

10 Site development constraints



Figure 36. Example of existing ecology (The Coal LWS)

Constraints		Network Rail land	Thames Path	Utilities	Overall environmental impacts
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.	10.4 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.	10.6 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.	10.10 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.	10.12 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.
Narrowness of the riverside strip			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.		10.13 The Proposed Development is considered to constitute Schedule 2 (Section 10 Part (f) ‘Construction of roads’) development under the EIA Regulations as an Infrastructure Project for which the area of development exceeds 1 hectare and could result in significant environmental effects.
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).		10.8 The Thames path will be safeguarded, whilst the new pedestrian and cycle route and river crossing will supplement and relieve congestion on the towpath.	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.	10.14 No formal screening exercise has been undertaken. As stated in Section 1, the applicant has voluntarily undertaken an EIA of the proposed development, which has been documented in an ES, in compliance with the requirements of the EIA Regulations.
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.	10.5 Other Third Party land ownership 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.	Accessibility 10.9 The existing Accommodation Bridge is unsuitable for wheelchair users and buggies whilst cyclists must wheel bikes up and down the stepped ramps.		10.15 The scoping process has been informed by the previous work and consultation with stakeholders. This includes the EIA Scoping Opinion provided by RBC on 25th November 2016, and the subsequent July 2017 ES and June 2018 ES Addendum. Following adoption of the Scoping Opinion, there was further discussion with RBC to agree the approach to cumulative assessment with the TVP P&R and to agree the other approved developments to be considered in relation cumulative effects,



Figure 37. Moorings



Figure 38. Pylons



Figure 39. Example of existing ecology (The riverside grass strip)

Moorings		Ecology and biodiversity		Landscape		Water and flooding			
10.16	A Scoping Opinion Request for the development now proposed was submitted to RBC and WBC on 29th August 2018. The request was supported by an EIA Scoping Report which set out the required information under the Section 15 (2) of the EIA Regulations. This included a description of the Application Site and the Proposed Development, the topics to be assessed as part of the EIA, the methodology for assessment and those topics to be scoped out of the EIA. A copy of the EIA Scoping Report. RBC and WBC provided an EIA Scoping Opinion in October 2018.	10.17	There are a number of informal mooring places along the length of the river bank.	10.21	The site is not covered by any statutory nature conservation designation. Part of the Site is designated as a LWS for the habitats it supports. These include woodland and scrub.	10.25	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	10.32	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).
		10.18	The new route and bridge will not obstruct existing moorings and provides three new short-stay visitor mooring platforms. The proposed scheme will therefore facilitate riverside improvements and relieve congestion along the riverbanks and towpaths that will lessen potential conflicts with moored boats.	10.22	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.	10.26	Full details along with relevant landscape and tree protection and mitigation proposals are outlined in the Environmental Statement.	10.33	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.
			Visual impact	10.23	The habitats present within the site are generally of low intrinsic ecological value; although broadleaved semi-natural woodland, running water and marginal vegetation (largely associated with The Coal, Kennet Mouth and Kings Meadow East LWS and adjacent water courses) are of greater value. The East MRT site was identified to provide habitat suitable for use by a range of protected or notable species, with populations of slow worm and grass snake, and foraging and commuting bats identified during detailed surveys.		Heritage and archaeology	10.34	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.
		10.19	There are a limited number of places from where the bridge can be seen.			10.27	The adjacent railway bridge and the attached accommodation bridge are listed Grade II.		
		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.			10.28	A heritage appraisal and archaeological desk based assessment has been prepared and submitted with the application.		
					10.29	Whilst the scheme does not physically impact upon the listed bridge structures, it will affect their setting.	10.35	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.	
				10.24	Please refer to the Environmental Statement submitted with the application for further details.	10.30	The preferred bridge design has been selected to reduce impact on views towards and through the listed structures.		
						10.31	There is low potential for archaeological remains.		

Noise, crime, health & safety		Light and lighting		Navigation		Noise, crime, health & safety	
10.36	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	There is currently only one street light north of the railway and the setting is potentially sensitive to light effects.	10.43	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.	10.48	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.
10.37	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.	10.41	The MRT will incorporate low-level parapet lighting to meet highway standards.	10.44	Local boating clubs including Reading University, Reading Rowing Club, Reading Canoe Club, and Thames Valley Cruising Club use the rivers in the area.	10.49	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.
10.38	It is however considered that the bridge may contribute to better personal security through increased foot and cycle traffic.	Construction		10.45	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.	10.50	It is however considered that the bridge may contribute to better personal security through increased foot and cycle traffic.
		10.42	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.	10.46	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.		
				10.47	The provision of three new short-stay mooring platforms are considered to provide an enhancement to navigation.		



