



Pedestrian and Cycle Bridge Feasibility Study – Report Summary

For London Borough of Richmond

July 2018



OBJECTIVES

The primary objective of introducing a new bridge across the Thames in Richmond is to improve connectivity, thereby increasing access to homes, jobs, services, leisure activities and transport links. The full list of objectives is identified below:

- Provide a more pleasant and safer journey experience for pedestrians and cyclists who currently suffer from poor amenity on existing bridges.
- Improve the health and wellbeing of residents and others by affecting a mode shift from motorised modes to walking and cycling, and by encouraging new trips to be made by active modes.
- Provide a more direct and coherent route for short journeys over the river and to link into the wider network for longer trips. This will help to connect people to homes, jobs, services, leisure activities and public transport nodes.
- Support the potential for growth and regeneration.
- Contribute to improving the public realm and public spaces around the bridge, and help to activate these areas.

A new crossing which meets the above objectives will contribute towards the delivery of a number of policies and proposals in the Mayor's Transport Strategy including:

Healthy streets and healthy people:

- MTS Policy 1: reduce dependency on cars in favour of active, efficient and sustainable modes of travel
- MTS Policy 2: seek to make London a city where people choose to walk and cycle more often
- MTS Policy 3: adopt Vision Zero for road danger in London
- MTS Policy 5: prioritise space efficient modes of transport to tackle congestion and improve the efficiency of streets for the movement of people and goods

New homes and jobs:

- MTS Policy 21: ensure that new homes and jobs in London are delivered in line with the transport principles of Good Growth



APPROACH

The approach to the study has been structured with the aim to answer the following key questions:

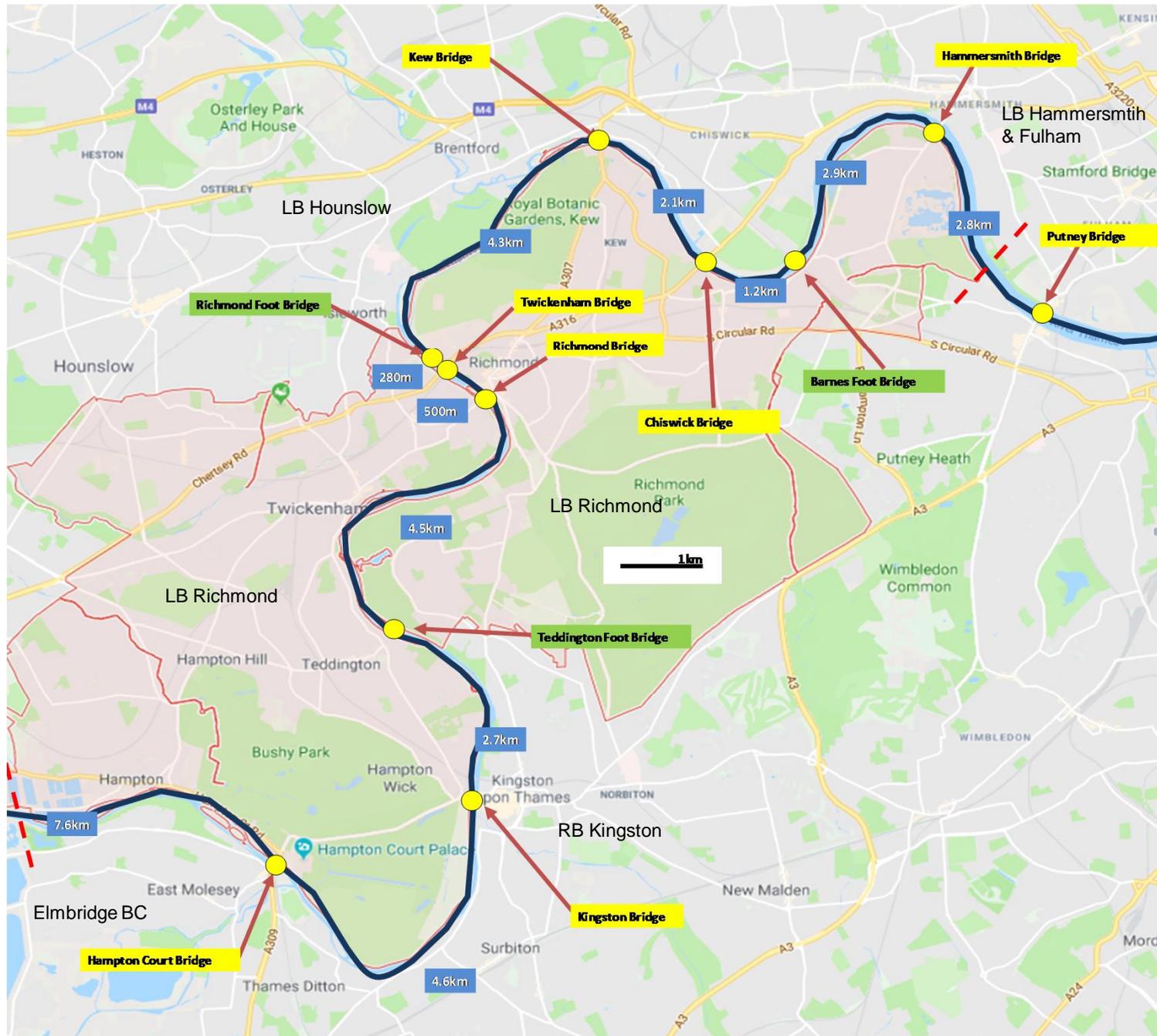
- Where are the most promising locations for new cycle/pedestrian bridges?
- What level of demand is there for the new bridges compared to the existing bridges?
- What potential issues and constraints may impact on implementing the bridges?
- What opportunities do the bridges provide for improving connectivity?
- Will the bridges provide value for money?

