sub total		4,190
B=N*25%	Leakage at 25%	1,048
C=A-B Sub total		3,143
Dp=C*25%	Displacement at 25%	786
E=C-DpSub total		2,357
F= n/a	Multiplier	N/A
Fu=E*10%	Uncertainty in securing funding 10%	236
TOTAL=G-Fu Total net effects		2,121

Table 3.24: Additionality Assessment. Commercial Development - Edge of City Centre, sqm

A	Gross commercial development (sqm)	29,002
D	Deadweight	0
N=A-D Sub total		29,002
B=N*25%	Leakage at 25%	7,251
C=A-B Sub total		21,752
Dp=C*25%	Displacement at 25%	5,438
E=C-DpSub total		16,314
F= n/a	Multiplier	N/A
Fu=E*10%	Uncertainty in securing funding 10%	1,631
TOTAL=G-Fu Total net effects		14,682

Table 3.25: Additionality Assessment. Commercial Development - Out of Town, sqm

A	Gross commercial development (sqm)	10,000
D	Deadweight	0
N=A-D Sub total		10,000
B=N*25%	Leakage at 25%	2,500
C=A-B Sub total		7,500
Dp=C*25%	Displacement at 25%	1,875
E=C-DpSub total		5,625
F= n/a	Multiplier	N/A

Fu=E*10%	Uncertainty in securing funding 10%	563
TOTAL=G-Fu	Total net effects	5,063

3.4.42 Land value uplift has been calculated based on 2,121 dwellings and 19,745 sqm of commercial development, a mix of city centre and out of town.

3.4.43 Using the delivery schedule available for this development and price per unit (ha, dwelling of sqm) available from Ministry of Housing, Communities & Local Government (2017), the total land value has been estimated. In calculating the land value, the following factors were used to produce values in 2010 market values and prices:

- | GDP deflator from DfT's TAG Databook (May 2020);
- | Discount rates as provided by the Green Book; and
- | Rate of indirect taxation (DfT's TAG data book) to derive market prices.

3.4.44 Table 3.26, Table 3.27 and Table 3.28 set out the land value calculations for each of the development types.

Table 3.26: Land Value Estimation, Residential Development

Table 3.27: Land Value Estimation, Commercial Development - Edge of City Centre

Table 3.28: Land Value Estimation, Commercial Development - Out of Town

3.4.45 The resultant land value uplift associated with the dependent dwellings is a sum of residential and commercial land values (£178.8m) minus the existing value of the land (£0.3m) and is approximately £178.5m.

Amenity impact

3.4.46 Since all the sites are previously developed land, there is no land amenity impact to be considered due to the proposed development. In fact, a number of existing landscape features will be retained and enhanced.

Total scheme impact

3.4.47 The total impact of the scheme, including conventional transport user benefits, land value uplift, and transport external costs is summarised in Table 3.29.

Table 3.29: **Total scheme benefits**

Benefit	Value
Conventional transport user benefits	£29,555,242
Transport external costs	£106,928,923
Land value uplift	£178,461,319
Amenity impact	£0
Total benefits	£101,087,638

Adjusted BCR 17.13

3.4.48 Including the impact of the dependent development results in total benefits of £101.1m, and an adjusted BCR of 17.13, which represents a Very High Value for Money category.

3.4.49 Since the adjusted BCR is very strong, separate sensitivity testing has not been undertaken. Instead, it has been calculated that the transport external costs would need to decrease by 84% or £89.3m to -£196.2m, or the land value uplift would need to fall by 50% or £89.3m to £89.2m, for the adjusted BCR to fall below 2.

Braywick Roundabout phase 2

3.4.50 To estimate the conventional user benefits from the second phase of improvements at Braywick Roundabout, a TUBA assessment has been undertaken for the following scenario:

I Scenario 3: Do Something (Braywick P2) vs Do Minimum (Braywick P2)

3.4.51 The results for Scenario 3 are shown in Table 3.30 below. Table 3.30 shows that the Present Value of Benefits (PVB) is approximately £4.60m, with a Present Value of Costs (PVC) of £1.50m and a Benefit to Cost Ratio (BCR) of 3.07, which according to WebTAG represents High Value for Money. All values are discounted to 2010 prices.

Table 3.30: Scenario 3- Analysis of Monetised Costs and Benefits

Benefit Scenario 3

(DS BP2 vs DM BP2)

Total accident benefits saved by scheme	£359,200
Greenhouse Gases	-£40,000
Economic Efficiency: Consumer Users (Commuting)	£1,643,138
Economic Efficiency: Consumer Users (Other)	£1,116,423
Economic Efficiency: Business Users and Providers	£1,806,201
Wider Public Finances (Indirect Taxation Revenues)	-£289,741
Present Value of Benefits (PVB)	£4,595,221
Broad Transport Budget	£1,495,000
Present Value of Costs (PVC)	£1,495,000
Net Present Value (NPV)	£3,100,221
Benefit to Cost Ratio (BCR)	3.07

3.4.52 External to external movements have been masked in the TUBA results presented above to remove the benefits and disbenefits not attributed to the junction improvement schemes. Greenhouse gas benefits and disbenefits however have not been masked since they are not available as sector to sector benefits in TUBA.

