

Reading Borough Council, Transportation and Streetcare

East Reading Mass Rapid Transit Scheme Design and Access Statement



April 2018



in association with



Doyle Design LLP

Project Ref: 132.1MRT

Rev: 03(MD)

Caversham Bridge House, Waterman Place, Reading, Berkshire RG1 8DN

T: +44 (0)118 950 0761 F: +44 (0)118 959 7498 E: reading@peterbrett.com

Maps and plans reproduced from/based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown Copyright.

Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings.

Licence No. 100019672 Year of Publication: 2012 Owner/Purchaser of Mapping: Reading Borough Council

Reading Borough Council, Transportation and Streetcare

East Reading Mass Rapid Transit

Design and Access Statement

Contents

1	Executive Summary	6	14	Bridge form options	34
2	Introduction and background	8	15	Selected bridge form	42
3	Amended application	10	16	Viaduct	44
4	Transport context	12	17	Abutments	46
5	Design Policy	14	18	Columns and beams	48
6	Design review	15	19	Undercroft	52
7	Site description	16	20	River Edge	54
8	Aims and objectives	20	21	Colours, materials and finishes	56
9	Higher level option appraisal	22	22	Public realm	59
10	Site development constraints	26	23	Access and movement	60
11	Route parameters	28	24	Landscape	62
12	Bridges and crossings	30	25	Lighting, signals and signage	68
13	Main scheme components	32	26	Construction	70

Figures

Figure 1. Transport context	6
Figure 2. Urban context	6
Figure 3. Project sponsors	9
Figure 4. Transport strategy diagram	12
Figure 6. Eastern Corridor diagram	13
Figure 5. Traffic congestion at Cemetery Junction	13
Figure 7. The Design Review Panel meeting in June, 2017.	15
Figure 8. View from the River Thames looking south towards the site with the railway beyond	16
Figure 9. Urban Context (Google Earth)	16
Figure 10. Application site boundary (red line plan')	17
Figure 11. Application site boundary overlaid (approximately) on aerial photograph (Google Earth).	17
Figure 12. Adjacent planning units	18
Figure 13. Strategic cycle routes (Sustrans).	18
Figure 14. Photographs of context	19
Figure 15. Preferred scheme following option appraisal (to note that the current application scheme has been substantially refined)	25
Figure 16. Example of existing ecology (The Coal LWS)	26
Figure 17. Example of existing ecology (The riverside grass strip)	26
Figure 18. Moorings	27
Figure 20. Rail corridor	27
Figure 21. The Thames Path	27
Figure 19. Pylons	27
Figure 22. Evidence of fly-tipping	27
Figure 23. Parameter plan - narrower route cross section across the main bridge span	28
Figure 24. Parameter plan -wider main route cross section across viaduct and approach ramps	29
Figure 25. Parameter plan - existing rail bridge	29
Figure 26. Parameter plan - proposed bridge	29
Figure 27. Revised parameter plan showing the narrowed cross section adjacent to the narrowest part of the retained riverside open space - 'the pinch point'	29
Figure 28. The bridges of the lower Kennet	30
Figure 29. Horse Ferry at Reavensthorpe (Yorkshire Waterways Museum).	30
Figure 32. Great Western main line bridge (1839-40)	30
Figure 30. Maidenhead Railway Bridge	30
Figure 31. Kennet crossings	30
Figure 35. Wokingham Branch Rail Bridge	31

Figure 33. The Accommodation Bridge (or 'Horseshoe' Bridge)	31
Figure 34. Footbridge	31
Figure 36. Gas Pipeline Bridge	31
Figure 37. Elevation/section of proposed scheme viewed from the north (Thames Riverside)	32
Figure 38. Revised proposed scheme	33
Figure 39. A selection of different bridge types considered (Images: Stel Construction Info.)	34
Figure 40. Bridge form selection	36
Figure 41. The weathered steel beam forms a blade like feature that emphasises the horizontal sweep of the new bridge structure	38
Figure 42. The in situ concrete deck also describes the sinuous sweep of the new bridge structure	38
Figure 43. Options for the integration or segregation of the walkway and the cycleway	39
Figure 44. Bridge girder forms (shown diagrammatically)	40
Figure 45. Selected bridge form (tree planting shown indicatively)	42
Figure 47. Baseline viaduct with concrete girder, four column support and square edge soffit	44
Figure 49. Steel girder with two supporting columns	44
Figure 46. Example of sinuous form	44
Figure 48. Example of simply detailed soffit (Images: Stel Construction Info.)	44
Figure 52. Riverside cross section (Planting shown indicatively)	45
Figure 50. Steel girder with tapered soffit and deeper projection	45
Figure 51. Steel girder with tapered and projecting soffit and tapered concrete columns	45
Figure 53. Steel girder with tapered and projecting soffit and flared single concrete column	45
Figure 54. Simple retaining walled abutment (baseline scheme)	46
Figure 55. Retaining wall with girder extended over the abutment.	46
Figure 56. Open abutment with earth embankment	46
Figure 58. Retaining wall sloping towards the river edge	47
Figure 61. Example of a bridge abutment with gabion wall	47
Figure 59. Retaining wall with sloping abutment walls (preferred scheme)	47
Figure 57. Elevation/section of proposed scheme viewed from the east bank of the Kennet	47
Figure 60. Retaining wall with column and embankment	47
Figure 64. Example of flared single column (Image: Stel Construction Info.)	48
Figure 63. Example of tapered column head	48
Figure 62. Straight columns (planting indicative)	48
Figure 65. Tapered column head (planting indicative)	49
Figure 66. Flared single column (planting indicative)	49

Figure 67. Illustration of the degree of openness along the riverside -original submitted scheme	50	Figure 100. Example of gabion clad abutment at junction with concrete deck	58
Figure 69. Selected flared single column design	50	Figure 99. Example of weathering steel beam meeting abutment	58
Figure 68. Illustration contrasting the degree of openness along the riverside between the original submitted scheme and proposed submitted scheme	50	Figure 101. Example of railing with horizontal rails emphasizing curving form of viaduct	58
Figure 70. Illustration of the relative degree of openness along the riverside between the original submitted scheme and the proposed revised scheme	51	Figure 102. Public realm plan	59
Figure 71. Underpass park, Toronto (Toronto Star)	52	Figure 103. Walking and cycling access	60
Figure 74. Concept design for Underpass Park, Toronto	52	Figure 104. Bus services that could use the route	61
Figure 72. Underpass park, Toronto (Toronto Star)	52	Figure 105. Landscape strategy plan	62
Figure 75. Games courts, Underpass park, Toronto	52	Figure 106. Mosaic artwork to be relocated and restored	63
Figure 73. Playspace at Underpass park, Toronto.	52	Figure 108. Detailed Landscape Strategy plan (see Landscape Strategy in ES for full detailed version)	64
Figure 76. 'Playscape'	52	Figure 107. Extract from the proposed trees and shrub planting palette	64
Figure 77. Under the Freeway Market, Idaho	52	Figure 109. Riverside marginal planting	65
Figure 78. Collonade Mountain Bike Park, Seattle (Joe Mabel)	53	Figure 110. Loddon Lily planting in marsh areas	66
Figure 82. SEART Park, Mount Wellington, New Zealand	53	Figure 111. Example of tussocky Grassland- a swathe of grassland between the river and the bridge, tolerant of partially shaded conditions, containing a mixture of wild flowers and grasses,	66
Figure 84. Possible examples of enclosing railings that may be installed in the future to enclose some or all of the viaduct undercroft.	53	Figure 112. Example of wildflower grassland- a mixture of wild flowers and grasses.	66
Figure 79. Collonade Mountain Bike Park, Seattle (Sage Ross)	53	Figure 113. Examples of riverside marginal planting	67
Figure 80. Colonnade Mountain Bike Park, Seattle (Sage Ross)	53	Figure 116. Loddon Lily / marsh plant species to be planted beneath the viaduct.	67
Figure 83. I-93 Lighting Project, Boston Mas.	53	Figure 114. Examples of information, or story, boards proposed at locations throughout the linear space	67
Figure 81. SEART Park, Mount Wellington, New Zealand	53	Figure 115. There is opportunity for the local community and schools to be involved in the design of the landscape elements	67
Figure 85. Artists impression of proposed marginal shelf with temporary mooring and open pools (NTS)	54	Figure 117. Bridge deck lighting concept (DW Windsor Garda LED Rail Lighting, copyright DW Windsor)	68
Figure 86. Cross section through proposed timber platform for temporary mooring (NTS)	55	Figure 118. Bridge deck lighting concept (DW Windsor Garda LED Rail Lighting, copyright DW Windsor)	68
Figure 89. Sketch layout of typical temporary mooring platform (NTS)	55	Figure 119. Column lighting luminaires (Holophane VMAX) and details of light shields on all luminaires to mitigate light spill into the surrounding area (inset)	69
Figure 91. Examples of marginal planting	55	Figure 120. Lighting strategy extract	69
Figure 92. River edge dimensions (NTS)	55		
Figure 87. Cross section through proposed marginal planting shelf (NTS)	55		
Figure 88. Cross section through proposed open water pool (NTS)	55		
Figure 90. Sketch layout of typical open water pool (NTS)	55		
Figure 94. Balustrade rail with mesh infill	56		
Figure 93. Example of weathering steel finish	56		
Figure 95. Example of gabion wall	57		
Figure 96. Example of gabion wall junction with concrete deck	57		
Figure 97. Example of gabion clad abutment at junction with weathering steel beam	57		
Figure 98. Example of gabion clad abutment at junction with concrete deck	58		

Maps and plans reproduced from/based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence No. 100019672 Year of Publication: 2012 Owner/Purchaser of Mapping: Reading Borough Council

1 Executive Summary

Background		Description of development		Revised Scheme						
1.1	This Design & Access Statement (DAS) has been prepared by Doyle Town Planning and Urban Design (Doyle) on behalf of Reading Borough Council (RBC).	1.8	Permission is sought for:	1.10	The application was submitted in July 2017. The scheme has now been revised.	Mooring Platforms and Associated Riverside Planting	1.23	Information, or story, boards are proposed at locations throughout the linear space, which could provide information on the habitat enhancements and the locally occurring Loddon Lily, and to celebrate the confluence of the Thames and Kennet.		
1.2	The DAS supports a full planning application for a proposed new public transport, pedestrian and cycle route. The application is submitted on behalf of Reading Borough Council, Transportation and Streetcare. Reading Borough Council (RBC), Wokingham Borough Council (WBC) and Thames Valley Berkshire Local Enterprise Partnership (TVB LEP) are promoting the scheme.		“Construction of a segregated fast-track public transport, pedestrian and cycle bridge, comprising concrete bridge structure with a river span of 59.5m and a land span of 316m, supported by concrete columns and reinforced soil embankment, with associated footpath links, junction improvements and landscaping.”	1.11	There are seven main scheme amendments along with a series of more minor adaptations.	1.17			The river edge incorporates three new mooring platforms and associated riverside planting that provide landscape and visual amenity benefits. The improvements provide a greener outlook and better connectivity between the footpath and the waters edge.	
1.3	The Statement has been produced in order that the local planning authority and the wider community may understand the analysis that has led to the development of the proposed new route and bridge.	1.9	The proposed development comprises: - creation of a new route for public transport only, including cycle path and footway between Napier Road and the A3290 at Thames Valley Park proposed Thames Valley Park and Ride; - the erection of a new bridge over the River Kennet; - formation of a new T-junction with Napier Road; - connection to the proposed Thames Valley (TVP) Park & Ride; - development of new and improved footpath links to Tesco and the towpath; and - associated infrastructure and landscaping.	1.12	the width of the viaduct has been narrowed by 1m for a short section to the east of the River Kennet to position the structure further away from the towpath and river edge to the east of the River Kennet.	Trees	1.18	The landscape strategy has been updated to include retention of the Willow tree east of the Kennet Mouth.		
				1.13	The route alignment to the west of the River Kennet has been amended to take into account the proposed diversion of electricity lines. The alignment has been straightened and moved further away from The Coal Wildlife Local Site (LWS).	1.19			Additional trees are retained north of the viaduct and within The Coal LWS.	Lighting
						Land beneath viaduct			1.20	
1.4	East Reading Mass Rapid Transit scheme is a segregated fast-track public transport, pedestrian and cycle route.			1.14	The replacement car parking spaces originally proposed to compensate for those lost spaces within the Tesco car park have been removed. Therefore, an additional 824 sqm of semi-natural habitat within the footprint of the on-site portion of The Coal, Kennet Mouth and Kings Meadow East LWS will be retained and protected when compared to the existing planning submission		1.21	This has removed the requirement for lighting columns along the viaduct.		
1.5	The route of the MRT scheme links the A3290 at Thames Valley Park, beside a proposed new Park & Ride facility, to Napier Road, Reading town centre and the railway station.						1.22	The area is proposed to remain open and unfenced to allow people to see beneath the viaduct, whilst discouraging public access beneath the viaduct due to the creation of areas of marshy wetland and grasses, providing an area for seasonal flooding, and a diverse marshy habitat. Provision is made within the application the potential for fencing to be installed beneath the viaduct at a later date if proven to be desirable, rather than at the outset, as previously proposed. .		
1.6	The route extends along the southern bank of the River Thames and north of the Great Western Railway Line. The route crosses the mouth of the River Kennet and then travels along Napier Road into Central Reading.				Columns					
1.7	The new route will travel from a new bridge to be located at the mouth of the River Kennet where it joins the Thames, immediately to the north of the main Great Western Railway line bridge across the Kennet.			1.15	The form of the columns supporting the viaduct has been changed. The previous proposals incorporated pairs of columns with flared capitals. These have now been substituted for single, flared columns.		1.22	The existing mosaic will be carefully lifted, repaired and reinstalled into a new area, which is more visible to passers-by. New seating would be provided at the relocated mosaic and near to the location of timber mooring platforms, where enhanced views of the river may be enjoyed.		
					1.16	The single columns are considered to be more elegant reducing the overall footprint at ground level and creating a greater sense of openness along the riverside.				

Purpose

- 1.29 The A4 corridor in east Reading linking the town centre and the A3290 is suffering from significant levels of congestion, particularly in the peak periods. This congestion is forecast to increase with the projected level of growth in Reading and Wokingham Borough.
- 1.30 This scheme is a vital element of a wider strategy to develop and to encourage sustainable transport, active travel, in order to and support planned growth.
- 1.31 The new route will enhance accessibility and support the continued, sustainable growth of the boroughs of Reading and Wokingham and the wider area.
- 1.32 The new route will make it more attractive to travel by bus, bicycle or to walk. Offering more sustainable travel choices will reduce private car trips and thereby ease forecast congestion and air quality on the existing highway network.
- 1.33 The new route will help to tackle highway network congestion, particularly on the A4 London Road corridor, which acts as a barrier to growth.
- 1.34 The route will connect people to jobs in the area and in Reading town centre, and improve access to Reading railway station with its regional and national connections.

Funding

- 1.35 The majority of funding for the scheme has been allocated by central Government from the Local Growth Fund, with local contributions from the private sector funded through planning contributions and local investment.
- 1.36 Funding has been allocated for Phase 1 and Phase 2 East MRT by the Thames Valley Berkshire Local Enterprise Partnerships (TVBLEP) from the Local Growth Fund, for the period 2015/16-2020/21.
- 1.37 Funding from the Local Growth Fund is provided specifically for strategic transport projects and cannot be used for any other purpose.

Policy

- 1.38 This scheme is a long established element of RBC's strategy to deliver sustainable economic growth and housing for Reading and Wokingham Boroughs. It is included in RBC's Corporate Plan, Core Strategy and Local Transport Plan.
- 1.39 The scheme is also identified in WBC's Core Strategy, Managing Development Delivery, Local Plan, and Local Transport Plan; and TVB LEP's Strategic Economic Plan.

Assessment

- 1.40 The proposals have been informed by current and emerging national and local planning policy, and by discussions and negotiations with Reading Borough Council (RBC), Wokingham Borough Council (WBC), other key stakeholders including landowners, and the wider community.
- 1.41 The proposals respond to the constraints of the site and surrounding area. The location and alignment of the bridge has been decided after a rigorous option appraisal process that took into account environmental, aesthetic and amenity impacts. That process, and the various background studies, are summarised in this DAS.
- 1.42 A range of landscaping measures form part of the scheme to complement the bridge and manage, enhance and protect environmental features affected by the scheme. This includes new riverside planting, marshy wetland areas and new tree planting.

Environment

- 1.43 The Planning Authority has confirmed that the proposed development falls within Schedules 1 or 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 2011. An Environmental Statement (ED) is therefore required to accompany the planning application.
- 1.44 The ES Addendum explains and includes in necessary assessment of the various scheme amendments.