The study has been split into two key stages:

Stage 1: Desktop Review, Data Collection and Location Shortlisting

Stage 2: Appraisal of Specific Sites

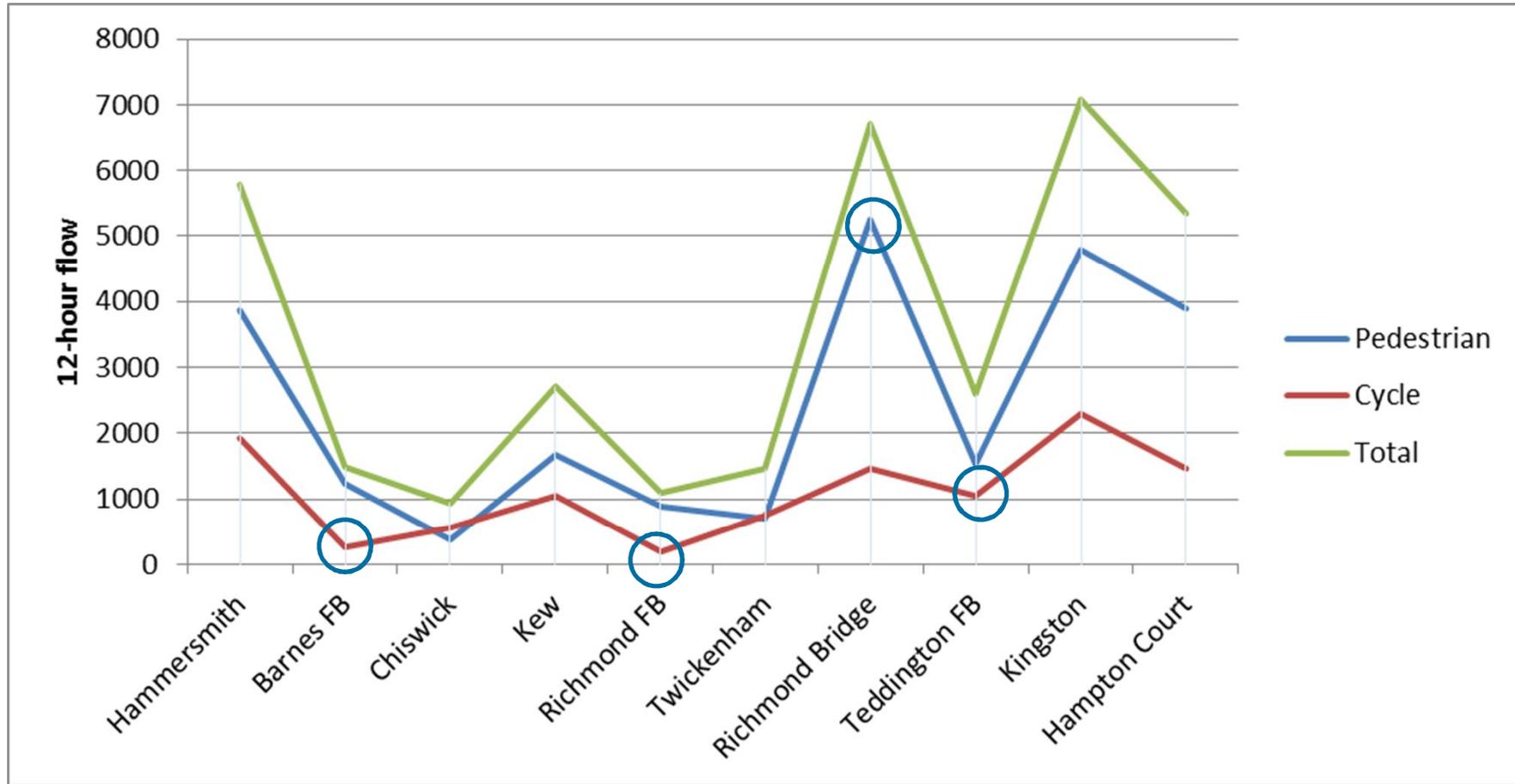
CONTEXT – EXISTING BRIDGES



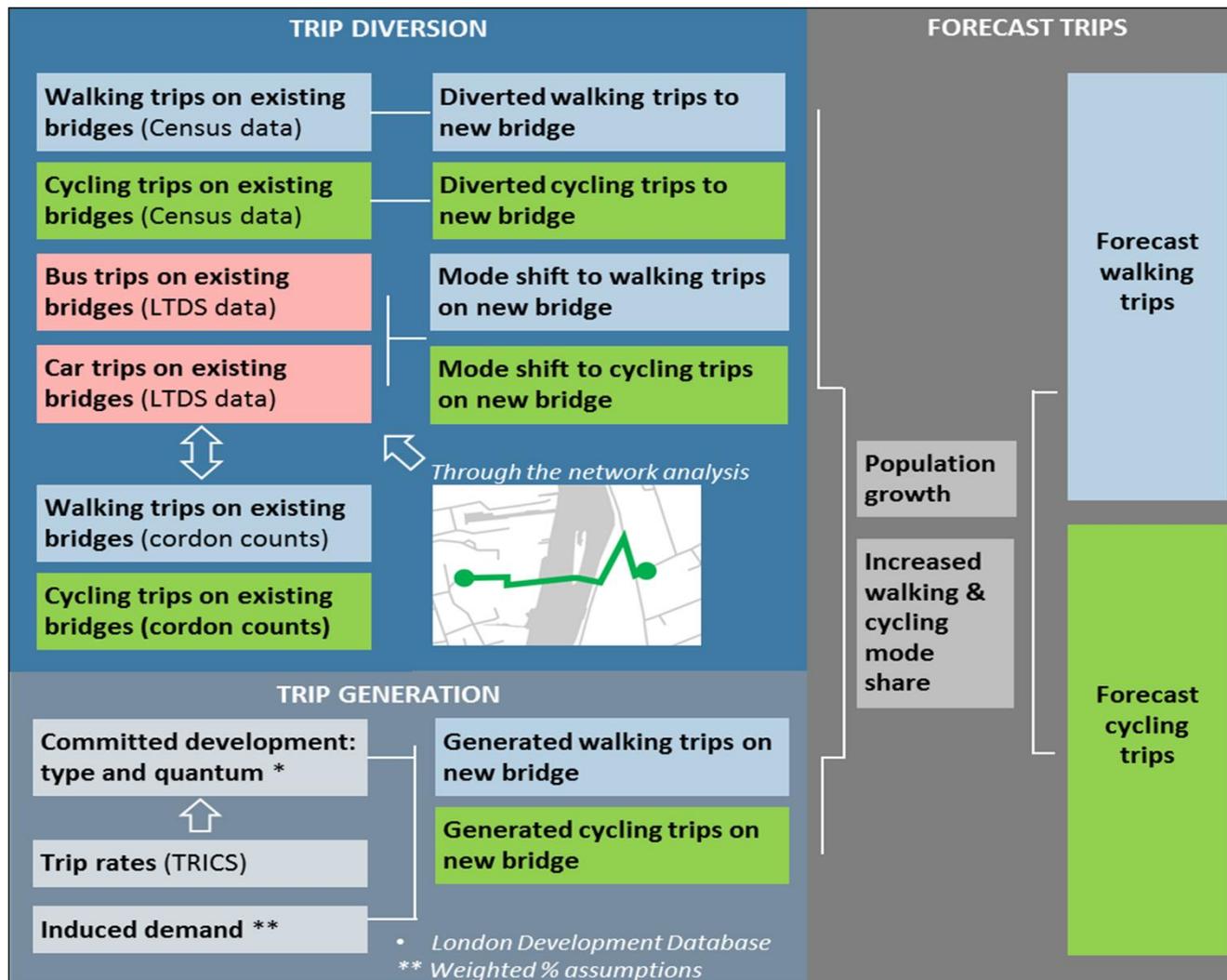
CONTEXT – EXISTING BRIDGES

Bridge	Design type, completion date	Length	Width	Cycle Lane?	Access	Other features	12-Hour Ped. Count	12-Hour Cycle Count	Total count
Hammersmith Bridge	Suspension Bridge, 2 piers (1887)	210m	13m	No, on road only	Steps + footway/ road	Narrow traffic lanes, 20000 veh/day	3,872	1,923	5,795