3.4.53 The TUBA summary tables are provided in Appendix G, and the Appraisal Summary Tables (AST) are provided in Appendix H.

3.5 Environmental and social impact summary

3.5.1 Although the planned development will generate additional vehicle trips on the network, resulting in negative environmental and social impacts, the proposed scheme interventions present significant improvements in comparison to the existing situation, therefore, reducing the impact of the planned development.

Environmental impact:

3.5.2 Despite the proposed junction interventions presenting air quality and greenhouse benefits in isolation, since the scheme shall unlock development and increase traffic flows on the existing highway network, it is estimated to generate an overall negative impact. As demonstrated by the TUBA modelling outputs, the proposed junction interventions will generate £377,000 in greenhouse benefits in comparison to the existing situation. However,

the planned development will generate a transport external cost of £822,000, which equates to a total negative impact of £445,000. Therefore, the overall greenhouse gas impact of the scheme is estimated to be negative as a consequence of the planned development; however, the planned junction interventions will reduce this.

3.5.3 Since the scheme primarily involves widening and alterations to the existing highway, it is unlikely to generate significant adverse noise, landscape, townscape, or biodiversity impacts. The designs of the proposed junction interventions have been developed taking these impacts into consideration, particularly the loss of trees and planting. Where such impacts and loss are unavoidable, new trees and planting shall be provided elsewhere to offset any negative impacts. Site investigations including any necessary surveys shall be undertaken as part of the detailed design process, in liaison with the council's tree officer; where possible, the designs shall be amended to mitigate against any impacts.

3.5.4 In addition, although the scheme is primarily a traffic improvement scheme, cycle and walking improvements have been accommodated where possible. The following interventions have been included within the scheme which present improvements for walking and cycling: Stafferton Way, new controlled Parallel Zebra crossing; Oldfield Road, shared-use footway linking to existing cycle routes, new signal controlled Toucan crossings on all arms of the junction; Castle Hill, widened footway and new uncontrolled crossing; Braywick Roundabout, new controlled Toucan crossing and widened, shared-use footway linking into existing cycle routes. In addition, resurfacing shall be undertaken where the condition of the existing footway is poor within the junction extents; therefore, providing further improvements to the cycle and walking environment.

3.5.5 The scheme is not anticipated to generate any historic or water environment impacts.

Social impact:

3.5.6 As demonstrated by the traffic and economic modelling, the scheme will improve traffic journey times; therefore, providing improvements and benefits for commuters and other users by proving journey reliability and quality. However, the modelling outputs demonstrate that the scheme is estimated to result in a slight increase in accidents. This is due to the additional capacity attracting more vehicles onto the strategic routes around Maidenhead. The proposed interventions have been designed in accordance with current standards, including appropriate signage. In addition, Road Safety Audits shall be undertaken as part of detailed design to ensure that accident risks are reduced and mitigated to a minimum.

3.5.7 The proposed interventions are not anticipated to generate any security, access to services, or affordability impacts. In addition, since the scheme primarily involves widening and alterations to the existing highway, it is not anticipated to generate any severance impacts.

3.6 Value for Money statement

3.6.1 This section provides a Value for Money conclusion and categorises the Value for Money of the scheme as recommended by DfT.

3.6.2 The initial Benefit to Cost Ratio (BCR) of the six junction improvements schemes is 5.01, which represents a Very High Value for Money category. The adjusted BCR, which considers the impact of dependent development, is 17.13.

3.6.3 The BCR for the second phase of improvements at Braywick Roundabout is 3.07, which represents a High Value for Money category.

4. FINANCIAL CASE

4.1 Overview of Affordability Assessment

4.1.1 In September 2012, the DfT set out firm proposals for the devolution of funding for local major transport schemes from 2015 from a national pot of £2bn. The Government's response further confirmed the commitment to delegate funding decisions and negotiate a Growth Deal with every Local Transport Body (LTB) to deliver local growth and infrastructure priorities.

4.1.2 The Maidenhead Housing Sites Enabling Works proposal is a strong fit with local, regional, and national policies and priorities relating to transportation investment and economic growth. Funding is available through the Local Growth Fund (LGF) and has been provisionally allocated to this project subject to RBWM demonstrating a satisfactory benefit cost ratio.

4.2 Project costs

4.2.1 The LEP provisionally agreed a £4.213million Local Growth Fund contribution and £1.068million Business Rates Retention Pilot contribution to this project, with £316,000 of S106 contributions and £738,000 from the RBWM Capital Programme, making a grand total of £6.335m.

4.2.2 Table 4.1 below outlines the proposed scheme costs broken down for each junction. The cost estimate includes preparatory costs associated with preliminary and detailed scheme design, and scheme construction.