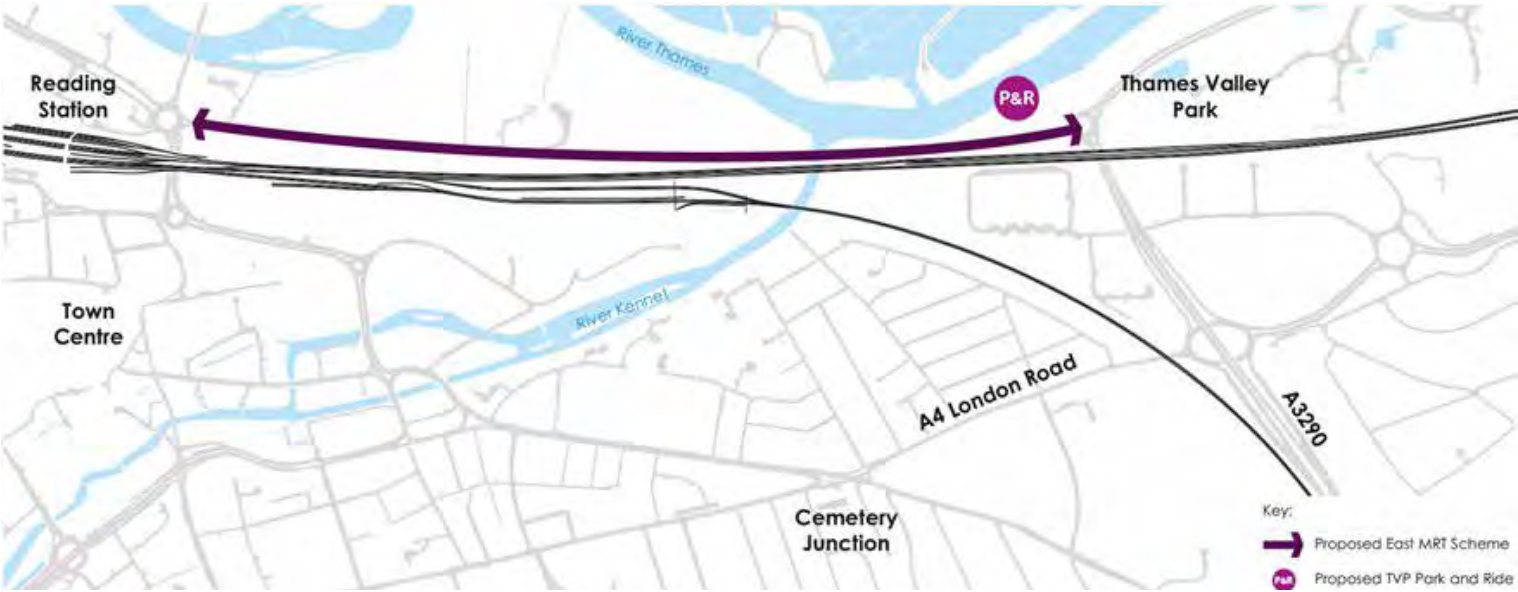


Figure 1. Transport context



Figure 2. Urban context

2 Introduction and background

Introduction		Scope		Guidance		Promoters			
2.1	This Statement has been prepared by Doyle Town Planning and Urban Design in conjunction with Peter Brett Associates (PBA) and Reading Borough Council (RBC). The Statement is in support of a full planning application for a segregated fast-track public transport, pedestrian and cycle route linking the A3290 to Napier Road, Reading town centre and the railway station. The application is submitted on behalf of Reading Borough Council, Transportation and Streetcare.	2.7	This Statement provides: - A summary of the application proposals; - A description of the site and the surrounding area; - A description of the proposals including details of use, layout/alignment, scale and appearance. - A description of the design process through the identification and appraisal of options through to the selection of final scheme.	2.16	Chapter 10 sets out the main constraints and potential impacts of the development and describes how the application scheme and the supporting information have sought to address these issues.	2.26	This Statement addresses the requirements of Section 42 of the Planning and Compulsory Purchase Act 2004, which stipulates that a statement covering design concepts and principles, and access issues, should be submitted with an application for planning permission.	2.30	The project is being promoted by Reading Borough Council, Transportation and Streetcare (RBC), working with Wokingham Borough Council (WBC), Thames Valley Berkshire Local Enterprise Partnership (TVB LEP) and Peter Brett Associates LLP (PBA). The public-sector led project has been allocated funding by TVB LEP from the Local Growth Fund.
2.2	The Statement has been produced for the benefit of the local planning authority and the wider community, to better understand the analysis that has led to the development of the proposed new bridge.	Structure of this Statement		2.17	Chapter 11 sets out the design parameters that have guided design development including key dimensions such as the width of the deck, span, the height above the river level, and the dimensions and arrangement of approach ramps.	2.27	Guidance regarding the preparation of the DAS is provided in the form of Department for Communities and Local Government document entitled ‘Guidance on Information Requirements and Validation’ and the CABE publication entitled ‘Design and Access Statements – How to write, read and use them’.	Description of development	
2.3	The Statement illustrates the design process that has led to the development of the proposed new route and bridge and then explains the underlying design principles, concepts and details of the proposal in a structured way.	2.8	The Design and Access Statement comprises the following sections.	2.18	Chapter 12 considers the history and current arrangement of bridges across the River Kennet in the vicinity of the proposed route and how this has influenced the development of the proposals.	Funding		2.31	Description of development is as follows.
2.4		2.9	Chapter 2 (this chapter) provides a general introduction and summarises the contents of the DAS.	2.19	Chapter 13 summarises the main components of the route from east to west.	2.28	The proposed bridge will be funded through allocated funding from the Thames Valley Berkshire Local Enterprise Partnership (TVB LEP). Funding has been allocated for both Phase 1 and Phase 2 East MRT from the Thames Valley Berkshire Local Enterprise Partnership (TVBLEP) through the devolved Local Growth Fund, for the period 2015/15 to 2020/21.	“Construction of a segregated fast-track public transport, pedestrian and cycle bridge, comprising concrete bridge structure with a river span of 59.5m and a land span of 316m, supported by concrete columns and reinforced soil embankment, with associated footpath links junction improvements and landscaping.”	
2.5	The Statement has been produced for the benefit of the local planning authority and the wider community, to better understand the analysis that has led to the development of the proposed new bridge.	2.10	Chapter 3 summarises scheme amendments.	2.20	Chapters 14 through to 20 describe the selected route and its key components including the bridge abutments and supporting columns.	2.29	The majority of funding for the scheme has been allocated by central Government from the Local Growth Fund, with local contributions from the private sector funded through planning contributions and local investment. Funding from the Local Growth Fund is provided specifically for strategic transport projects and cannot be used for any other purpose. Private sector contributions will also be sought.	2.32	The proposed development comprises:
2.6	The Statement illustrates the design process that has led to the development of the proposed new route and bridge and then explains the underlying design principles, concepts and details of the proposal in a structured way.	2.11	Chapter 4 sets out the transport context and Chapter 5 summarises relevant planning policy on design.	2.21	Chapter 21 describes the proposed materials and detailing and the design process leading to their adoption.				
		2.12	Chapter 6 describes the process of design review undertaken as part of the project development.	2.22	Chapters 22 look at movement, particularly pedestrian and cycle connections. Whilst Chapter 23 sets out the proposed approach to the design of the public realm.			- the erection of a new bridge over the River Kennet; - formation of a new T-junction with Napier Road;	
		2.13	Chapter 7, ‘Site description’, describes the existing physical characteristics and environmental context for the proposed development	2.23	Chapter 24 summarises the approach to landscape design that is set out more fully in the separate Landscape Strategy documents and plans submitted with the planning application and the Environmental Statement.			connection to the proposed Thames Valley Park & Ride;	
		2.14	Chapter 8 summarises the project aims and objectives against which the proposals should be tested.	2.24	Chapter 25 describes the approach to lighting in this sensitive setting.			development of new and improved footpath links to Tesco and the towpath; and	
		2.15	Chapter 9 describes the initial ‘higher level’ appraisal of options that determined the general route alignment and the transport modes that it would accommodate.	2.25	Chapter 26 summarises some main points of the construction strategy that is described more fully in the Transport Statement submitted with the application.			associated infrastructure and landscaping.	
								development of new and improved footpath links to Tesco and the towpath; and	
								associated infrastructure and landscaping.	



Figure 3. Project sponsors

Application Documents:

Consultation Statement (prepared by Peter Brett Associates LLP);

Design and Access Statement (prepared by Doyle Town Planning and Urban Design);

Transport Statement and Transport Statement Addendum (prepared by Peter Brett Associates LLP);

Environmental Statement

- Environmental Statement: Volume 1 Main Report, comprising the following assessments: Socio-Economics; Transport & Access; Air Quality; Hydrology and the Water Environment; Ground Conditions; Landscape & Visual including Lighting; Ecology and Archaeology and Heritage.
- Environmental Statement: Volume 2 Appendices, including: Flood Risk Assessment and Drainage Strategy; Ground Conditions Assessments; Tree Survey; Arboricultural Impact Assessment; Lighting Assessment; Preliminary Ecological Appraisal and Heritage Desk-Based Assessment.
- Environmental Statement: Non-Technical Summary
- ES Addendum Main Report, including the following updated assessments: Hydrology and the Water Environment; Landscape & Visual including Lighting and Ecology
- ES Addendum Appendix, including: FRA Addendum, Water Framework Directive Addendum, Landscape and Ecology Strategy, Arboricultural Information and Lighting Assessment
- ES Addendum NTS
- Landscape and Ecology Strategy (prepared by Peter Brett Associates LLP);
- Planning Statement (prepared by Peter Brett Associates LLP);
- Sustainability Statement (prepared by Peter Brett Associates LLP);
- Topographical Survey (prepared by MK Surveys);
- Utilities Statement (prepared by Peter Brett Associates LLP);

Application drawings

- 28791/2009/CIV/002 A – Site Location Plan
- 28791/2009/CIV/001 – Existing Site Layout
- 28791/2009/CIV/003 B – Proposed Site Block Plan Phase 1A
- 28791/2009/CIV/016 A – Proposed Site Block Plan Phase 1B
- 28791/2009/CIV/004 B – General Arrangement Phase 1A
- 28791/2009/CIV/005 B – General Arrangement Phase 1B
- 28791/2009/CIV/015 B – Proposed Site Context Including Proposed Park and Ride Development Phase 1A
- 28791/2009/CIV/020 A – Proposed Site Context Including Proposed Park and Ride Development Phase 1B
- 28791/2009/CIV/006 A – Proposed Longitudinal Section and Typical Cross Section
- 28791/2009/CIV/007 B – Proposed Carriageway Contours Phase 1A
- 28791/2009/CIV/017 A – Proposed Carriageway Contours Phase 1B
- 28791/2009/CIV/013 A – Proposed Cross Sections
- 28791/2009/CIV/008 B – Proposed Surface Water Drainage Strategy Phase 1A
- 28791/2009/CIV/018 A – Proposed Surface Water Drainage Strategy Phase 1B
- 28791/2009/CIV/009 B – Proposed Utility Diversions Phase 1A
- 28791/2009/CIV/019 A – Proposed Utility Diversions Phase 1B
- 28791/2009/CIV/011 A – Proposed Street Lighting Layout Phase 1A
- 28791/2009/CIV/012 A – Proposed Street Lighting Layout Phase 1B
- 28791/2003/SK310 P01 – Bridge and Viaduct Single Column Option General Arrangement
- 28791/2003/SK321 P02 – Bridge and Viaduct Single Column Option East Approach
- 28791/2003/SK322 P01 – Bridge and Viaduct Single Column Option East Approach
- 28791/2003/SK323 P01 – Bridge and Viaduct Single Column Option Main Span
- 28791/2003/SK324 P01 – Bridge and Viaduct Single Column Option: Cross Section Comparison at Pinchpoint
- 28791/4001/013 P01 – Marginal Planting / Mooring Platforms

3 Amended application

Revisions to The Proposed Development		Application Description		Lighting	Width and Alignment	Columns		
3.1	Since the submission of the 2017 Planning Application (Refs: 171108 and 172048), and following post-submission consultation, a number of changes have been made to the proposed scheme.	3.2	As per the submitted July 2017 planning application the development comprises the following: “Construction of a segregated fast-track public transport, pedestrian and cycle bridge, comprising concrete bridge structure with a river span of 59.5m and a land span of 316m, supported by concrete columns and reinforced soil embankment, with associated footpath links, junction improvements and landscaping.”	Low-level parapet lighting of the viaduct (which removes the need for lighting columns), which removes the need for lighting columns;	3.5	The viaduct has been locally narrowed by a width of 1m to position the structure further away from the river edge to the east of the River Kennet. This in turn reduces the proposed footway / cycleway for a short section to 4m. The viaduct has been narrowed to provide additional width between the viaduct structure and the towpath / river and to prevent encroachment onto Network Rail land. Increasing the width between the viaduct and the towpath also allows sufficient space for the proposed 132kV SSE cable underground diversion.	3.8	Single columns proposed rather than the previous pairs of columns, as they are considered more elegant and reduce the footprint as well as create a sense of increased the openness for towpath users. These single columns flare at the top to support the steel beams, which have in turn have been pushed further under the viaduct, to further enhance the sense of openness. . The single column also allows the use of a narrower pilecap which provides sufficient space for the proposed 132kV SSE cable underground diversion.
		3.3	The application is as per the submitted ES and with the following design changes: Width and Alignment - Viaduct to locally narrow by 1m to the east of the River Kennet (avoiding Network Rail land) with narrow foundations for the SSE cable to be located north of structure; - Minor realignment to south of Tesco (west of the River Kennet) due to SSE cable undergrounding; - Removal of Tesco car park extension, allowing greater tree retention; Columns - Viaduct to be constructed with a single -column design (instead of the two-column design in the original submission);	- Retention of the Willow tree at the Kennet Mouth and also additional trees north of the viaduct; - Provision of three new short-stay visitor mooring platforms with associated riverside planting (marginal shelf); - Omission of proposed green panels, ‘fedging’ and reclaimed boats which were previously proposed in the landscape design. - Potential for fencing to be installed beneath the viaduct, if required in the future (details would be agreed at the relevant time); - Areas of marshy wetland and grasses beneath the viaduct; - Relocation and repair of mosaic (and storyboards in public realm area); - Additional ecological mitigation measures, including off-site provision;	3.6	The alignment to the west of the River Kennet has also been amended to take into account the proposed 132kV SSE diversion, which will necessitate the removal of the steel pylons. As a result, the alignment (which previously avoided the pylons) has been straightened and moved further away from The Coal LWS.	3.9	Low level lighting has been incorporated within the proposed parapet rails across the structure and viaduct. This is designed to provide adequate lighting levels to illuminate the proposed footway/cycleway and avoid light spill.
					3.7	The replacement car parking spaces originally proposed to compensate for those lost spaces within the Tesco car park have been removed. Therefore, an additional 824 sqm of semi-natural habitat within the footprint of the on-site portion of The Coal, Kennet Mouth and Kings Meadow East LWS will be retained and protected when compared to the original planning submission.	3.10	The column lighting proposed within the existing planning submission will be replaced with linear LED rail lighting mounted on the inside face of the northern parapet, facing southwards (i.e. away from the River Thames) to light the pedestrian / cycle way only. This will minimise the levels of light spill from the structure on to surrounding habitat. Full details pertaining the lighting design are contained within the Lighting Assessment.
				Flood Compensation Amendments to flood compensation;				
		3.4	Further detail of the proposed amendments is explained below.					

Landscape and Ecology

3.11	The landscape strategy has been updated to include retention of the Willow tree east of the Kennet Mouth (T88) and additional planting where the viaduct and river are closest as well as additional tree retention due to the removal of the previously proposed replacement car parking for Tesco.	3.15	In addition, the existing moorings between Kennet Mouth and the proposed new riverbank works are on land in 3rd party ownership (Wokingham Borough Council and Reading University). The existing moorings at Kennet Mouth are planned to be repaired by a third party, separate to this planning application, to full functionality (a section of the existing river wall in this location has partially failed).
3.12	In order to create a greater sense of openness along the riverside, the green panels and ‘fedging’ have been removed from the proposals.	3.16	The reclaimed boats previously proposed in the landscape design have been removed following officer advice.
3.13	The area under the viaduct is proposed to remain open and unfenced to allow people to see beneath the viaduct, whilst discouraging public access beneath the viaduct due to the creation of areas of marshy wetland and grasses, providing an area for seasonal flooding, and a diverse marshy habitat. Provision is made within the application the potential for fencing to be installed beneath the viaduct at a later date if proven to be desirable, rather than at the outset, as previously proposed.	3.17	The existing mosaic will be carefully lifted, repaired and reinstalled into a new area, which is more visible to passers-by. New seating would be provided at the relocated mosaic and near to the location of timber mooring platforms, where enhanced views of the river may be enjoyed.
3.14	Three timber mooring platforms would be provided as part of the riverbank enhancements (alongside the marginal shelf landscaping improvements). These would be new river elements which will provide additional short stay mooring facilities, which are lacking in the area. The mooring platforms and the new riverbank edge would help to improve the interface of the site with the River Thames and enhance people’s experience of the edge of the River Thames in this location.	3.18	Information, or story, boards are proposed at locations throughout the linear space, which could provide information on the habitat enhancements and the locally occurring Loddon Lily, and to celebrate the confluence of the Thames and Kennet.
		3.19	There is opportunity for the local community and schools to be involved in the design of the information / story boards, the reinstallation of the mosaic and the planting of Loddon Lily / marsh plant species beneath the viaduct.