Figure 40. Rail corridor



Figure 41. The Thames Path



Figure 42. Evidence of fly-tipping

11 Route parameters

Route		Width	
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.	11.2	The route is typically 11.5m wide comprising a 6.5m two-way carriageway, 3m two-way cycle lane and a 1.7m footway plus 0.3m planters.
11.3	The route narrows to 10.5m, including a reduced 2.5m two-way cycle lane and 1.2m footway plus planters (0.3m), for a short section east of the River Kennet, where the viaduct is closest to the towpath and river.	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.
11.5	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.	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.
11.7	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.	11.8	Shuttle working along the central bridge section is therefore proposed.
Horizontal alignment		11.9	The potential horizontal alignment is highly constrained by the following factors. - Electricity Pylons. - Gas Main. - Listed structures. - Network rail operational land. - The need to set the alignment as far from the riverside as possible. - The need to minimise tree loss. - The need to minimise flood zone impacts.
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.	11.11	However, as above, a section of the structure closest to the towpath and river has been narrowed to reduce landscape and visual amenity impacts.
11.12	Within these constraints, the horizontal alignment is designed to fit in sensitively within the landform and the built, natural, ecological, and cultural/heritage setting.	11.13	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.
11.14	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.	11.15	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.
11.16	The approach is to introduce planting to soften the foreground, but with the structure rising above intended to make a positive a visual statement.	11.17	Existing vegetation and trees will be protected and augmented as far as practicable.
11.18	The alignment, width and design of route has been amended and trimmed, to maximise tree retention.	11.19	Structures between the bridge and the surrounding landscape, such as hard surfaces, have been used minimally.
Vertical alignment		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.
11.21	Design exploration of these factors has determined that the most appropriate vertical alignment comprises: The scheme rises approximately 5.6m at a steady 1:42 gradient from ground level in the east, adjacent to the proposed TVP P&R, to the new bridge across the River Kennet in the west.	11.22	The selection of the main River Kennet span (or spans) is determined by the following factors. - Limit visual impact overall. - Limit impact on views towards and through listed bridge structures. - Maintain a generally open aspect. - Limits obstructions to navigation and navigation headway. - Minimise encroachment upon the water environment and marginal habitat. - Minimise flood zone impact. - Keep an open aspect for the footpaths travelling below the bridge.
11.23	Design exploration of these factors has determined that a single span of 59.5m is appropriate.		

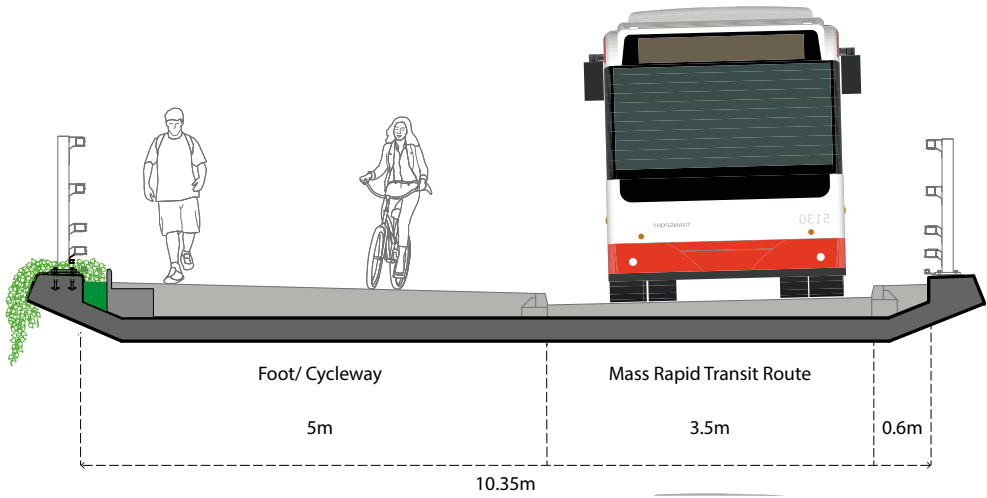


Figure 43. Parameter plan - narrower route cross section across the main bridge span