Table 4.1 – Scheme costs, junction breakdown

JUNCTION COSTS £000							
	A	B	C	D	E	F	Total
Design	307	55	67	7	104	15	555
Prelims	176	32	39	4	60	9	320
Construction	1,356	243	296	32	458	68	2,453
Stats	955	52	521	0	924	0	2,452
Contingency	307	55	67	7	104	15	555
Total	3,101	437	990	50	1,650	107	6,335

4.2.3 A contingency (risk) budget of £554,638 is included within the cost estimates based on 20% of the construction cost. It will be reviewed and refined throughout the design and commissioning process to give improved levels of confidence regarding scheme cost.

4.2.4 An estimate of design fees, legal fees, and charges of £554,638 has been included representing 20% of construction costs.

4.2.5 An estimate of preliminaries of £319,983 has been included at 15% of construction costs. This includes all surveys, and any permanent and temporary Traffic Orders.

4.2.6 Cost estimates have been informed by knowledge, understanding and experience of the quantum of costs required to deliver the proposed scheme, based on preliminary designs. These shall be refined based on detailed design following approval of this business case.

4.2.7 There are maintenance costs associated with existing highway infrastructure. The proposed replacement and refurbishment of footways and carriageways with new surfacing

will reduce future maintenance costs due to the increased service life of the new surfacing relative to the existing. Several of the junctions have been identified as needing resurfacing now or within the next few years.

4.3 Cost Profile

4.3.1 Table 4.2 presents the total scheme costs profiled by financial year for the duration of the funding period.

4.3.2 With preliminary design complete, detailed design will take place until July 2020. The construction works shall commence in August 2020 and will be fully delivered in April 2021. Subject to the approval of this business case.

Table 4.2 – Cost profile

	2019/20	2020/21	Total
Expenditure (estimated costs)	£000	£000	£000
Design	230	325	555
Prelims	-	320	320
Construction	-	2,453	2,453
Stats	-	2,452	2,452
Contingency	-	555	555
TOTAL COST	230	6,105	6,335

4.3.3 Funding for the scheme will be provided through a combination of Section 106 contributions and Capital Funding from RBWM, and Local Growth and Business Rates Retention Pilot funding from the LEP. Table 4.3 sets out how the funding sources will be utilised to deliver the project.

Table 4.3 – Budget provision

	2019/21	2020/21	Total
Expenditure (estimated costs)	£000	£000	£000
LGF Funding	-	4,213	4,213
Business Rates Retention Pilot	-	1,068	1,068
Capital Programme	230	508	738
S106 Funding (RBWM)	-	316	316
TOTAL COST	230	6,105	6,335

5. COMMERCIAL CASE

5.1 Output based specification

5.1.1 The Commercial Case details the procurement strategy for the project and is informed by the following strategic outcome objectives:

- I Achieve cost certainty, or certainty that the scheme can be delivered within the available funding constraints;
- I Obtain contractor experience and input to the construction programme to ensure the implementation programme is robust and achievable;
- I Minimise further preparation costs with respect to scheme design by ensuring best value, and appropriate quality;
- I Obtain contractor input to risk management and appraisals, including mitigation measures, to capitalise at an early stage on opportunities to reduce construction risk

and improve out-turn certainty thereby reducing risks to a level that is 'As Low as Reasonably Practicable' (HSE Risk Management).

5.1.2 Key deliverables for the scheme include junction capacity improvements at the following sites:

- | A308(M) / A308 / A330 / The Bingham;
- | A308 / Stafferton Way / Rushington Avenue;
- | A4 / A308;
- | A4 / B4447 / Market Street;
- | A4 / B3028 / Lassell Gardens; and
- | A4 / A4094 / Guards Club Road.

5.2 Procurement strategy and sourcing options

5.2.1 RBWM is able to draw on existing long-term framework contracts for delivery of aspects of the project including:

- | Volker Highways for delivery of highways construction services, traffic signs and road markings;
- | Project Centre for professional engineering services, including structures, highway planning and design services; and
- | AA Lighting for the design and delivery of street lighting solutions.

5.2.2 These contracts were let in 2017 using a rigorous competitive tender approach to ensure best value for money across a range of highway projects, taking advantage of economies of scale associated with delivering large volumes of work as part of the RBWM capital programme.

5.2.3 The Maidenhead Housing Sites Enabling Works project consists of standard highways improvement schemes that are similar in scope to projects already being delivered as part of the frameworks. Therefore, it is considered sensible to use the existing frameworks to take advantage of their preferential rates and RBWM is content that this approach represents value for money,

5.2.4 The construction, paving and associated signing and lining will be procured directly through Volker Highways who will also be in a position to deliver early contractor involvement in the design and development of the scheme.

5.2.5 The timescales for delivery of the works are relatively tight and going out to competitive tender would incur significant additional delay that could prejudice delivery within the funding time constraints. Utilising the existing frameworks will minimise procurement timescales.