Flood Compensation

3.20	Proposed tree planting has been positioned taking into account services and maintenance access, including the SSE cable which lies to the north of the viaduct foundations. New tree planting will be a minimum 2m from the SSE cable.	3.22	The scheme design has changed to incorporate flood compensation measures to mitigate the impact of the development on floodplain storage. This previously included ground lowering within the Tesco store car park to provide storage, but this element has been removed. These measures have been amended following the scheme alterations and EA liaison and now consist of the following areas of ground lowering to provide compensatory floodplain storage to counter any losses in floodplain storage capacity caused by the proposed new structure (areas will be made good and reseeded/replanted on completion):
3.21	Proposed planting species have been updated to be native species suitable for planting within the river corridor.		- Lowering of an earth embankment to the immediate north-east of the Tesco store; - Lowering of an earth embankment to the north-west of the Tesco store; - A cutting into the embankment at the eastern end of the MRT (where the land rises out of the floodplain near the new TVP P&R site);

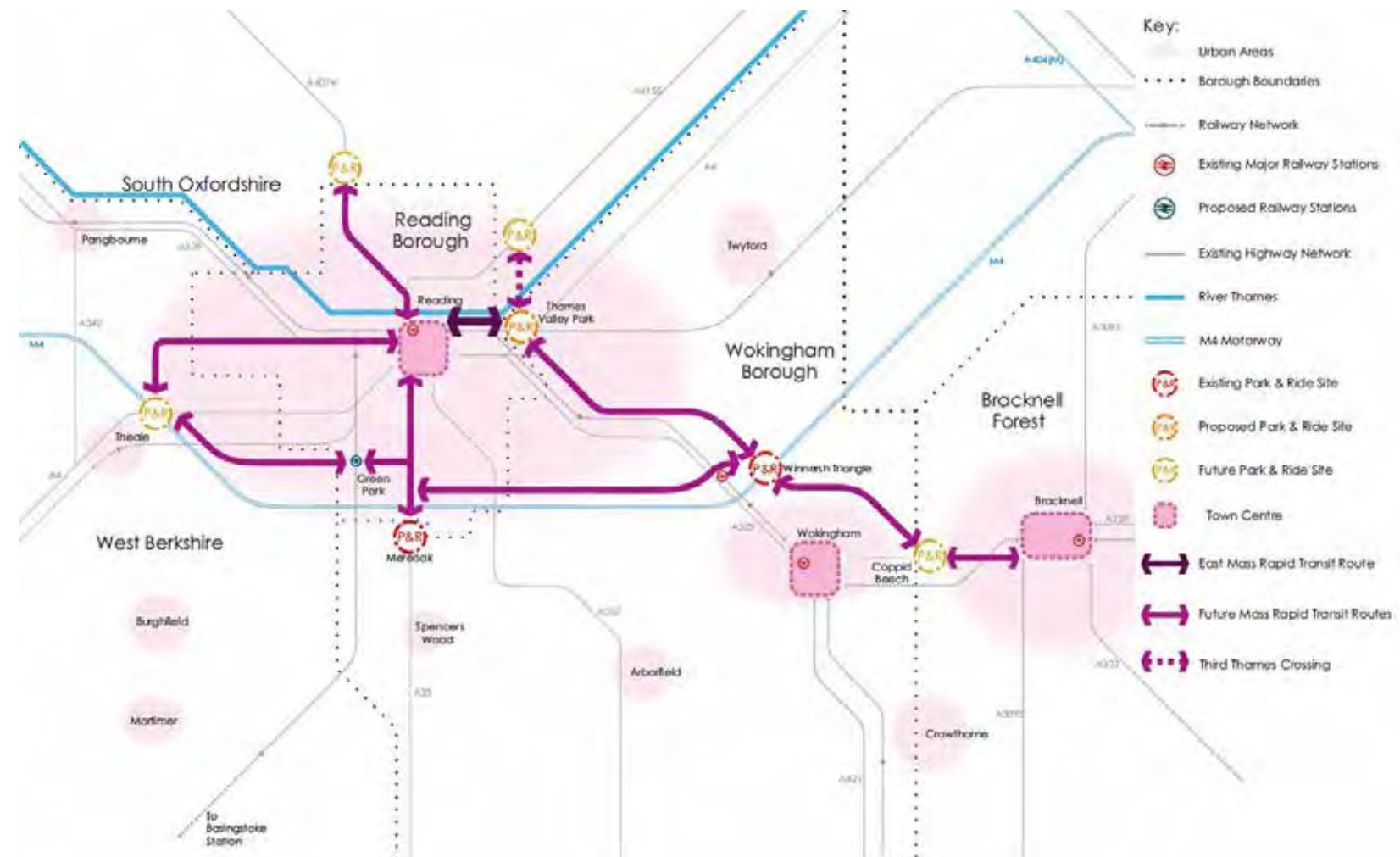


Figure 4. Transport strategy diagram

4 Transport context

Planned future growth

- 4.1 Reading is the fastest growing urban area in the UK. It is also the most congested urban area outside London.
- 4.2 Significant growth is planned in both Reading and Wokingham Boroughs that will increase travel demand into and out of Reading town centre for work and for other journeys.
- 4.3 Most vehicle journeys into and out of Reading town centre are channelled along the four main corridors to the north, south, east and west.
- 4.4 Observations demonstrate that the eastern corridor has reached capacity. This will seriously restrict economic growth.
- 4.5 Future economic growth is therefore highly dependent upon enhanced connectivity, transport capacity upgrades and the development of more sustainable travel patterns.

The London Road Corridor

- 4.6 The A4 London Road is the main strategic route for vehicles travelling to and from Reading Town Centre to the east and the link to M4 junction 10. The corridor supports approximately 75,000 people movements per day between key destinations including Thames Valley Park and Reading town centre.
- 4.7 The road comprises two narrow lanes for traffic travelling towards central Reading and a single narrow lane exiting towards the A3290. The A4/A329 Cemetery Junction is a particular pinch point along the route. The road is heavily constrained and suffers with significant congestion, particularly during the peak periods. The queues can reach 300 – 550 vehicles exiting Reading in the peak periods and between 60 – 200 vehicles entering Reading in the peak periods. Journey times range from 7 to 24 minutes east bound, depending upon the time of day.
- 4.8 For Westbound, the journey times range from 10 to 24 minutes. This shows there are currently significant variations in journey time due to congestion, which will severely limit the potential for future growth on the corridor.

Public transport

- 4.9 Public transport services are well used in east Reading and the commuter shuttle bus services are full in the peak periods.
- 4.10 There is existing bus priority between Watlington Street gyratory and Cemetery Junction, however services suffer delays in the town centre and between Cemetery Junction and the A3290.

Mass rapid transit

- 4.11 The East Reading Mass Rapid Transit Scheme will form part of a longer term MRT network for the Thames Valley and well as being capable of operating as a standalone MRT route.
- 4.12 The scheme will also link to a planned Third Thames Crossing and a Park and Ride facility north of the River Thames.

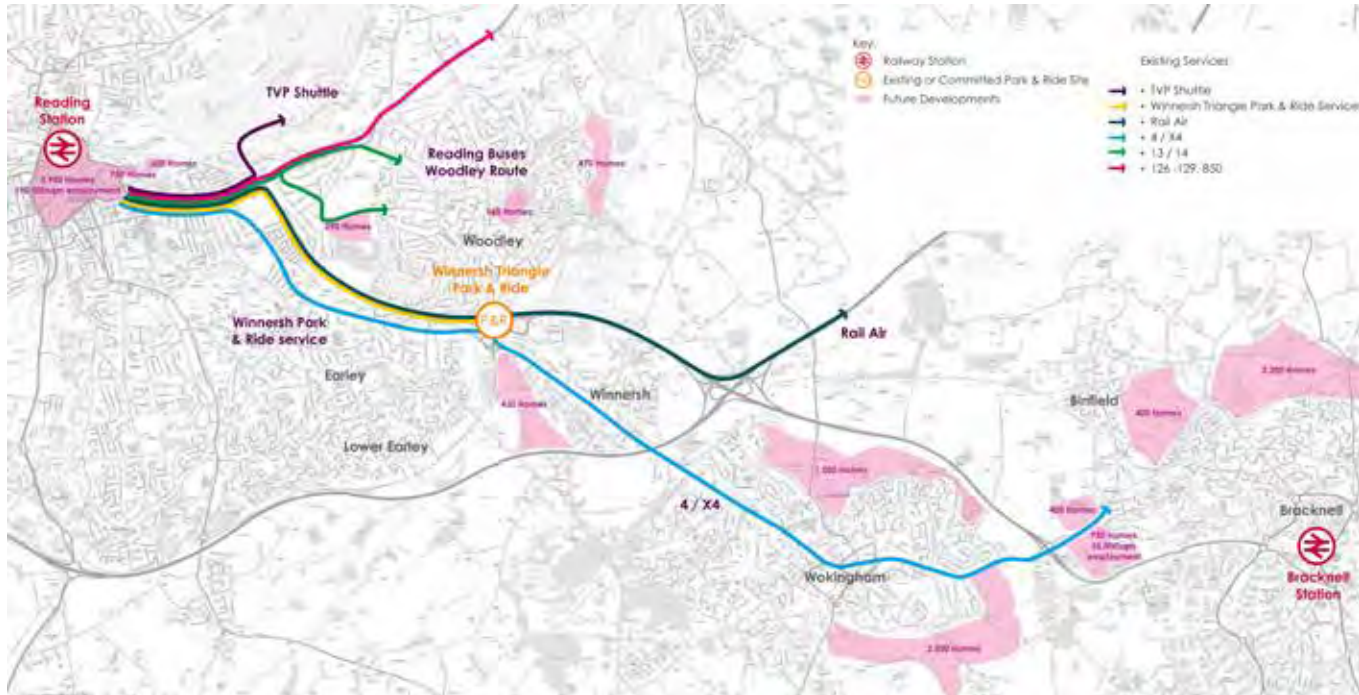


Figure 6. Eastern Corridor diagram



Figure 5. Traffic congestion at Cemetery Junction

Park and Ride

- 4.13 The proposed Thames Valley Park Park & Ride (TVP P&R) scheme (Wokingham planning ref: 161596) was approved on 10th November 2016 and includes provision of 277 car parking spaces. The proposed TVP P&R is planned to be served by the TVP commuter bus service only. The proposed hours of operation are expected to be between 7am and 7pm Monday to Friday only, no services will operate at the TVP P&R at the weekend. The TVP P&R will be served by ten buses per hour during peak periods and four buses per hour during off peak periods.

Strategic networks

- 4.14 This eastern section will form part of a longer term MRT network for the Thames Valley or operate as a standalone MRT route. The link also provides future opportunity to link to a Third Thames Crossing to provide MRT to a P&R north of the River Thames.
- 4.15 Reading is planned to benefit from significant investment in the following strategic networks:
- Crossrail, which is planned to start running in 2018 and is reported to be generating the most homes of all the new rail lines.
 - The Western Rail Link to Heathrow will provide direct access to Heathrow Airport from Reading and is planned to be completed in 2021.
 - HS2, which should be completed in the next decade, will reduce journey times from London to Birmingham to 49 minutes, making it easier to commute from Britain's second city to the capital. London's rail commuter network will then encompass Brighton, in the south, Southend, in the east, Reading, in the west, and Birmingham, to the north.
 - M4 Junctions 3-12: Smart Motorway.

Cycling and walking

- 4.17 The A4 London Road does not provide adequate pedestrian and cycle facilities between and on the boundary of Reading and Wokingham Boroughs. The towpath along the south bank of the River Thames provides a cycling route however; there are stretches where cyclists are required to dismount, as access rights are on foot only.
- 4.18 The natural surveillance and surfacing on the towpath are poor, it is narrow in places with a stepped bridge, and is shared by pedestrians.

5 Design Policy

National Planning Policy Framework				Wokingham Development Plan Core Strategy				
5.1	The National Planning Policy Framework (NPPF) sets out the Government’s planning policies for England and outlines how these are expected to be applied to both plan-making and decision-making.	5.6	There are a number of other design -related policies: - Policy CS1: Sustainable Construction and Design; - Policy CS2: Waste minimisation; - Policy CS3: Social Inclusion and Diversity; - Policy CS7: Design and the Public Realm; - Policy CS8: Waterspaces; - Policy CS28: Loss of open space; - Policy CS33: Protection and Enhancement of the Historic Environment; - Policy CS35: Flooding; - Policy CS36: Biodiversity and Geology; - Policy CS37: Major Landscape Features and Strategic Open Space; - Policy CS38: Trees, Hedges and Woodlands.	- DM1: Adaptation to Climate Change - DM4: Safeguarding Amenity - DM12: Access, Traffic and Highway-Related Matters - DM17: Green Network - DM18: Tree Planting - SA14: Cycle Routes - SA16: Public and Strategic Open Space - SA17: Major Landscape Features	5.11	WBC adopted its Core Strategy in January 2010 and it sets out the Council’s vision for how the borough will develop up to 2026.	5.15	The strategic transport improvements in CP10 are further protected and safeguarded by Policy CC08 and Appendix 3 of the MDD Local Plan. Appendix 3 itself refers to strategic transport projects indicated on Figure 24 of the Local Transport Plan, which includes a proposed highway scheme connecting west into Reading Borough from Thames Valley Park and the proposed Park & Ride facility.
5.2	Paragraphs 56 -66 deal with Requiring Good Design.				5.12	Policy CS3 of the WBC Core Strategy sets out a number of principles for new development to ensure high quality design. This includes the need to ensure that proposals are of an appropriate scale, activity, mass, layout, built form, height to the site and surrounding area.		
RBC Core Strategy (January 2008)					5.13	Other relevant policies include - CP1: Sustainable Development; - CP3: General Principles for development; - CP6 Sustainable Transport (see below); - CP9: Scale and location of development proposals; - CP7: Biodiversity; - CP10: Improvements to the Strategic Transport Network (see belwo); - CP11: Proposals outside the development limits (including countryside);	5.16	A number of WBC supplementary planning documents are also relevant to the proposed development, comprising: - WBC Borough Design Guide SPD (Adopted May 2012). - WBC Sustainable Design and Construction SPD (Adopted May 2010).
5.3	RBC adopted the Core Strategy in January 2008, with alterations to the Core Strategy document made on 27th January 2015. This version of the Core Strategy forms the most up to date version of the Core Strategy							
5.4	These are described more fully in Chapter 6 of the Planning Statement submitted with the application.		5.8	The East MRT route is designated within the RCAAP as a preferred route for the MRT corridor. The key AAP policies which are relevant to the determination of this planning application are				
5.5	Policy CS7 of the RBC Core Strategy requires that all development is of a high design quality and that it maintains and enhances the area within which it is located. Specifically, and of relevance to this proposal, Policy CS7 refers to: - Layout; - Landscape; - Height and massing; and, - Architectural detail and materials.			5.9	Policy RC5 Design in the Centre; and			
				5.10	Policy RC14: Public Realm (RC14d Kings Meadow and The Coal LWS).			
Sites and Detailed Policies Document (RBC)								
		5.7	RBC adopted the Sites and Detailed Policies Document in October 2012, with alterations subsequently made in January 2015. The document provides detailed policies and identifies the specific development sites and designations necessary to deliver the Core Strategy. The key design policies are:					
					RCAAP			
					RBC SPD Sustainable Construction and Design SPD (adopted July 2011).			
					5.14	Policy CP6 of the WBC Core Strategy supports schemes that, inter alia, provide for sustainable forms of transport, minimise travel distances and improve existing infrastructure. Policy CP10 of the Core Strategy sets out specific proposed improvements to the Strategic Transport Network, including: high quality mass rapid transit along the A4 and A329 corridors and between Reading and Woodley; improvements to public transport services; improvements to increase the use of bicycles; and enhancements to footpath and cycle networks.		
								Managing Development Delivery (MDD) Local Plan (adopted February 2014)
							5.17	WBC adopted its Managing Development Delivery (MDD) Local Plan in February 2014. The MDD supplements the Core Strategy and includes more detailed policies for development within the borough. The key design policies are: - Policy CC03: Green Infrastructure, Trees and Landscaping - Policy CC06: Noise - Policy CC09: Development and Flood Risk - Policy CC10: Sustainable Drainage - Policy TB21: Landscape Character - Policy TB23: Biodiversity and Development - Policy TB24: Designated Heritage Assets - Policy TB25: Archaeology

Reading Borough Council, Transportation & Streetcare

14

6 Design review



Figure 7. The Design Review Panel meeting in June, 2017.