5.2.6 Also, involvement of the council's existing term contractor allows them to better coordinate the Maidenhead Housing Sites Enabling Works with other highway works in the area, minimising the risk of incurring delays associated with other schemes over-running. Project Centre has been involved in the concept design and preparation of the Maidenhead Housing Sites Enabling Works business case. As such, they have a sound understanding of the scheme, its cost estimates and associated risks. Their continued involvement in the project through to the delivery phase will help to minimise risk and any associated costs.

5.2.7 RBWM will undertake signal design using in-house expertise. Delivery of the signal schemes will be through preferred contractors Siemens and Simone Surveys. This combination has been demonstrated to provide the optimum balance of cost and quality on previous projects.

5.3 Payment/ charging mechanisms and framework

5.3.1 The existing term contracts are based on an NEC 3 contract model option B, which allows for penalty clauses, specifically relating to over-running.

5.3.2 Payments to the contractors will be made monthly in arrears to the value of 80% of the project, subject to the project engineer checking and agreeing the submission made by the contractor as the build progresses.

5.3.3 Payments made to the contractor will be subject to cross-checking against the programme to ensure that the absolute minimum overrun occurs. If any penalty is due to be applied, the Council work with the contractor to rectify/remedy this.

5.3.4 The final 20% will be paid once the project is complete and has been signed off.

5.4 Risk allocation and transfer

5.4.1 Resources are available to manage risks across the scheme. Risks shall be allocated and managed in a cost-effective manner by the most appropriate party to do this and at the appropriate level.

5.4.2 The Project Board as defined in Section 6 shall be primarily concerned with managing strategic level risks relating to interfaces between the scheme and the wider project environment.

5.4.3 The Project Manager will have overall responsibility for ensuring that the risk management process is implemented and managed in accordance with best practice. They will ensure that risks are actively managed in a consistent and appropriate manner across all work streams. All severe risks will be reported to the Project Board. In addition, all risks which relate to the overall direction, organisation and control of the scheme shall be reported to the Project Board.

5.4.4 The Project Manager will:

- | Ensure that an appropriate procedural framework is adopted;
- | Report to the Project Director in review and management of project performance;
- | Agree the required level of risk management support to be provided for risk identification, analysis, review and reporting;
- | Facilitate risk workshops/meetings as appropriate; and
- | Be the custodian of the risk register.

5.4.5 The Risk Owner will be responsible for the day-to-day management of the risk(s) that they own. The selection and appointment (by the Project Manager) of a risk owner will be on a “best person for the task” approach and, once appointed, the risk owner will monitor and update the risk register informing the Project Manager of changes.

5.5 Contract length

5.5.1 The design and build elements of the scheme will be procured separately. Project Centre are identified to undertake preliminary and detailed designs, which will be undertaken in line with the programme provided in Appendix F. A review of the programme will be undertaken at each stage and incorporated into the delivery plan.

5.5.2 The existing Volker Highways contract for construction currently runs to 2021. However, this would be extended for job specific projects currently under construction for the duration of that scheme.

5.5.3 Construction and installation of signals will be procured separately.

5.6 Human resource issues

5.6.1 The ability for the contractor to resource the project effectively will be scrutinised at procurement stage via the procurement specifications.

5.6.2 Design resource is readily available via Project Centre, who hold a long-term, sole-source framework with RBWM.

5.7 Contract management

5.7.1 The contract follows a traditional NEC 3 format, ensuring that the contractual / commercial arrangement will be well defined. This form of contract is well understood throughout the supply chain and relies on a pre-defined risk register to allocate and manage anticipated risk.

5.7.2 During contract negotiations, risk will be allocated to the party best able to manage it in the most cost-effective way.

5.7.3 The contracts will be managed through a combination of workshops, reviews, meetings and day-to-day operation to enable all actions to be discussed and agreed.

6. MANAGEMENT CASE

6.1 Introduction

6.1.1 The DfT's guidance document, 'The Transport Business Case: Management Case', outlines the areas that should be covered as part of the Transport Business Case documentation. These aspects are covered under the following sections of this Management Case:

- | Evidence of similar projects
- | Programme and project dependencies;
- | Governance, resourcing and responsibilities;
- | Managing project risks;
- | Stakeholder management; and
- | Benefits realisation.

6.1.2 The management approach has been developed following the outline set out below:

- | Set the appropriate governance structure to ensure outcomes and objectives are met;
- | Identify and plan for the key approval milestones ensuring information is provided in good time so as to not delay the programme; and
- | Assess how the delivery process will be managed to achieve optimum financial performance and impact.

6.2 Evidence of similar projects

6.2.1 This section presents evidence to demonstrate that RBWM, and its consultants / contractors are experienced at delivering similar infrastructure projects to those proposed for this scheme.