Design South-East

6.1	An independent review of the design of the proposed development was undertaken by a panel of architects at Design South-East (DSE).	The design exercise undertaken should be fully explained.		
6.2	Following submission of the project for design review on 4th May 2017, a review was held with DSE on 6th June 2017. The review was attended by members of the project team and planning officers of RBC and WBC, and comprised a site visit, presentation and discussions with panel members.	6.7 A detailed design rationale is set out in this document along with the various options considered that led to proposed scheme.	6.11 Chapter 10, Parameters, sets out the various determinants and influences on bridge height, whilst Chapter 13, Bridge form options, details the various options considered.	6.15 Please see chapter 18, Colours, Materials and Finishes, and also the Sustainability Statement.
6.3	A formal response from DSE, summarising the feedback provided at the review meeting, was received on 16th June 2017.	A utilitarian design approach is acceptable however the appearance of the structure needs to be more attractive and elegant.	Queried whether the land beneath the viaduct could be activated or closed-off	Landscape strategy should take a proactive approach
6.4	The overall principle of the scheme was accepted by the Panel and their comments therefore related to further design development and providing further details of the design processes involved.	6.8 The scheme has been further developed and refined in order to incorporate the twin goals of creating a simple but elegant structure. See particularly chapters 13 through to 18 of this document on the form of the bridge and viaduct, abutments, columns and materials.	6.12 The land beneath the viaduct includes the creation of areas of marshy wetland and grasses in order to allow people to see beneath the viaduct and discourage public access to deter antisocial behaviour. See Chapter 19, Public Realm and Landscape.	6.16 Chapter 19, Public Realm and Landscape, details the approach to landscape design. This outlines the parallel approaches of mitigating the impact of the structure overall, so that it partly receded into the riverside landscape, whilst also celebrating the new bridge structure.
6.5	The Panel's comments are summarised below, followed by the project team's response.	The river mouth is a gateway to the town and should be celebrated	6.13 The proposed approach does not prevent the future activation of the land beneath the viaduct for riverside leisure use.	Recommend further ongoing engagement with key stakeholder groups and statutory consultees.
	Proposals should consider incorporating leisure and tourism improvements.	6.9 Chapter 11, Bridges and Crossings, demonstrates how the approach to the new bridge has been developed in the context of the six crossings of the lower reaches of the Kennet.	Design should fully consider the interfaces with adjacent land uses	6.17 Details of community and stakeholder engagement are summarised in the Planning Statement and Consultation Statement submitted with the application. Further engagement will be undertaken during the planning application process.
6.6	The scheme incorporates improvements and enhancements to the towpath set out in chapter 10 of this document, Public Realm and Landscape.	Proposals should consider impacts on the listed railway bridge as well as the horseshoe bridge	6.14 The interfaces between the proposed Park and Ride, the Dreadnought, Tesco have been carefully considered, with Further details outlined in Chapter 19, Public Realm and Landscape.	
		6.10 The new bridge has been designed to both complement and open views to and through the railway bridge.		



Figure 8. View from the River Thames looking south towards the site with the railway beyond



Figure 9. Urban Context (Google Earth)

7 Site description

Site		Route corridor		Character		Dreadnought Public House	
7.1	Land between Thames Valley Business Park and Napier Road, Reading, to the south of the River Thames and north of the Great Western Main Line Railway.	7.2	The route of the East MRT scheme is proposed to link the A3290 at Thames Valley Park, from a proposed new Park & Ride facility, to Napier Road, Reading town centre and the railway station	7.8	The area is characterised by contrasting urban forms. It is both an area of dense, semi-natural planting and waterside open spaces alongside an industrial landscape of railways, industrial sheds, electricity pylons and gas works.	7.10	The Dreadnought is a two storey 18th century brick built former public house with slate roof. It was formerly a clubhouse and boat storage facilities for the University boat club.
		7.3	The route extends from the A3290 and A4 along the southern bank of the River Thames north of the Great Western Railway Line, across the mouth of the River Kennet connecting to central Reading via Napier Road.	7.9	The thick vegetation within and surrounding the Site helps to create a sense of relative isolation with only limited views into, across and out from the area. Views are typically disrupted to the south by railway infrastructure, large electricity pylons and glimpses beyond the railway to an infrastructure of the large gas cylinders.	7.11	Permission to create tearooms , toilet blocks and accommodation including demolition of some out buildings and sheds and conversion of some to guest accommodation has now lapsed.
		7.4	To the east of the application site lies Thames Valley Park. The Wokingham Waterside Canoe & Kayak Centre and former Dreadnought public house and boat sheds lie to the north and east. Gas works and gas holders and Sutton Business Park estates fill the land between branches of the railway to the south.			Levels	
		7.5	The Thames and Kennet Marina lies beyond the north banks of the Thames.			7.12	The land is generally low-lying and close to the level of the river. It it rises slightly to the west. The ground and river banks west of the Kennet are generally higher than the east.
		7.6	To the east, is a Tesco store and extensive car park with petrol filling station. There is a wide woodland strip between the store and car park and the riverbank.			7.13	The Site is surrounded to the north by the flat landscape of Reading Marina and the River Thames.
		7.7	To the south west, are redeveloped areas along Kenavon Drive.				

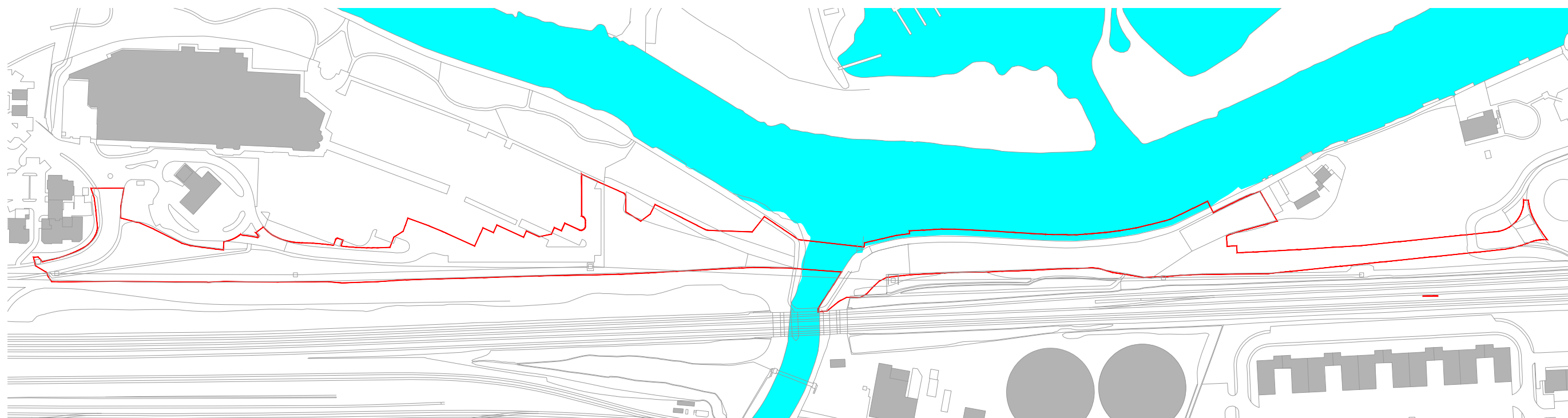


Figure 10. Application site boundary (red line plan')

Maps and plans reproduced from/based upon Ordnance Survey material with the permission of Ordnance Survey on behalf of The Controller of Her Majesty's Stationery Office. © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence No. 100019672 Year of Publication: 2012 Owner/Purchaser of Mapping: Reading Borough Council

Park and Ride

- 7.14 Full planning permission has been granted for the development of a Park and Ride facility at the eastern end of the Site that will provide approximately 277 vehicular spaces, motorcycle parking with associated vehicular access and landscaping.
- 7.15 The Park and Ride site is a 1.35 ha parcel of land accessed from the A3290 roundabout at Broken Brow. It adjoins the roundabout to the east, the Great Western mainline railway embankment to the south, Wokingham Waterside Centre to the east and the former Dreadnought public house and the Thames Path and River Thames beyond to the north. Site clearance works have commenced.
- 7.16 The Park and Ride site is accessed via a vehicular access from Broken Brow roundabout running parallel to the railway line, which provides access to a hard-surfaced car park. There will be an area for buses to pick up and drop off. Landscaping is proposed around the edges and within the site.

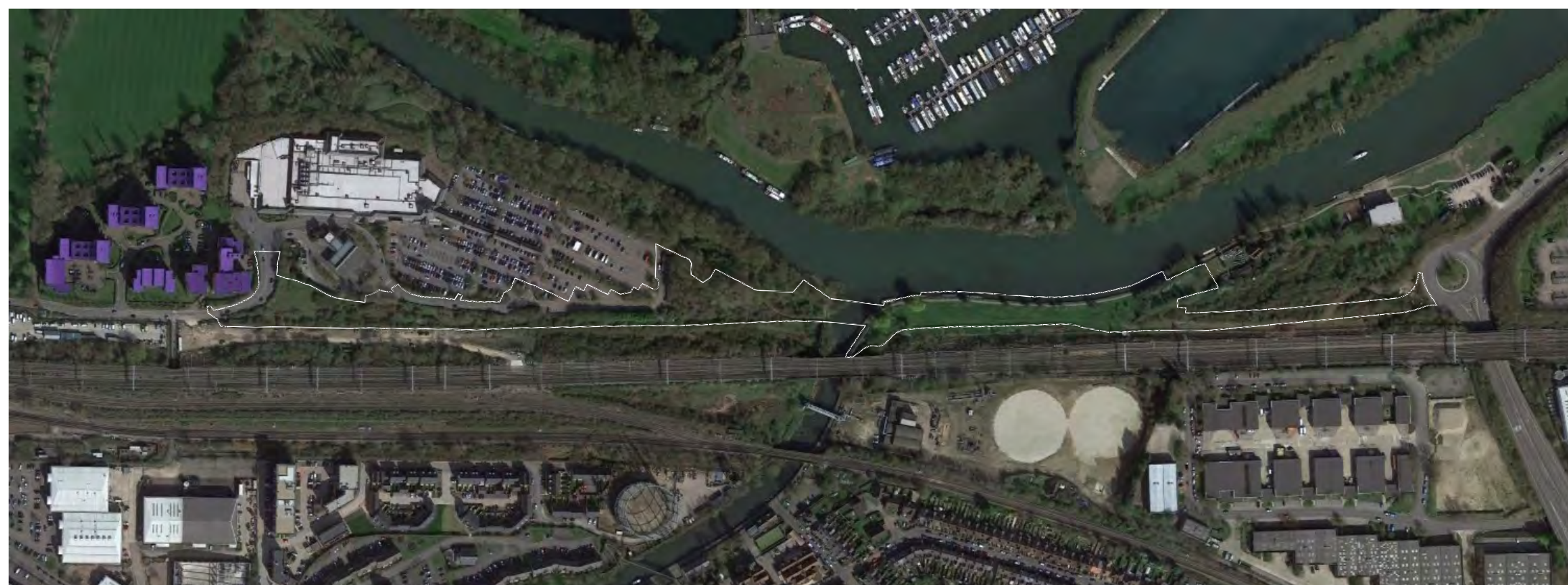


Figure 11. Application site boundary overlaid (approximately) on aerial photograph (Google Earth).

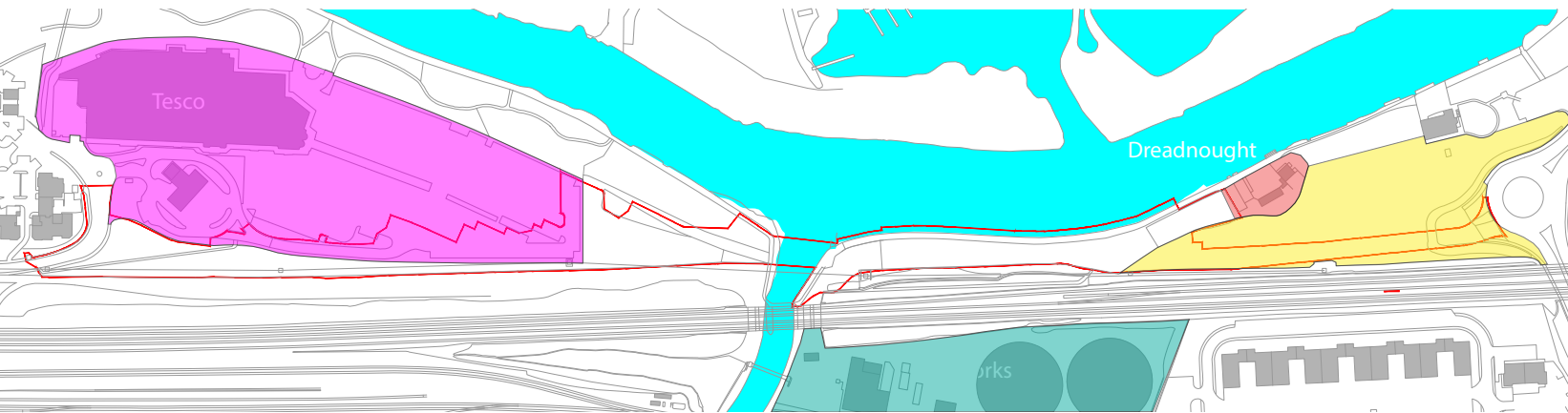


Figure 12. Adjacent planning units

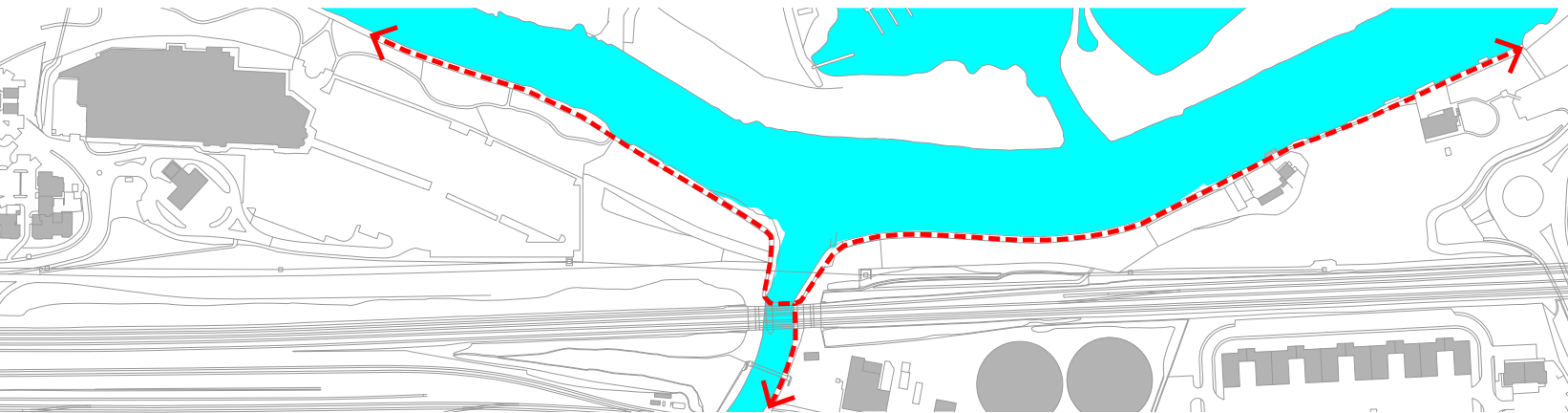


Figure 13. Strategic cycle routes (Sustrans).

Tesco

7.17 The Tesco store is a single storey, high-bay building with tiled roof. There is an extensive surface car park with petrol filling station. Access is solely from the west, via Napier Road.

Pylons

7.18 Medium and high voltage power lines and posts/pylons traverse the area from east to west. The high voltage overhead power lines have reached the end of their design life and are due to be replaced and re-routed underground this year. The alignment of the underground route has been determined following discussion and agreements between SSE and RBC (and other land owners on its route).

River edge

7.19 The river edge typically comprise brick or concrete retaining walls that are broken down in parts. The adjacent footpath is close in level to the water-mark. The banks are lined with a number of stairs and landing stages for boats to launch with temporary mooring generally permitted.

Existing footpaths and cycleways

7.20 A towpath runs east-west along the southern side of the River Thames National Trail. This is designated as part of the Thames Path, although cycling is prohibited along some sections of the route.

7.21 The path is made, with a basic asphalt surfacing over most of its length.

Strategic cycle routes

7.22 Reading stands at the hub of the National Cycle Network (NCN) in the Thames Valley, with direct links via Routes 4 and 5 to London Oxford and Bristol.

7.23 Sustrans Route 4 travels east-west along the above towpath (Thames Path National trail) . Route 23m travels along the Kennet and meets Route 4 adjacent to the proposed new bridge.

Railway

7.24 The Great Western Railway traverses from east to west rising above the level of adjacent land and supported on a mix of embankments and brick retaining structures.

7.25 The embankment forms a significant visual barrier.

River Crossings

7.26 There are three river crossings of the Kennet in the immediate area comprising two rail bridges and a footbridge.

7.27 The adjacent railway bridge and attached accommodation bridge over the River Kennet is listed Grade II.

7.28 Isambard Kingdom Brunel for The Great Western Railway originally constructed the bridge in 1839-1840. The bridge was widened to the north, probably in 1892, with the accommodation bridge also probably attached (or rebuilt) at the same time.

7.29 The railway bridge is of red brick widened in engineering brick with ashlar dressings. The accommodation bridge is of steel and timber.

7.30 The railway bridge is built on a skew with a central elliptical arch flanked by pilasters and pairs of round flood arches to either side.

7.31 A gas pipe line in truss frame traverses the river located between the main railway bridges.

Riverside strip

7.32 The site is located on low lying landform, adjacent to the southern bank of the River Thames, that runs to the north of the site. The confluence between the River Kennet and the River Thames, falls roughly within the middle of the site. To the south, the Great Western Main Line Railway is raised on an embankment. Overall, the site has a sense of enclosure and a sense of being part of the River Thames corridor through the urban area, with few views out to adjacent areas. Its character is of urban open space and river-edge. There are strong influences from the railway and infrastructure corridor to the south of the site boundary, with views of the railway, moving trains, gantries and overhead cables; which counteracts the calmer and more attractive River Thames to the north of the tow path.

Trees

7.33 Broad-leaved woodland is present in the western section of the site, which lies within a Local Wildlife Site (LWS). There are also scattered trees, and some areas of dense scattered scrub, throughout the site. A number of individual and group Tree Preservation Orders (TPOs) and a woodland TPO cover trees within the western part of the site, along the River Thames, within the LWS and within the Tesco carpark. There are no TPOs upon the eastern part of site within the Borough of Wokingham.



1. Railway bridge and Accommodation Bridge.
2. Mature planting along the river front.
3. Wokingham Waterside Centre.
4. Route corridor.
5. Railway bridge and accommodation bridge.
6. Trees within The Coal Local Wildlife Site.
7. Reading bridge across the Thames.
8. High Bridge across the Kennet in Reading.
9. Railway electricity gantrys.

Figure 14. Photographs of context

8 Aims and objectives

Over arching objectives		Objectives			
8.1	The following over arching objectives have been established for the scheme as a whole:	Transport	Sustainability, health and wellbeing	Walking and Cycling Objectives	Construction and Maintenance
		Economic Objectives			Lighting, Detailing and Materials
	• Provide a cost-effective solution to accommodate future travel demand on the London Road Corridor for local trips; • Increase capacity for movement of people thereby reducing journey times and forecast congestion, as well as improving reliability of journeys along the corridor. • Support economic development in Reading Town Centre, east Reading, Wokingham and within the Thames Valley. • Develop a high quality, sustainable system which visibly has priority over the private car. • Facilitate a future MRT network for the Thames Valley. • Allow access for mobility impaired and pushchairs.	- Promote sustainable transport alternatives to cars and encourage a modal shift to public transport. - Improve access to and from Reading eastwards for buses, pedestrians and cyclists. - Complement the proposed Park and Ride facility at Thames Valley Park by offering a modal interchange from cars to sustainable transport modes. - Provide quicker, reliable journey times to central Reading. - Ease forecast traffic congestion, particularly along the heavily congested A4 corridor in east Reading. - Support the local economy, facilitate economic development and enhance access to employment and other essential services. - Encourage sustainable economic growth by promoting public transport usage and reducing car trips.	- Promote sustainable transport alternatives to cars - Reduce carbon emissions by bringing about an increase in the volume and proportion of journeys made by lower carbon, more sustainable means of travel, including walking and cycling. - Help to deliver wider social and economic benefits, including accessibility and social inclusion for the community. - Bring about improvements to air quality and increased compliance with air quality standards, and wider environmental benefits such as noise reduction. - Actively promote increased levels of physical activity such as walking, cycling and exercise. - Contributing to improving Reading’s air quality through reducing the use of the private car. - Promote healthy living, well-being and active lifestyles by providing opportunities for walking and	- Improve pedestrian and cyclist safety through the provision of a fast track and dedicated cycle and pedestrian routes directly into the centre of Reading. - Connect the cycle hire schemes at Thames Valley Park to the central areas of Reading. - Provide a recreational route to encourage interest within the River Corridor and wider locality. - Provide a safe, and direct route option for pedestrians and cyclists to and from the town centre east Reading and Wokingham, which seeks to minimise associated journey times. - Connect with existing and planned cycle routes and pedestrian paths. - Help facilitate greater pedestrian and cycle permeability across the network, particularly on the key movement corridors. - Improve connections to strategic pedestrian and cycle routes such as Thames Path and ‘Sustrans’ NCN routes. - Meet current anticipated future growth in pedestrian and cycle journeys, particularly to and from the station, town centre and future town centre development areas. - Provide a route of sufficient width and capacity to provide an alternative pedestrian and cycle route between east and central Reading a that is both attractive and direct.	- Determine which areas of available land will be needed on a temporary basis for assembly of the bridge sections. - Minimise any detrimental effect upon the existing riverbank and other structures. - Ensure elements requiring maintenance are easily accessible from the deck surface or ground in order to allow inspection, adjustment and maintenance throughout the life of the structure. - Consider ease of maintenance and the long term management of the bridge throughout the design process to ensure that the quality of the bridge can be maintained; including measures such as low energy, low carbon and low maintenance lighting. - Consider through the design stage the most suitable off-site fabrication, transport and on-site assembly options and the wider management of any construction impacts. - Determine the most cost-effective structural form for the length of crossing and context. - Where appropriate, select standard and propriety products. - Consider the most cost-effective construction methods. - The scheme design should provide for general amenity lighting..

Navigation

- Limit development within and encroachment upon water spaces.
- Limit impacts upon navigation, moorings and other river transport related activity; including ferries.
- Determine and safeguard the ‘navigation envelope’ of the Kennet.
- If needed, consider ways to protect the bridge and its support structures from impacts.

Landscape and ecology

- Protect native flora and fauna: sustain, improve and, where possible, create new species rich habitats.
- Protect, as far as practicable, individual trees, groups of trees and woodland from damage and limit the need for removal.
- Retain good quality and native waterside vegetation, recognising its contributions to ecology and landscape character.
- Strengthen the role of the Thames and adjacent open spaces as important landscape features and wildlife corridor.
- Install riverside, native, marginal planting at the marginal shelf along the edge of the River Thames.

Setting

- Respond to the practicalities and constraints of the site.
- Respond positively to the local context, and improve the interface of the site with the River Thames.
- Contribute towards a high quality public realm and the distinct character, appearance, landscape and amenity of the river and open space.
- Develop a design that is appropriate and attractive and enhances the relationship between buildings, spaces and routes.
- Landscape and ecology
- Protect native flora and fauna: sustain, improve and, where possible, create new species rich habitats.
- Protect, as far as practicable, individual trees, groups of trees and woodland from damage and limit the need for removal.
- Retain good quality and native waterside vegetation, recognising its contributions to ecology and landscape character.
- Strengthen the role of the Thames and adjacent open spaces as important landscape features and wildlife corridor.
- Install riverside, native, marginal planting at the marginal shelf along the edge of the River Thames.
-

Access

- Improve access to green space, such as safe off-road routes to parks especially in areas under-served by green space, such as Central Reading.
- Maximise waterside areas as a destination for leisure and recreation, balancing access and openness with protecting and enhancing wildlife habitats.
- Offer a safe and accessible environment for all.

Heritage

- Protect and enhance the historic environment; protect features with local or national designation including sites and features of archaeological importance.

Flooding

- Minimise effects upon the capacity of the flood plain to store floodwater and floodwater flow,
- Do not increase flood risk.

Aesthetics

Consideration should be given to a range of potential design qualities which may help to determine the final design through an option appraisal process. These may include the following:

- Structure;
- Functional;
- Elegantly engineered;
- Lightweight appearance;
- Visual energy and life; expressing the structural forces which flow through it;
- A structure that is easily understood and enjoyed by a wide audience;
- A distinctive identity, unique and memorable;
- A visible landmark with presence in the landscape;
- Framing limited vistas to and from the bridge and the approaches;

User experience

- Consider the experience of the bridge user; maximising opportunities to connect with the structure above and the water below;
- A dynamic civic space above the water to encourage people to appreciate the views.
- A night time appearance that offers safety for pedestrians and cyclists.

Deck

- Aim to create the appearance of slenderness with a thin and lightweight structure
- A simple structure free of obstructions or complex engineering.

Balustrade

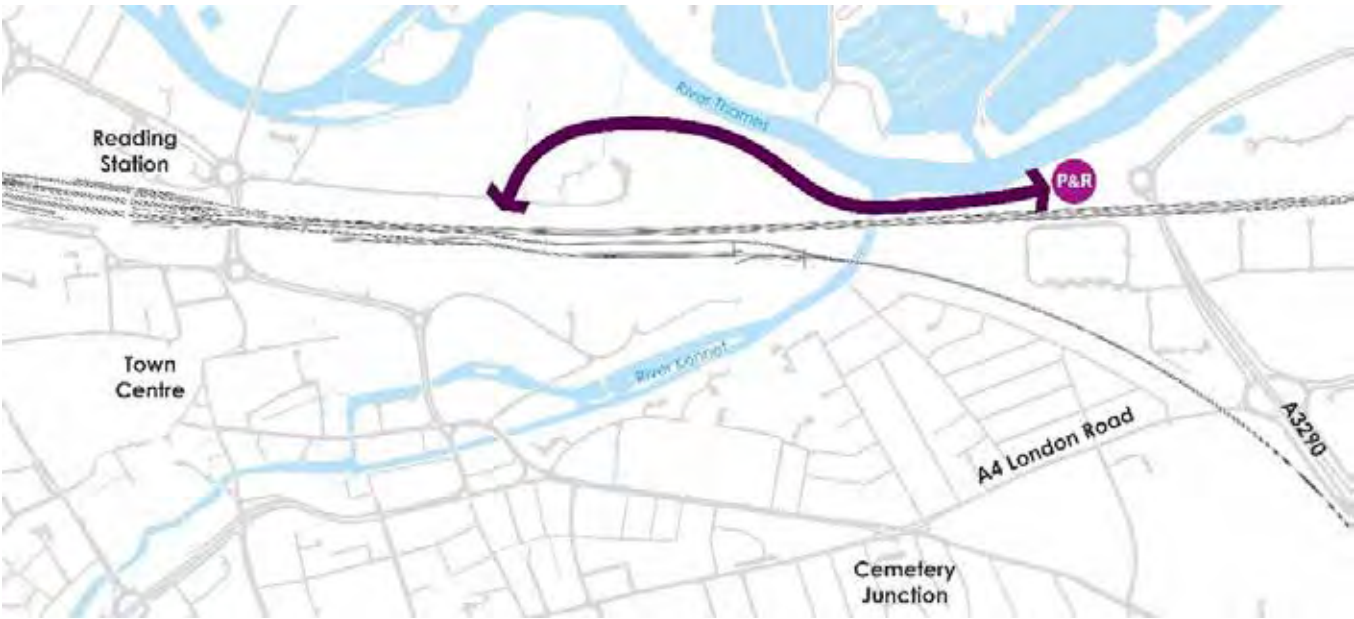
- Maximum transparency in long views to the bridge.
- Provide a feeling of safe enclosure for the bridge user.
- Continuous top rail with an additional handrail provided at lower level for pedestrians as appropriate.

Approaches

- Gentle and shallow gradient approaches (balanced against excessive ramp length and in line with appropriate standards and guidance) with sweeping/sinuous alignments in line with main flows.
- As far as possible create a sense of connection with the river bank, rather than sweeping over and past.

9 Higher level option appraisal

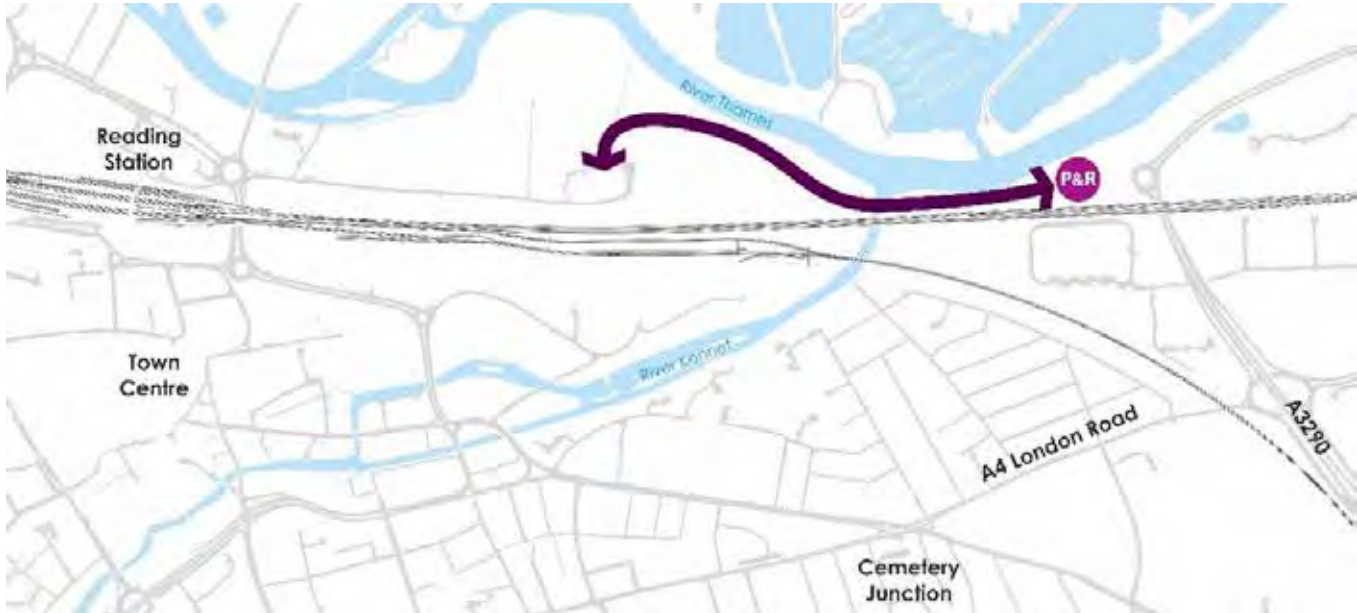
Study	Option development and appraisal
9.1 An evaluation of route options has been undertaken to inform a bid to secure the allocated funding. The route options study led to the identification of a preferred scheme.	9.4 The two-stage option appraisal process involved the assessment of ten options in stage one that were reduced to four options for more detailed appraisal in stage two, leading to the identification of two hybrid preferred options.
9.2 The study clarified the need and justification for a transport intervention and the process of option identification, development and selection undertaken.	9.5 The first stage options examined both wider transport options within Reading and the Thames Valley as well as specifically looking at the eastern route into Reading town centre from A4 and A3290 at Thames Valley Park.
9.3 Options were compared with a ‘do nothing’ option where the following outcomes were identified: • Ever increasing congestion and worsening transport conditions will act as an inhibitor to growth with private sector investment attracted to other areas with better accessibility; • Air Quality issues will be exacerbated without the mitigation afforded by intervention; and • The resident population will be disadvantaged by restricted accessibility to jobs services.	9.6 The first stage options were subject to robust assessment using the Department for Transport’s Early Assessment and Sifting Tool (EAST). The tool is designed to compare and refine options; highlight adverse impacts and unanticipated consequences; identify trade-off between competing objectives; filter and discount ‘non runner’ options at an early stage; and highlight uncertainties that should be the focus of further analysis.



Option 1 – Segregated MRT route between Napier Road and the A3290 roundabout.

This route option passes through RBC land over the meadows. The route bridges the River Kennet mouth and connects to the proposed TVP Park & Ride.