6.2.2 RBWM has extensive experience of delivering similar schemes as part of its annual capital programme and also as part of major schemes. Similar schemes that have been implemented recently include:

- | Stafferton Way Link, Maidenhead – construction of a new £6 million link road to the south of Maidenhead town centre, including a new bridge over the flood relief channel with shared-use footway / cycleways, toucan crossing, new road junctions, lighting and noise barriers and a roundabout at the A4 / B3028 junction.
- | Clarence Road Roundabout, Windsor – construction of a complex signal-controlled roundabout at the junction of A332 Royal Windsor Way, A308 Goslar Way, B3173 Imperial Road, B3024 Clarence Road. The scheme was constructed in a phased manner to minimise the impact on traffic and the completed scheme has succeeded

in significantly improving congestion and helping to achieve air quality objectives within the Windsor Air Quality Management Area.

I Maidenhead Station Forecourt – enhancement of the station to cater for the Elizabeth Line and achieve a more sustainable transport mode split for travel to and from Maidenhead town centre. The scheme includes the removal of long-stay parking from the forecourt, the doubling of cycle parking capacity, the creation of a pedestrian area, widened footways and a gateway to the town centre.

6.2.3 For the Stafferton Link Road, the client and project management team were responsible for commissioning a professional services team, and procurement of a contractor, Balfour Beatty, who successfully delivered the project.

6.2.4 Although utilising a different procurement strategy, the management structure and practices proposed for the Maidenhead Housing Sites scheme shall be the same as those applied for the delivery of the Stafferton Link Road project, which are outlined below.

6.2.5 Project and programme management services were led by RBWM, who undertook all associated programme and risk management activities and coordinated the professional services team.

6.2.6 Scheme delivery was managed through a design and build contract, which was specified and procured by the RBWM team.

6.2.7 The Stafferton Way Link Road scheme delivered all elements of the scheme to the required standard and has been successful in delivering the missing section of the town centre ring-road to unlock investment in the vicinity of Stafferton Way, with a new supermarket and housing development being constructed since the scheme opened.

6.2.8 The scheme did experience a significant overspend, which was due to changes to project scope, including additional items requested by members, engineering complexity and unforeseen utilities costs. The council allocated additional funds to the project to ensure that it was delivered in full.

6.2.9 A detailed review of the project was undertaken, which highlighted several key learning points, including: the need for timely reporting of financial information; understanding trade-offs between scope and cost; and the need for full involvement of elected members, officers and consultants in the decision-making process throughout the lifetime of the project.

6.2.10 The council has since put in place a comprehensive, scalable and mandated project management methodology for use with all major projects, which is described in full later in this document.

6.2.11 RBWM's professional services consultants, Project Centre, have extensive experience in developing business cases for major LEP schemes and assisting local authorities to design and deliver those schemes; and it is expected that they will be leading on the design elements of the scheme.

6.2.12 Project Centre has previously assisted Medway Council to secure £11m of LEP funding for a transportation and public realm improvement scheme at Commercial Road Car Park in Strood.

6.2.13 Project Centre also provided preliminary design, consultation and detailed design services which included traffic modelling, street and architectural lighting design, public and stakeholder consultation, public realm and street art design, design iteration development and detailed design of construction plans.

6.2.14 The Strood project is now complete and was delivered within programme and budget constraints.

6.2.15 Project Centre also provided services for Waltham Forest mini-Holland scheme, which included traffic engineering and public realm design for 5km of cycle/ bus/ walking routes of strategic highway. Lea Bridge Road was the focus of the study and a flagship for the Transport for London (TfL) mini-Holland programme, for which Waltham Forest Council received £30m in funding. Project Centre delivered preliminary design, consultation, and detailed design services for the project.

6.2.16 The scheme incorporated junction designs, removal of bus lanes, the introduction of cycle lanes and facilities for pedestrians. The road section has over 30 junctions with 6 signalised junctions ranging from a simple 3-arm junction with one lane approach to a complex 4-arm junction with 3-lane approach.

6.3 Programme/ project dependencies

6.3.1 The scheme programme is dependent on the following:

- | Political backing;
- | Stakeholder support;
- | Funding from the identified funding streams; and
- | Successful liaison with the local community and businesses, ensuring they are included in regular updates throughout the scheme's development.

6.3.2 The scheme is not dependent upon other projects. However, each of the junction improvements will need to be carefully programmed to avoid creating unacceptable levels of congestion on key transport corridors. Works will also need to be coordinated with other major transport schemes (i.e. Maidenhead Missing Links and Maidenhead Station Access), which are due to take place over a similar timescale.

6.3.3 There are several regeneration and major transport schemes proposed in the coming months, so RBWM has set up a working group consisting of representatives from the council and developers who have major sites that are likely to be built out in the next few years. This ensures that each party has early sight of the others' programmes and allows for works to be properly coordinated. This is in addition to the usual governance arrangements outlined below.

6.4 Governance, organisation structure & roles

6.4.1 RBWM will operate the design, construction, and monitoring stages of the scheme, utilising the governance structure described in Table 6.1.