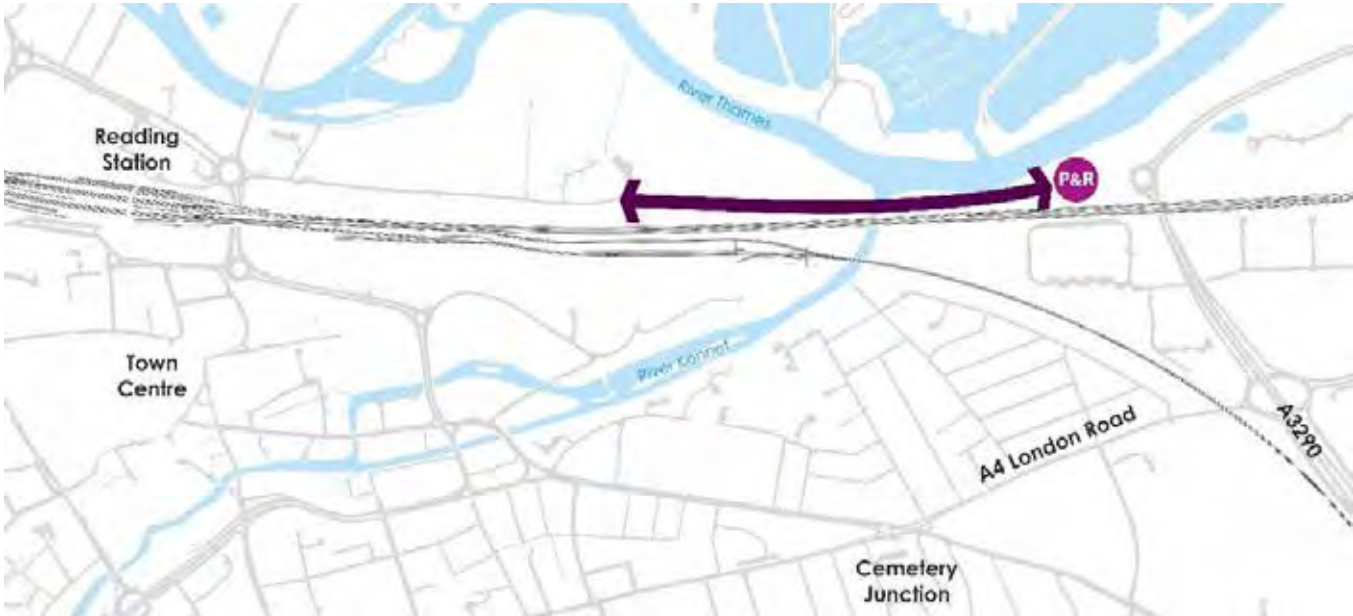
This option was selected for further appraisal in stage 2.



Option 2 - Segregated MRT route between Napier Road and the A3290 roundabout.

This route option passes through RBC land over the meadows and adjoins the public highway at Tesco access roundabout. The route bridges the River Kennet mouth and connects to the proposed TVP Park & Ride.

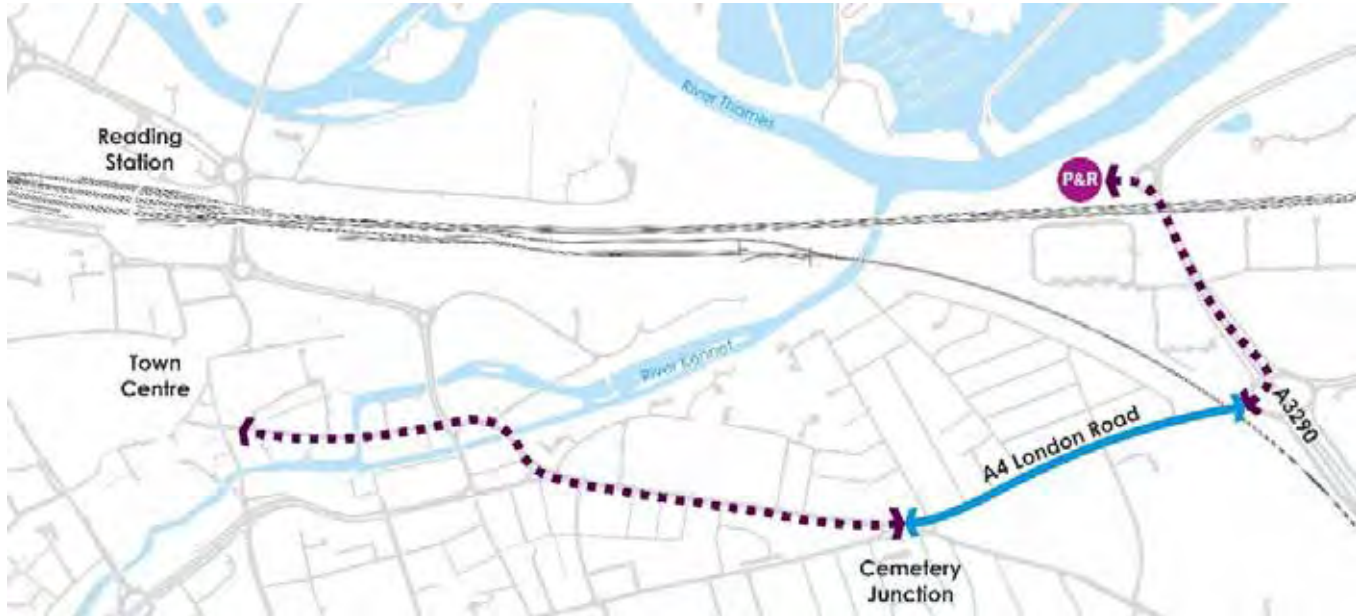
This option was selected for further appraisal in stage 2.



Option 3 - Segregated MRT route between Napier Road and the A3290 roundabout.

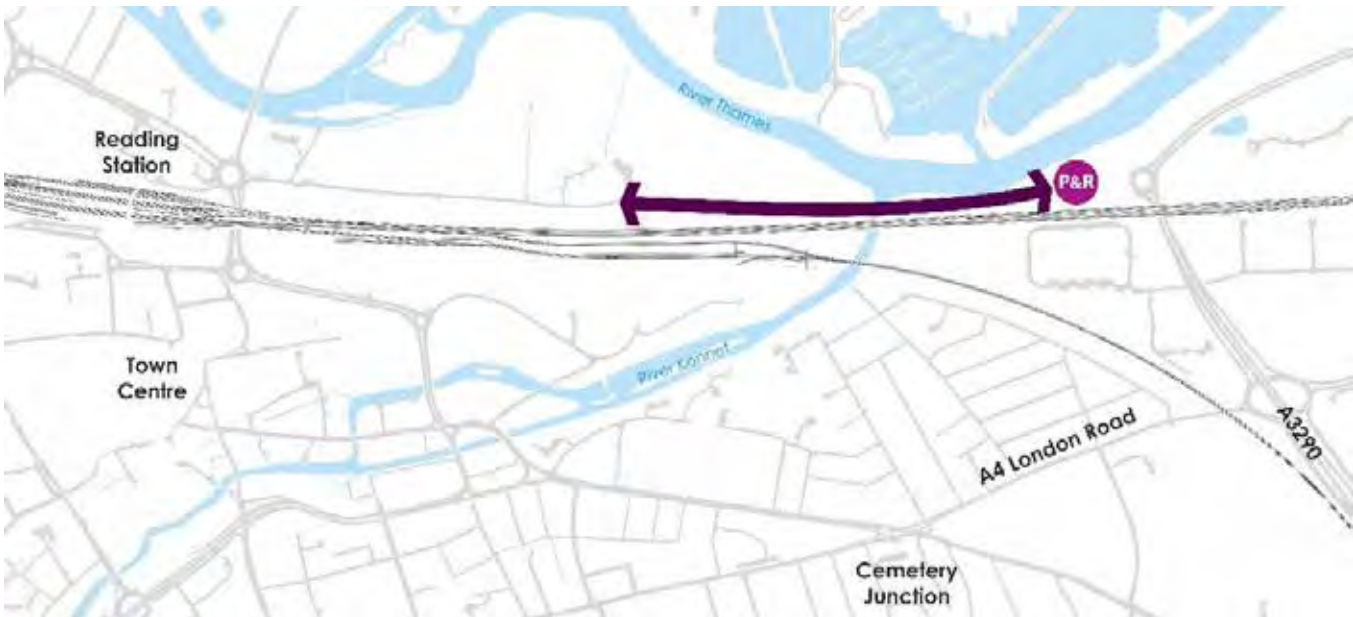
This route option passes through the edge of the superstore car park and land owned by Tesco. The route bridges the River Kennet mouth and connects to the proposed TVP Park & Ride.

This option was selected for further appraisal in stage 2.



Option 5 – A tidal flow scheme on the A4 London Road.

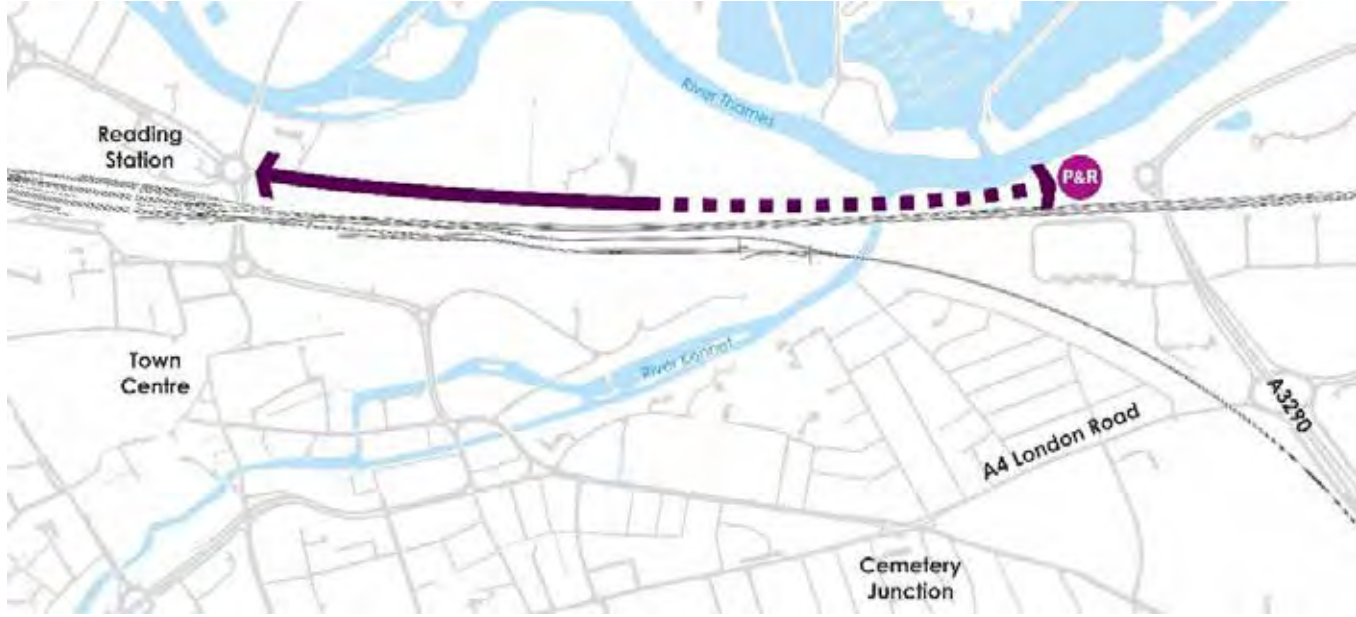
This option provided insufficient economic benefits and did not offer significant environmental benefits such as reducing carbon emissions, when compared to the alternative options. It brings about safety and capacity issues. The option was therefore discounted.



Option 4 - Segregated MRT route between Napier Road and the A3290 roundabout.

This route option runs adjacent to the railway line on Network Rail land and through a small parcel of land owned by Tesco. The route bridges the River Kennet mouth and connects to the proposed TVP Park & Ride.

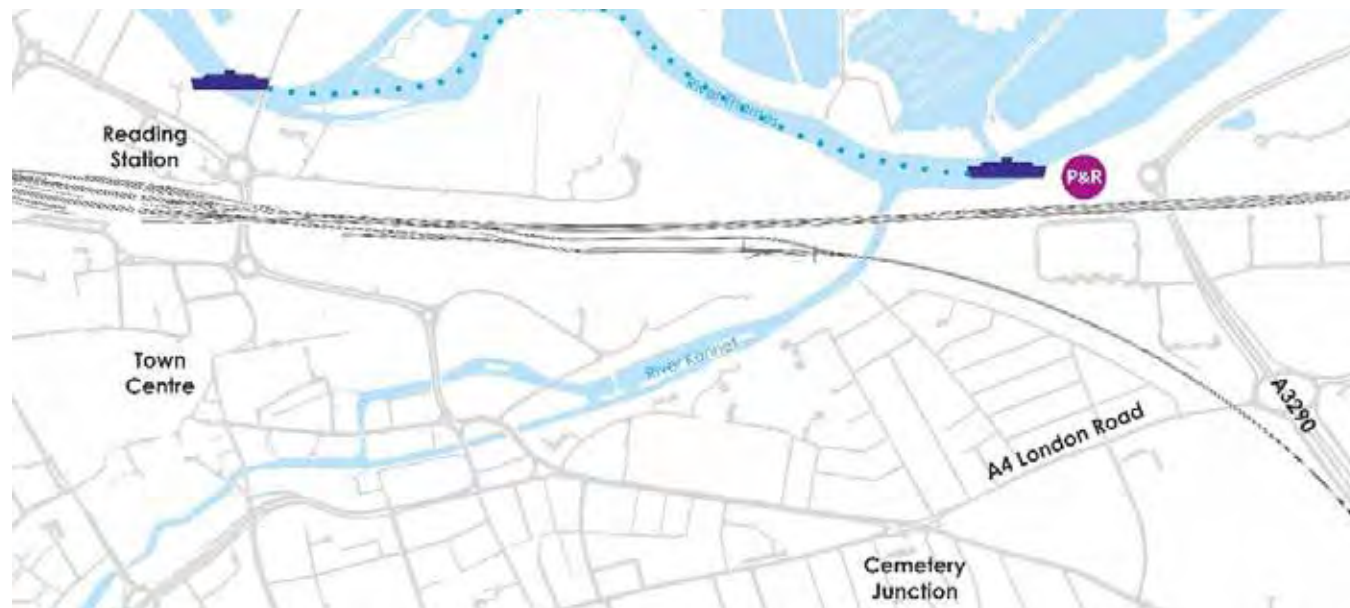
The construction costs of option 3 and 4 are the lowest of the four options and result in the lowest impact on the environment compared to remaining options, particularly in relation to ecology, flood risk, visual impact, landscape impact. This would improve public acceptability over the other remaining options. Option 3 avoids Network Rail operational land compared to option 4, and is therefore considered more deliverable in terms of technical feasibility, programme and cost.



Option 6 - Segregated MRT route between Napier Road and the A3290 roundabout.

This route option passes through the edge of the superstore car park, land owned by Tesco. The route is via a tunnel under the River Kennet mouth and connects to the proposed TVP Park & Ride.

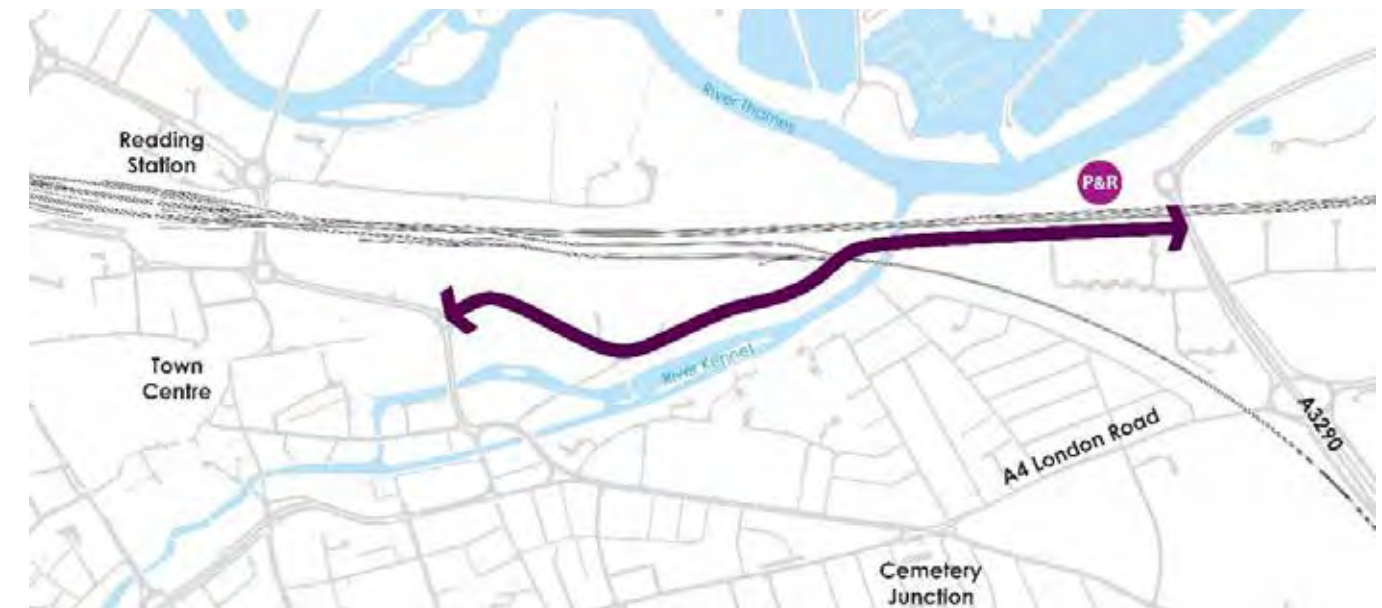
This option offered high delivery costs when compared with the potential benefits. The option was therefore discounted.



Option 7 – Park and Ferry. A new ferry route to be created between Reading Station, and the proposed TVP Park & Ride.

It is proposed that this route will follow the River Thames to a new jetty provided adjacent to Christchurch Bridge.