Table 6.1 – RBWM management and governance arrangements

Responsible group or officer	Responsibility
Cabinet	Member group that manages council business including high value/high risk procurement and projects including LGF projects.
Overview & Scrutiny Panel	Provides on-going member oversight of the development and delivery of major transport schemes.
Project Sponsor	Senior officer with overall accountability for the project. Responsible for providing regular updates to relevant Cabinet portfolio members. For the Maidenhead Housing Sites project this role will be fulfilled by Chris Joyce, Head of Infrastructure, Sustainability and Economic Growth.

Project Board Provides senior officer project management oversight and support. For Maidenhead Housing Sites Enabling Works, the Project Board includes senior representatives from:

- | Highways, Parks and Countryside;
- | Community Protection and Enforcement;
- | Property;
- | Regeneration;
- | Parking; and
- | Finance.

The Group is responsible for the strategic management of the project and has authority to commit resources to the project in accordance with the Council's Constitution.

General tasks include:

- | appointing the project manager;
- | signing off the project brief and business case;
- | approving the Project Initiation Document (PID);
- | agreeing project controls;
- | authorising project start;
- | reviewing progress against the agreed programme,
- | review of Microsoft Teams project toolkit;
- | authorising variations to expenditure;
- | managing key risks in the highlighted risk log;
- | agreeing responses to issues arising;
- | managing communications;
- | authorising project closure.

The Project Board meets on a monthly basis and an LGF update report is a standing item on the agenda.

Project Manager

Responsible for delivering the project on behalf of the Project Board. Key responsibilities include:

- | Leads and manages the Project Team – has the authority and responsibility to run the project on a day-to-day basis;
- | Delivers the agreed outputs to the required level of quality and within the specified constraints of time, cost, resources and risk;
- | Prepares project information, including the Project Initiation Document (PID) and Project Plan;
- | Identifies and evaluates risks, determines and manages actions, and maintains the risk log;
- | Manages and controls changes to the project scope, requirements, personnel etc;
- | Ensures the project is properly resourced, with sufficient, properly-skilled support;
- | Monitors and reports progress against the agreed programme, budget and other performance metrics, updating the Council's project management system each month;
- | Identifies key issues that need to be escalated to the project board for review and decision;
- | Liaises with the Project Board and Project Sponsor, securing their approval and decisions at key project stages.

Project Team This is a working group that is responsible for the detailed running of the project.

They undertake regular reviews of progress, risks, issues, actions and spend at a detailed level.

Head of Internal Audit Leads on providing financial governance advice. Involved in the programme from an early stage.

6.4.2 The Council uses Microsoft Teams software to manage the project and to provide visibility of the status of the work. This is regularly updated by the Project Manager and is reviewed by the Project Sponsor and Project Board on a monthly basis.

6.4.3 Key information entered within Microsoft Teams includes:

- | Project toolkit;
- | Delivery status;
- | Project milestones;
- | Risks log;
- | Issues log;
- | Decision / change log;
- | Costs;
- | Actions;
- | Project plan / programme;
- | Document management;
- | Project overview;
- | Scope / project initiation document;
- | Justification / approvals;
- | Project constraints;
- | Assumptions;
- | Meeting agendas / minutes; and
- | Progress reports.

6.4.4 A key benefit of using the Microsoft Teams software is that it is a cloud-based system, allowing for a common data environment, so all project documentation can easily be shared with internal and external stakeholders. It also enables collaboration and automatic version control, so all parties are confident that they are working on the latest version of project documents.

6.4.5 A regular snapshot is taken of the Microsoft Teams toolkit to provide status reports for Project Board and Project Team meetings. This also provides a useful audit trail.

6.5 Programme/ project plan

6.5.1 The outline programme for development and delivery of this scheme is attached in Appendix F. This programme will be refined following full scheme approval, and subject to detailed design of specific scheme elements. The key milestones are detailed in Table 6.2 below.

Stage	Date	Site A	B	C	D	E	F
Business case approval	Jul 2020						
Detailed design	Nov 2020	Jul 2020		Sep 2020	Jul 2020		Oct 2020
	Aug 2020						

Commence construction	Jan 2020	Sep 2020	Nov 2020	Dec 2020	Dec 2020
2020 Sep 2020					
Completion of Construction	Arp 2021	Oct 2020	Dec 2020	Jan 2021	
Mar 2021	Nov 2020				

6.5.2 The construction phase includes the programming of six junctions within an ongoing programme of highway works, the Maidenhead Missing Links Cycle Route and Housing Sites to which this Business Case relates. As shown in Table 6.2, the scheme delivery shall be phased to minimise the impact on the network during construction.

6.5.3 Although the delivery of each junction shall be phased, there will be two overarching phases: Phase 1, which includes sites B, C, D and F (A308 Stafferton Way Roundabout, A4 Castle Hill Roundabout, A4 Cookham Roundabout, A4 Ray Mead Roundabout); and, Phase 2, which includes sites A and E (A308 Braywick Roundabout, A4 Oldfield Junction).

6.5.4 Phase 2 comprises the more complex, larger sites, being delivered at the latter stages of the scheme. Although the construction of the Phase 2 sites shall be undertaken after Phase 1, utility works shall be undertaken during Phase 1 construction where possible to avoid delays.