This option provided insufficient economic benefits and did not offer significant environmental benefits such as reducing carbon emissions, when compared to the alternative options. The option was therefore discounted.



Option 9 – Segregated MRT route between Sutton Park Avenue and Alexander Turner Close, across the River Kennet and beneath the Reading to Waterloo railway line.

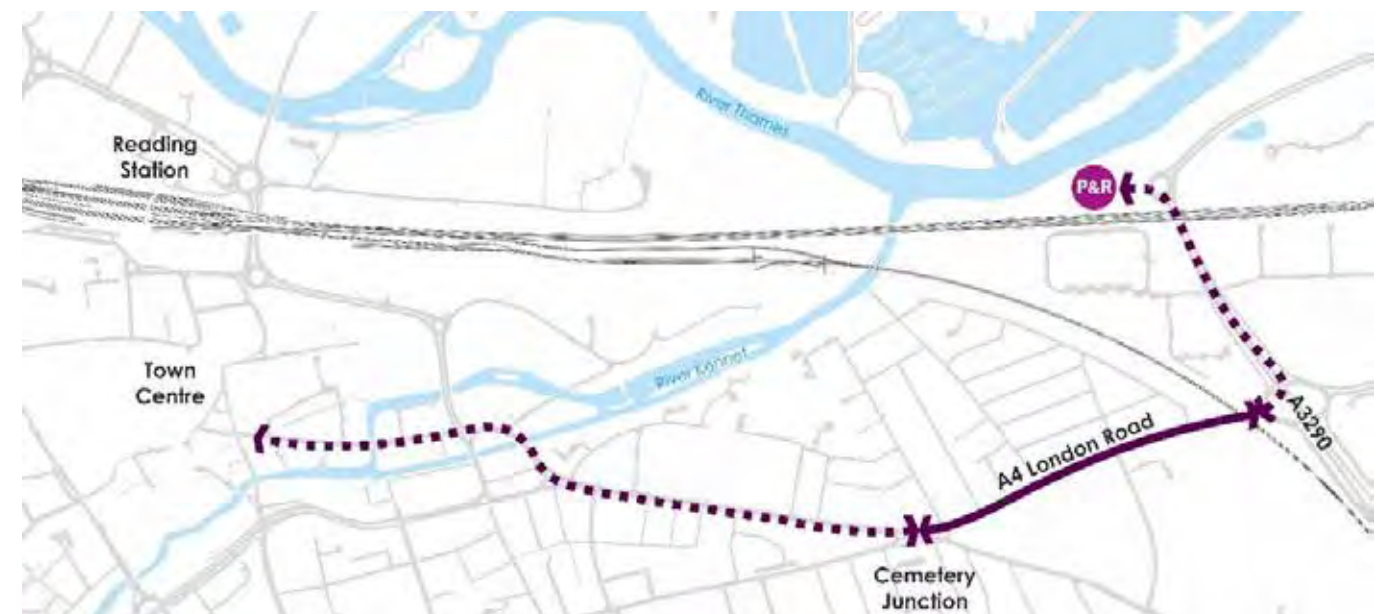
This option offered high delivery costs when compared with the potential benefits. The option was therefore discounted.



Option 8 – Park and Rail.

A new rail station to be provided at Thames Valley Park to serve both the business park, and provide a direct rail connection between the proposed TVP Park & Ride and Reading Railway Station.

This option offered high delivery costs when compared with the potential benefits and is not supported by Network Rail. The option was therefore discounted.



Option 10 - A tidal flow bus lane scheme on the A4 London Road.

This option was selected for further appraisal in stage 2.

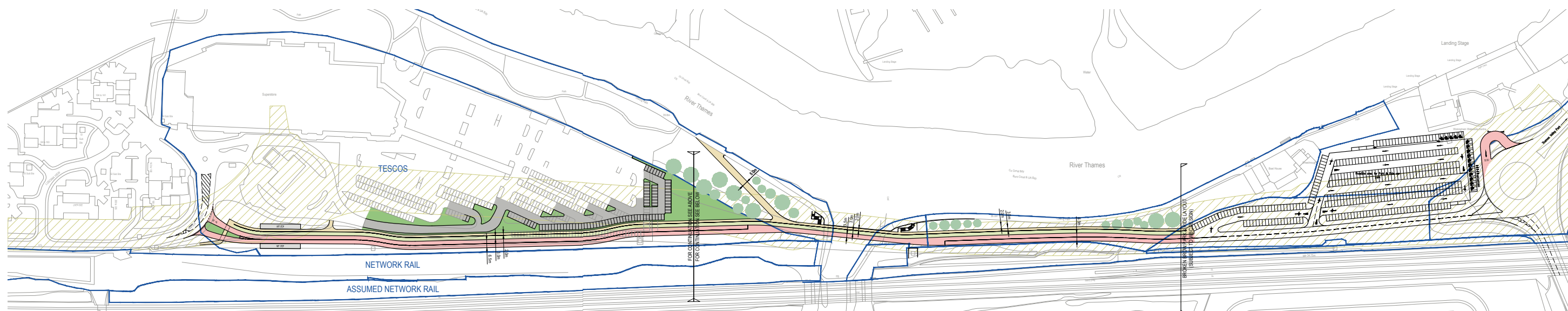


Figure 15. Preferred scheme following option appraisal (to note that the current application scheme has been substantially refined)

Stage 2

- 9.7 The construction costs of option 3 and 4 were found to be the lowest of the four short-listed options. These options also resulted in the lowest impact on the environment compared to four remaining options, particularly in relation to ecology, flood risk, visual impact, landscape impact; which would improve public acceptability over the other remaining options.
- 9.8 The stage 2 assessment incorporated alternative approaches to bus priority as follows:
- Bus priority Option 1 – Nearside bus lane on approach to Vastern Road Roundabout along with a fully segregated cycle route and landscape enhancements.
 - Bus priority Option 2 - Segregated MRT route between Napier Road and the A329(M) roundabout along with fully segregated cycle route and landscape enhancements. This option uses land owned by Tesco's and Network Rail).
- 9.9 Bus priority Option 2 was found to be most complementary. It improved the journey times for bus services, other vehicles and cyclists, and improved the visual impacts and deliverability.

Preferred option

- 9.10 Option 3 (combined with Bus Priority Option 2) was identified as the preferred option on the basis of its quantitative and qualitative scores on strategic, economic, managerial, financial and commercial aspects.
- 9.11 The preferred route runs adjacent to the existing railway line, to the south of the River Thames.
- 9.12 The preferred option includes:
- a new route for public transport only, including cycle path and footway between Napier Road and the proposed Park & Ride at Thames Valley Park;
 - the erection of a new bridge over the River Kennet and route avoiding the food plain, with associated improvement works to the towpath;
 - creation of a recreational route with public open space and ecological habitats;
 - formation of a new T-junction with Napier Road; and
 - formation of a new three-arm roundabout junction between Thames Valley Park Drive and A3290 (also forms part of the Park & Ride facility).

10 Site development constraints

Constraints		Other Third Party land ownership	
10.1	The main Site development constraints are summarised under the following headings. Further details on these and other relevant constraints are provided in the Environmental Statement submitted with the application.	10.5	Adjacent sites are in private ownership including Tesco, University of Reading, Oracle, Wokingham Borough Council and Reading Borough Council. The route has been planned to minimise incursion into operational, developed or highly utilised third party land.
Narrowness of the riverside strip		Thames Path	
10.2	The planned route corridor east of Kennet mouth is constrained by the Great Western Railway to the south and the River Thames to the north. The width of the corridor typically ranges from 23 to 28m whilst the planned route ranges from 9 to 13m in width. The potential route alignment is further constrained by trees and utilities, including electricity pylons (see below).	10.6	The Thames Path is a National Trail following the River Thames from its source near Kemble in Gloucestershire to the Thames Barrier at Charlton, south east London.
10.3	The route is aligned to take account of the riverside setting, avoid utility corridors that cannot be moved, and minimise and mitigate impacts overall, including the need to soften and screen the impact of the elevated sections of the route.	10.7	The path travels beside the planned route. The route includes Horseshoe Bridge, which crosses the mouth of the Kennet and Avon Canal as it joins the Thames.
		10.8	The Thames path will be safeguarded, whilst the new pedestrian and cycle route and river crossing will supplement and relieve congestion on the towpath.
Network Rail land		Accessibility	
10.4	Consultation with Network Rail has been carried out through their clearance process to determine constraints and opportunities associated with use of or working alongside their land. It has been confirmed the use of Network Rail land to the west of the River Kennet is not possible due to being an operational asset. The use of land or oversail of Network Rail land to the east of the River Kennet has been ruled due to risks associated with technical feasibility, costs, timescales, stability monitoring, safety issues/requirements of working on or over an operational rail embankment, as well as Network Rail’s maintenance access requirements.	10.9	The existing Accommodation Bridge is unsuitable for wheelchair users and buggies whilst cyclists must wheel bikes up and down the stepped ramps.
		Utilities	
		10.10	The planned route corridor is traversed by high voltage power lines suspended between pylons. There are further utilities buried below ground as well as lower a voltage above ground electricity transmission corridor supported on poles that can be realigned.
		10.11	Service/supply infrastructure has been carefully mapped and the main utilities are marked on the context plan submitted with the application. The route and bridge have been aligned in order to avoid underground utilities and minimise impacts on any utilities in proximity to the scheme.
		Overall environmental impacts	
		10.12	The proposed development (by virtue of its nature, scale, size or location) may give rise to significant environmental impacts and is therefore subject to environmental impact assessment.
		10.13	A formal ‘Screening Opinion’ request was submitted to the Local Planning Authority who confirmed that the proposed development may give rise to significant environmental effects by virtue of its nature, size or location. An Environmental Statement therefore accompanies the planning application. An ES Addendum has also been prepared to consider proposed amendments to the scheme.
		Ecology and biodiversity	
		10.16	The site is not covered by any statutory nature conservation designation. Part of the Site is designated as a Local Wildlife Site for the habitats it supports. These include woodland and scrub.
		10.17	Detailed surveys have been undertaken to allow mapping and characterisation of the habitats present within the Application Site and to determine any signs of, or potential for, protected or notable species.
		Visual impact	
		10.18	Please refer to the Environmental Statement submitted with the application for further details.
		10.19	There are a limited number of places from where the bridge can be seen.
		Landscape	
		10.20	A Visual Impact Assessment (LVIA) has been commissioned and is submitted with this application. The results of these assessments are included in the Environmental Statement and briefly summarised in the Visual Impact Chapter of this document.
		10.21	A landscape and visual impact assessment and tree survey has been commissioned for the immediate area and is submitted with the application. Whilst the proposed orientation of the bridge has evolved to minimise disturbance to existing trees, there will be a degree of required tree removal
		Heritage and archaeology	
		10.22	Full details along with relevant landscape and tree protection and mitigation proposals are outlined in the Environmental Statement.
		10.23	The adjacent railway bridge and the attached accommodation bridge are listed Grade II.
		10.24	A heritage appraisal and archaeological desk based assessment has been prepared and submitted with the application.
		10.25	Whilst the scheme does not physically impact upon the listed bridge structures, it will affect their setting.
		10.26	The preferred bridge design has been selected to reduce impact on views towards and through the listed structures.
		10.27	There is low potential for archaeological remains.



Figure 16. Example of existing ecology (The Coal LWS)



Figure 17. Example of existing ecology (The riverside grass strip)



Figure 16. Example of existing ecology (The Coal LWS)



Figure 17. Example of existing ecology (The riverside grass strip)



Figure 18. Moorings



Figure 19. Pylons



Figure 20. Rail corridor



Figure 21. The Thames Path



Figure 22. Evidence of fly-tipping

Water and flooding		Light and lighting		Construction		Navigation		Construction	
10.28	Part of the eastern section of the Application site (i.e. east of the River Kennet crossing) is located within an area at 'High' probability of river flooding (Flood Zone 3).	10.32	There is currently only one street light north of the railway and the setting is potentially sensitive to light effects.	10.38	There will be a number of temporary impacts resulting from the construction phase of the development including loss of amenity, noise and traffic. Access via Horseshoe bridge and the towpath will be maintained where possible during construction.	10.42	The Thames Navigation Licensing & General Byelaws 1993 and regulations for the avoidance of collisions set down guidance on the safeguarding of the navigation. In particular, the navigation channel must be left unobstructed for through traffic at all times.	10.47	There will be a number of temporary impacts resulting from the construction phase of the development including loss of amenity, noise and traffic. Access via Horseshoe bridge and the towpath will be maintained where possible during construction.
10.29	However, the western section of the Application site (i.e. west of the River Kennet crossing) is located within an area at 'Medium' probability of river flooding (Flood Zone 2) and lies outside the 1 in 100 annual probability River Thames floodplain.	10.33	A lighting assessment has been prepared and is submitted with this application.						
		10.34	The MRT will incorporate low-level parapet lighting to meet highway standards.						
		Noise, crime, health & safety		Noise, crime, health & safety					
10.30	A Flood Risk Assessment (FRA) has been prepared in consultation with the Environment Agency and is submitted with this application. A Surface Water Drainage Strategy (SWDS) has also been prepared in accordance with the requirements of RBC and WBC as the Lead Local Flood Authorities over the Application Area.	10.35	It is recognised that the scheme will encourage greater use of this relatively remote area and may therefore increase the frequency of anti-social behaviour within the area and connecting routes, particularly in the evening and at night.	10.39	It is recognised that the scheme will encourage greater use of this relatively remote area and may therefore increase the frequency of anti-social behaviour within the area and connecting routes, particularly in the evening and at night.	10.43	Local boating clubs including Reading University, Reading Rowing Club, Reading Canoe Club, and Thames Valley Cruising Club use the rivers in the area.		
		10.36	Design measures have been and will continue to be carefully considered in order to minimise this possibility, including: The selection of appropriate, robust, materials; adequate lighting and creation of marshy wetland areas.	10.40	Design measures have been and will continue to be carefully considered in order to minimise this possibility, including the selection of appropriate, robust, materials; adequate lighting, openness and creation of marshy wetland areas beneath the viaduct.	10.44	The Environment Agency (EA) is the navigation authority. They apply a principle of non-detriment on a reach by reach basis with regards to bridge heights. For this reason, any new bridge needs to provide the same available headway as the bridges currently located between the mouth of the Thames and Blakes Lock. Therefore, any new bridge would need to have a minimum headway of 4.77m above normal water level.		
10.31	The studies demonstrate how flood risk and surface water drainage will be managed and the measures proposed to mitigate any potential detrimental flood risk impacts.	10.37	It is however considered that the bridge may contribute to better personal security through increased foot and cycle traffic.	10.41	It is however considered that the bridge may contribute to better personal security through increased foot and cycle traffic.	10.45	This will ensure a sufficiently clear and unobstructed passage for navigation beneath the bridge. The single-span bridge is designed to minimise any disruption to navigation with no piers within the river channel.		
						10.46	The provision of three new short-stay mooring platforms are considered to provide an enhancement to navigation.		

11 Route parameters

Route				River span					
11.1	The broad functions and alignment of the public transport route through the riverside strip has been established through the route option appraisal described in Chapter 6.	11.7	The effect of removing or combining the footway/cycleway would have limited benefits on land-take and visual impact when compared to the significant transport benefits of retaining the segregated footway and cycleway as proposed.	11.11	However, as above, a section of the structure closest to the towpath and river has been narrowed to reduce landscape and visual amenity impacts.	11.16	The approach is to introduce planting to soften the foreground, but with the structure rising above intended to make a positive a visual statement.	11.22	The selection of the main River Kennet span (or spans) is determined by the following factors. Limit visual impact overall.
Width									
11.2	The route is typically 11.5m wide comprising a 6.5m two-way carriageway, 3m two-way cycle lane and a 2m footway.	11.8	Shuttle working along the central bridge section is proposed.	11.12	Within these constraints, the horizontal alignment is designed to fit in sensitively within the landform and the built, natural, ecological, and cultural/heritage setting.	11.17	Existing vegetation and trees will be protected and augmented as far as practicable.		
11.3	The route narrows to 10.5m, including a reduced 2.5m two-way cycle lane and 1.5m footway, for a short section east of the River Kennet, where the viaduct is closest to the towpath and river.	Horizontal alignment		11.13	Visual analysis has demonstrated that the visibility of the new route from the surrounding area will be limited to local views. Visual enclosure of the site is provided by the raised railway embankment to the south and mature trees to the northern side of the River Thames.	11.18	The alignment, width and design of route has been amended and trimmed, to maximise tree retention.		
11.4	The route also narrows to 8.5m at the bridge over the Kennet comprising a 3.5m one way carriageway, 3m two-way cycle lane and a 2m footway.	11.9	The potential horizontal alignment is highly constrained by the following factors. - Electricity Pylons. - Gas Main. - Listed structures. - Network rail operational land.	11.14	Where the route is situated close to the Thames Path and National Cycle Network Route / towpath there will be views of the new viaduct structure in the context of the existing transport corridor and River Thames.	11.19	Structures between the bridge and the surrounding landscape, such as hard surfaces, have been used minimally.		
11.5	The width of the route is determined by the need to accommodate primarily two-way bus, cycle and pedestrian movements whilst limiting incursion into third party land and landscape and visual amenity impacts.					Vertical alignment			
11.6	The width may be reduced in one of two ways - Shuttle-working bus route - Combined cycle footway. - Removing the footway and/or cycleway completely.	11.10	The potential alignment of the structure has been considered further away from the towpath and river. However, this would have limited benefits in terms of the release of riverside land for additional planting to lessen visual impact whilst incursion into Network Rail land is either not viable or feasible due to operational need for the land, technical feasibility, costs, timescales, stability monitoring, safety issues/requirements of working on or over an operational rail embankment, as well as Network Rail’s maintenance access requirements.	11.15	There are a number of appropriate, broad design responses: - Minimising the height, mass and overall scale of the structure. - Planting new trees where possible, to replace those that will be removed to facilitate the structure and to filter views of it from the Thames Path / NCNR / towpath. - Making the bridge as simple and elegant as possible to minimise visual clutter and complexity.	11.20	The potential vertical alignment is constrained by the following factors. - Limit visual impact overall. - Limited impact on views of listed structures. - Maintain a generally open aspect - Maintain navigation headway. - Minimise flood zone impacts.	11.23	Design exploration of these factors has determined that a single span of 59.5m is appropriate.
						11.21	Design exploration of these factors has determined that the most appropriate vertical alignment comprises: - A viaduct of 204m ascending from east to west at a gradient of 1:43 rising to approximately 6m - A bridge height of 6.77m above normal water level. 112 m western ramp descending from approximately 6m down to general ground level.		

Reading Borough Council, Transportation & Streetcare

28

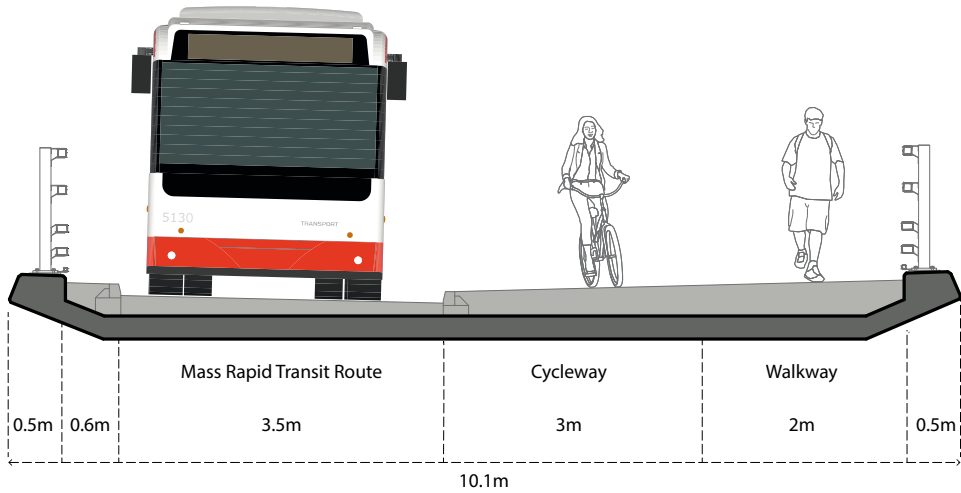


Figure 23. Parameter plan - narrower route cross section across the main bridge span

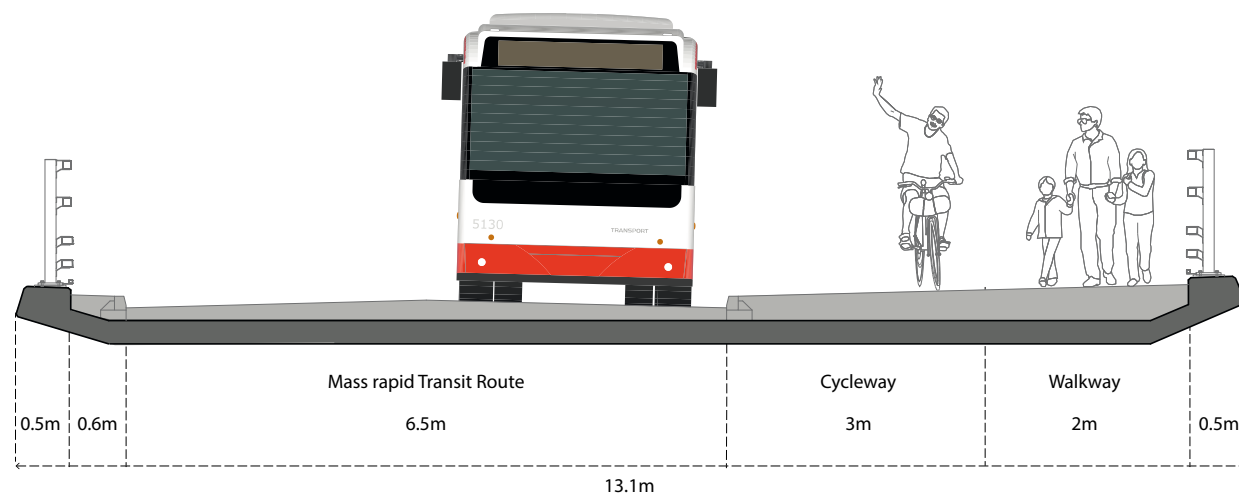


Figure 24. Parameter plan -wider main route cross section across viaduct and approach ramps

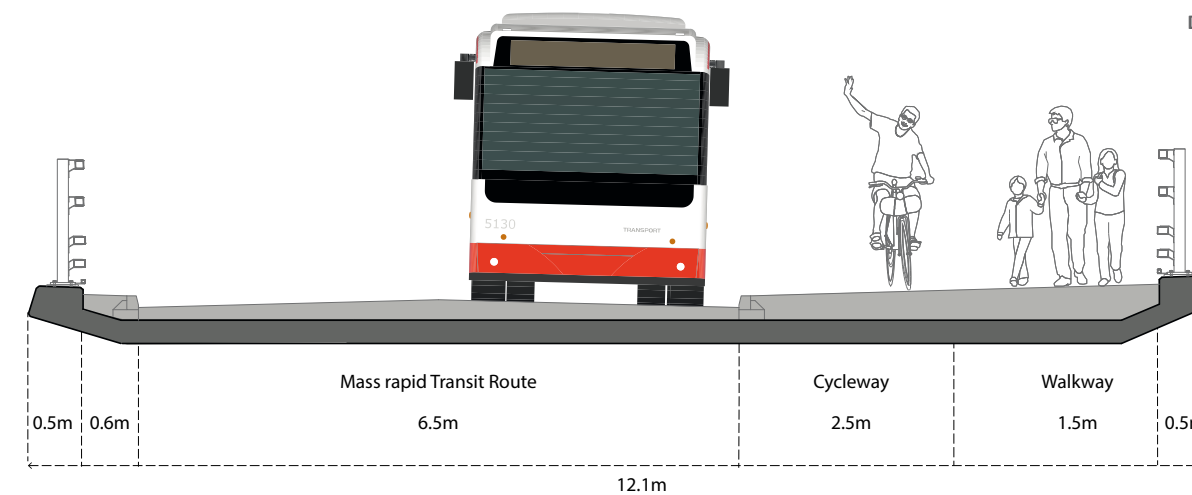


Figure 27. Revised parameter plan showing the narrowed cross section adjacent to the narrowest part of the retained riverside open space - 'the pinch point'

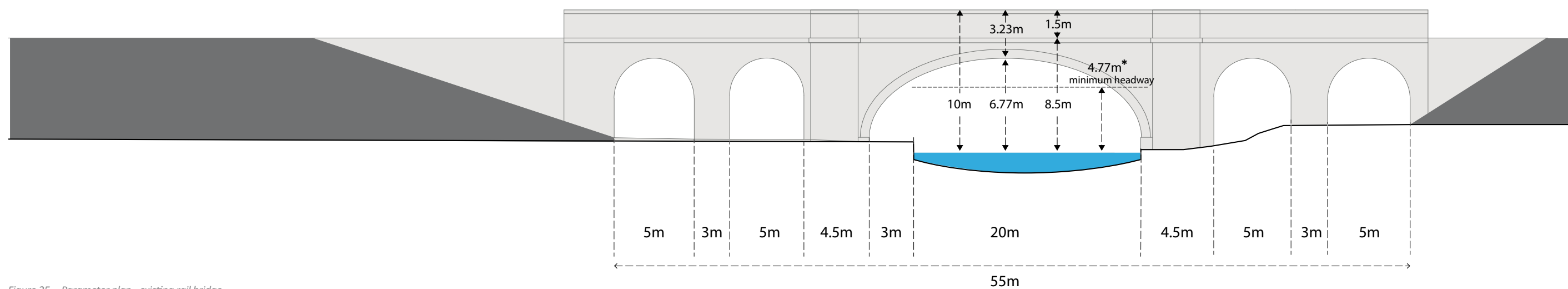


Figure 25. Parameter plan - existing rail bridge

* minimum headway has been determined by the Environment Agency)

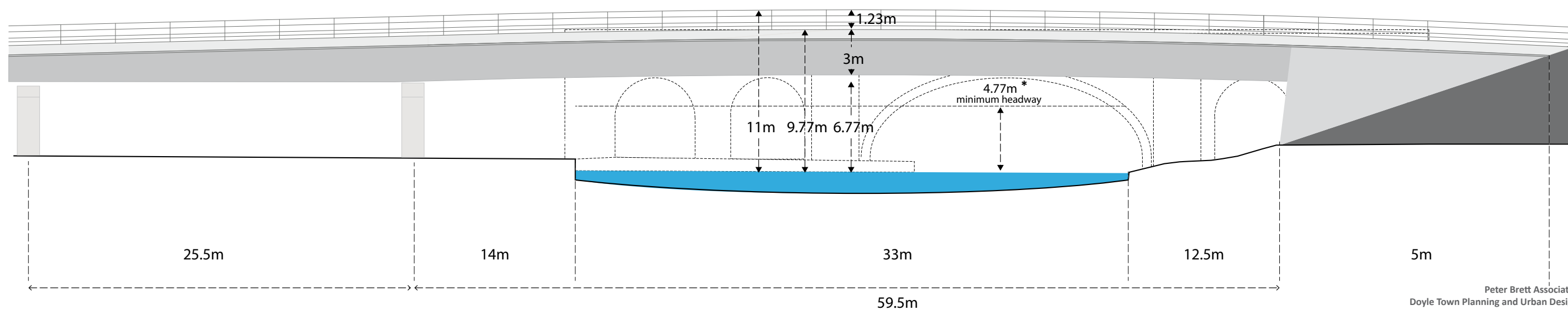


Figure 26. Parameter plan - proposed bridge

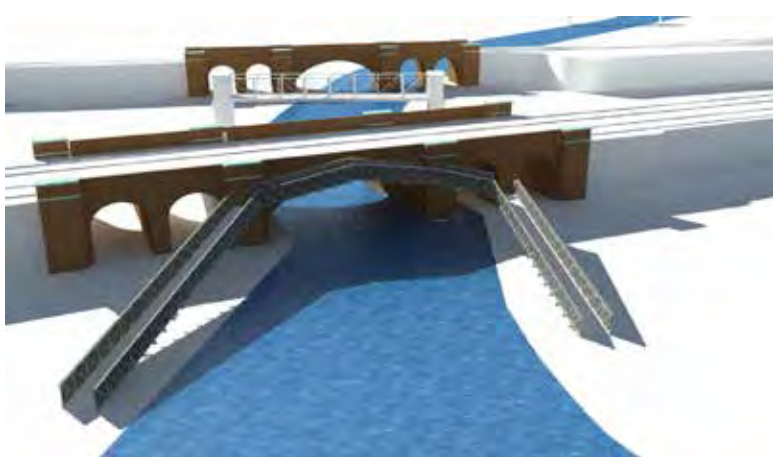


Figure 28. The bridges of the lower Kennet



Figure 29. Horse Ferry at Reavensthorpe (Yorkshire Waterways Museum).



Figure 30. Maidenhead Railway Bridge

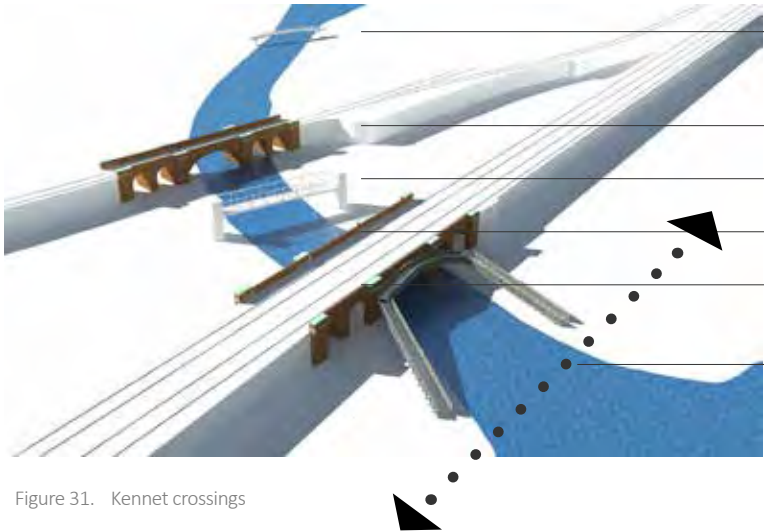


Figure 31. Kennet crossings

12 Bridges and crossings

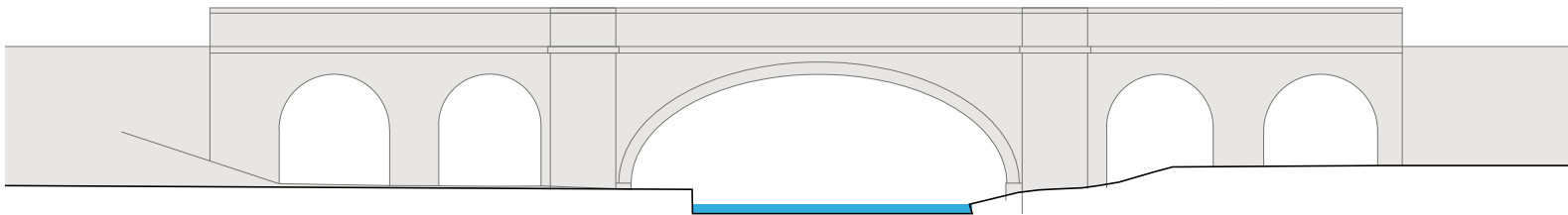


Figure 32. Great Western main line bridge (1839-40)

Bridges and crossings		Horse ferry		Main Line Great Western Railway Bridge		Wokingham Branch Line Bridge	
12.1	There are a series of bridges across the Kennet in the vicinity of the new route and a long history of bridges and ferry crossings nearby that reflect the wider story of the Thames and the Kennet.	12.4	When the canal link between Newbury and Bath was completed in 1810, a ferryman was appointed to take towing horses across the mouth of the Kennet. The toll was 2d (0.8p).	12.7	The route and bridge travel beside the main line London to Reading Great Western Railway bridge. The railway bridge was the first crossing of the Kennet in the area and is listed Grade II.	12.11	In historical terms, the bridge is significant in reflecting the early development of railways in Britain and also one of its most accomplished engineers, Brunel.
12.2	The new route and bridge need to be carefully integrated into this wider riverine, urban and historical context.	12.5	The ferry continued in use up until the installation of the Accommodation Bridge in the 1890's.	12.8	Isambard Kingdom Brunel for The Great Western Railway originally constructed the bridge in 1839-1840. The bridge was widened to the north, probably in 1892, with the accommodation bridge also probably attached at the same time.	12.12	In architectural and technological terms the bridge is significant, reflected in its status as a Grade II listed building. The skewed form and parabolic arch provides a more interesting appearance, particularly when viewed from river level. However, it is not a particularly rare design approach and the span is relatively short when compared with more significant early railway bridges, such as at Maidenhead.
12.3	The lower reaches on the Kennet stretching from Blakes Lock to the confluence with the Thames is distinct from the narrower, shallower and canalised upper stretches through central Reading. This lower stretch was characterised by marshland and later wharfage.	12.6	The new public transport route is broadly aligned with the former ferry crossing route.	12.9	The railway bridge is of red brick, widened in engineering brick with ashlar dressings.	12.13	The bridge remains in relatively unaltered condition. The Bridge is a significant and distinctive landmark in this part of Reading. However, views of the bridge are limited to walkers along the riverside walks.
				12.10	The bridge is built on skew with a central elliptical arch flanked by pilasters, the western one on cutwater, with two round flood arches to either side and broad battered buttresses beyond.		
							Footbridge
						12.15	A high level footbridge connects Cumberland Road with Kenavon Drive and is approached via ramps.
							Gas Works Bridge
						12.16	The gas works bridge is a relatively high steel truss bridge designed to carry pipes across the river between the two Gas Works sites on either side.