6.6 Assurance & approval plan

6.6.1 The Project Board will be the mechanism for assessing scheme progress. This includes sign-off for each stage completed and approval for commencing the next stage, as set out in the Project Management Toolkit. This methodology enables:

- | Realistic and achievable targets to ensure successful delivery;
- | Deployment of relevant skills and competencies to a project;
- | Compliance with best practice;
- | Key stakeholder input and understanding;
- | Project feedback through lessons learnt; and,
- | A visible audit trail.

6.6.2 The key milestones for RBWM and LEP sign-off are shown below:

- | Decision by BLTB/Thames Valley Berkshire LEP Board on commitment of funding – July 2020;
- | Contract between BLTB, LEP and scheme delivery body produced and signed – August 2020;
- | Detailed design approval – July (Phase 1), October 2020 (Phase 2);
- | Construction contract agreed – September (Phase 1), December 2020 (Phase 2).

6.6.3 These milestones have been built into the project programme and will be monitored by the RBWM Project Manager and reported to the Project Board.

6.7 Communications & stakeholder management

6.7.1 The key objectives of the scheme's stakeholder management are to keep stakeholders aware of the schemes progression and give an opportunity for feedback / input to the design process. Key stakeholders include:

- | RBWM elected members;
- | RBWM officers;
- | Neighbouring local authorities;
- | Thames Valley Berkshire Local Enterprise Partnership;
- | Highways England;
- | Developers;

-
- | Utility companies;
 - | Local bus companies;
 - | Local businesses;
 - | Local residents / residents' associations;
 - | Road users; and
 - | Local press.

6.7.2 RBWM will ensure public and stakeholder awareness of the scheme by providing consistent, clear, and regular information to those affected by the scheme. This will include information on how groups using the local road network might be affected by works.

6.7.3 RBWM will publicise the scheme in the public domain in advance of construction, including details of the programme, its impact on traffic movements including road closures, etc. This will include:

- | Press releases;
- | Articles on the council website;
- | Social media releases;
- | Articles in 'Around the Royal Borough';
- | Messages on variable message signs around the town centre;
- | Engagement with the Developers' Forum; and
- | Engagement of local businesses through the Town Manager.

6.7.4 Direct engagement with statutory consultees will occur during the detailed design stage of the project and further during the public consultation stage.

6.7.5 The design team along with the project team will undertake these consultation activities in partnership with the Royal Borough's communication team.

6.8 Programme/ project reporting

6.8.1 Responsibility for accurate, timely and appropriate communications within the Project Team rests with the RBWM Project Manager to ensure that the Project Board is kept up-to-date with programme developments.

6.8.2 The Project Manager is responsible for leading both Project Team and reporting to the Project Sponsor.

6.8.3 The Project Sponsor is responsible for keeping the lead members aware of the development of the scheme and reporting progress to Overview and Scrutiny Panel.

6.8.4 It is the responsibility of the Project Sponsor and Project Manager to ensure that the Project Board has sufficient information and is involved in all decisions that affect the programme and performance of the project, achievement of the project objectives or deviation from agreed and delegated responsibilities.

6.8.5 Project Team meetings will be held monthly, with the outcomes escalated to the Project Board.

6.9 **Implementation**

6.9.1 The key workstreams required for implementing the project are as follows:

- | Approval of business case;
- | Detailed design (Project Centre);
- | Early site works (through appointed contractor for scheme);
- | Utility works (led by in-house team, carried out by appointed contractor);
- | Construction (through appointed contractors for scheme);
- | Site supervision (led in-house); and

| Monitoring and evaluation (led in-house).

6.10 Risk management

6.10.1 The risk register detailing scheme risks, implications mitigations and actions is attached in Appendix E. It has been categorised into the four areas of:

- | Strategic;
- | Design;
- | Financial; and
- | Construction.

6.10.2 The key project risks will be managed throughout the planning and implementation of the scheme. The risk register includes the severity of risk. The main issues are summarised below:

- | The capital costs of the scheme may increase because of factors uncovered at the detailed design stage;
- | Statutory undertaker diversion / protection costs may be more than expected;
- | Unknown services struck during construction works may result in delays to programme; and
- | Delays may be incurred during construction due to delays with statutory undertaker diversions and / or access restrictions due to weather / other environmental constraints.

6.10.3 The Risk Register will remain a live document be continually updated throughout the life of the project as existing risks change, new risks are identified, or where further development of the design results in mitigation of risks. This would include appropriate levels of value engineering to optimise value and reduce risk as well as appropriate road safety audits to address any recommendations.

Following confirmation of scheme funding, ownership of the risks will be allocated to those parties best able to manage them.

6.11 Benefits realisation

6.11.1 This section presents the proposed monitoring and evaluation strategy for the project as well as the key decision points. The proposed reporting and approval process will also be summarised.

6.11.2 The following stages of the project programme represent key points where decisions can be undertaken to ensure that the appropriate project viability considerations are undertaken in advance of significant capital commitment:

- | Public consultation stage;
- | Local Enterprise Partnership funding approval; and
- | Internal funding approval.

6.11.3 The Scheme Monitoring and Evaluation Plan will consist of three distinct stages:

- | Stage 1 - Pre-Construction Study;
- | Stage 2 – One Year Post Opening Process Evaluation, Q2 2022; and
- | Stage 3 - Five Year Post Opening Impact Evaluation Study, Q2 2026.

6.11.4 The Council is seeking agreement to the following Key Performance Indicators to monitor the delivery and success of this project:

Table 6.3 – Key Performance Indicators

Core Benefit	Indicator	Target	Additional Data Collection
Outputs:	6 junction improvements delivered on time / to budget	None	Scheme delivery
	Carriageways resurfaced	None	Length of new surfacing
	Carriageways resurfaced	None	400m of carriageways resurfaced
Outcomes:	Improved traffic flow years relative to baseline	Number of vehicles ATC / turning counts	Increase in traffic flow over 5 years relative to baseline
	Reductions in queue lengths baseline	Queue lengths	Reduction over 5 years relative to baseline
	Video queue length surveys		
	Reduction in journey times baseline	Journey times	Reduction over 5 years relative to baseline
	Journey time surveys (manual & Bluetooth)		
	Improvement in air quality due to improved traffic flow concentration of NOx	Reduction in NOx after 5 years relative to baseline	Annual mean
	Reduction in collisions at affected junctions fatal casualties	Number of reported slight, serious and fatal casualties	Reduction after 5 years relative to baseline
	Increased pedestrian / cycle movements where facilities are provided / enhanced	Number of pedestrian / cycle movements	Increase after 5 years relative to baseline
	Video surveys		

6.11.5 A Process Evaluation will be undertaken as the construction nears completion. The aim will be to: identify factors influencing the extent to which objectives have been achieved; identify and investigate unintended outcomes; and identify lessons learned.

6.11.6 The process evaluation will involve interviews with key project officers and a process review workshop with key parties and stakeholders. This will include assessment of:

- I Programme management, success factors and key obstacles to delivering the scheme;
- I Project plan assessment, delivery at key milestones, etc.;
- I A review of evidence collated through RBWM's project management and governance procedures;
- I Consultation with key stakeholders to garner a range of views of the operation and success of the scheme;
- I Evolution of the risk register and the effectiveness of the risk management strategy e.g. safety during construction, delays to transport users, impacts on local business during construction;
- I Contract management issues, including handling of early warnings, change controls and value engineering opportunities;
- I If and how the context and rationale behind the scheme has changed; and
- I All costs involved in the management, construction and delivery of the scheme compared to the forecast costs including an assessment of risk and optimism bias in pricing.

6.11.7 This process will inform a formal Project Closedown and associated lessons learned report and log. These reports will be used to assist in the evaluation of the process from start to finish.

6.11.8 As part of the project closedown process a workshop will be held with key members of the client and contractor teams to capture the items that went well and did not go well and if there are additional lessons that need to be learned. This will include a review of the

impact of stakeholder engagement based upon the feedback that was received during the project, and perceptions of the construction phase obtained via the residents' attitudes surveys.

6.11.9 After completion of the monitoring and impact evaluation, an economic evaluation will be undertaken to assess the accountability of the investment into the scheme through answering the following questions:

- I How do the realised benefits, and therefore, VfM correspond with those estimates derived from the scheme appraisal?
- I Have any unexpected benefits occurred or have other predicted benefits not materialised? and
- I Are on-going benefits expected to change?

6.11.10 The actual outturn costs and movement data will be used to generate a new assessment of cost benefit. This will be supplemented with an assessment of the wider economic benefits generated by the scheme.

7. CONCLUSIONS

7.1.1 The business case demonstrates that there is a strong case for the proposed Maidenhead Housing Sites Enabling Works scheme, with the objectives and outcomes of the scheme satisfying local, regional, and national policies and priorities relating to transportation investment and economic growth. Following extensive design and traffic modelling, the preferred options are considered to present the best solution given the scheme scope, budget, and time constraints.

7.1.2 As demonstrated by the economic analysis, the proposed scheme benefits outweigh the costs, with the initial BCR of the six junction improvements generating a BCR of 5.01 demonstrating very high value for of money. When the impacts of the dependent development are considered the benefits of the scheme significantly increase, producing a BCR of 17.13. The second phase proposal for Braywick Roundabout also presents a very high value for money with a BCR of 3.07.

7.1.3 From the Financial Case, it is demonstrated that the scheme is affordable, with sufficient funds available to deliver the scheme subject to LGF and BRRP funding. RBWM also benefit from having existing framework agreements in place to deliver both the design and construction of the scheme, with RBWM, the consultant and contractor all having experience of delivering schemes of similar scale and complexity.

7.1.4 The scheme is currently being progressed to detailed design, following completion of preliminary design. Subject to approval of this business case, the scheme is on track to be completed by April 2021.