Barnes Footbridge	Deck arch bridge, 2 piers (1895)	124m	2.4m	No, foot bridge only	Steps	Runs alongside railway bridge	1,223	256	1,479
Chiswick Bridge	Deck arch bridge, 2 piers (1933)	185m	21m	Yes - shared with pedestrians	Steps + shared use path	40,000 veh/day	382	554	937
Kew Bridge	Arch, 2 piers (1903)	360m	23m	Yes - shared with pedestrians	Steps + shared use path	-	1,665	1,041	2,706
Richmond Footbridge	Deck arch bridge, 3 piers (1894)	76m	8m	No, foot bridge only	Steps	Split into two 2m walkways	892	200	1,092
Twickenham Bridge	Arch, 2 piers (1933)	118m	20m	Yes - shared with pedestrians	Steps + shared use path	-	706	750	1,456
Richmond Bridge	Stone arch bridge, 4 piers (1777)	91m	11m	No, on road only	Steps + footway/ road	Narrow traffic lanes, 35,000 veh/day	5,258	1,457	6,715
Teddington Footbridge	Suspension, single span (1889)	100m	3m	No, foot bridge only	Steps + ramps	-	1,544	1,042	2,585
Kingston Bridge	Stone Arch, 4 piers (1828)	116m	24m	Yes – shared with pedestrians	Steps + shared use path	50,000 veh/day	4,781	2,302	7,084
Hampton Court Bridge	Concrete Arch, 2 piers (1933)	97m	21m	Yes – shared with pedestrians	Road	-	3,899	1,457	5,356

CONTEXT – EXISTING DEMAND

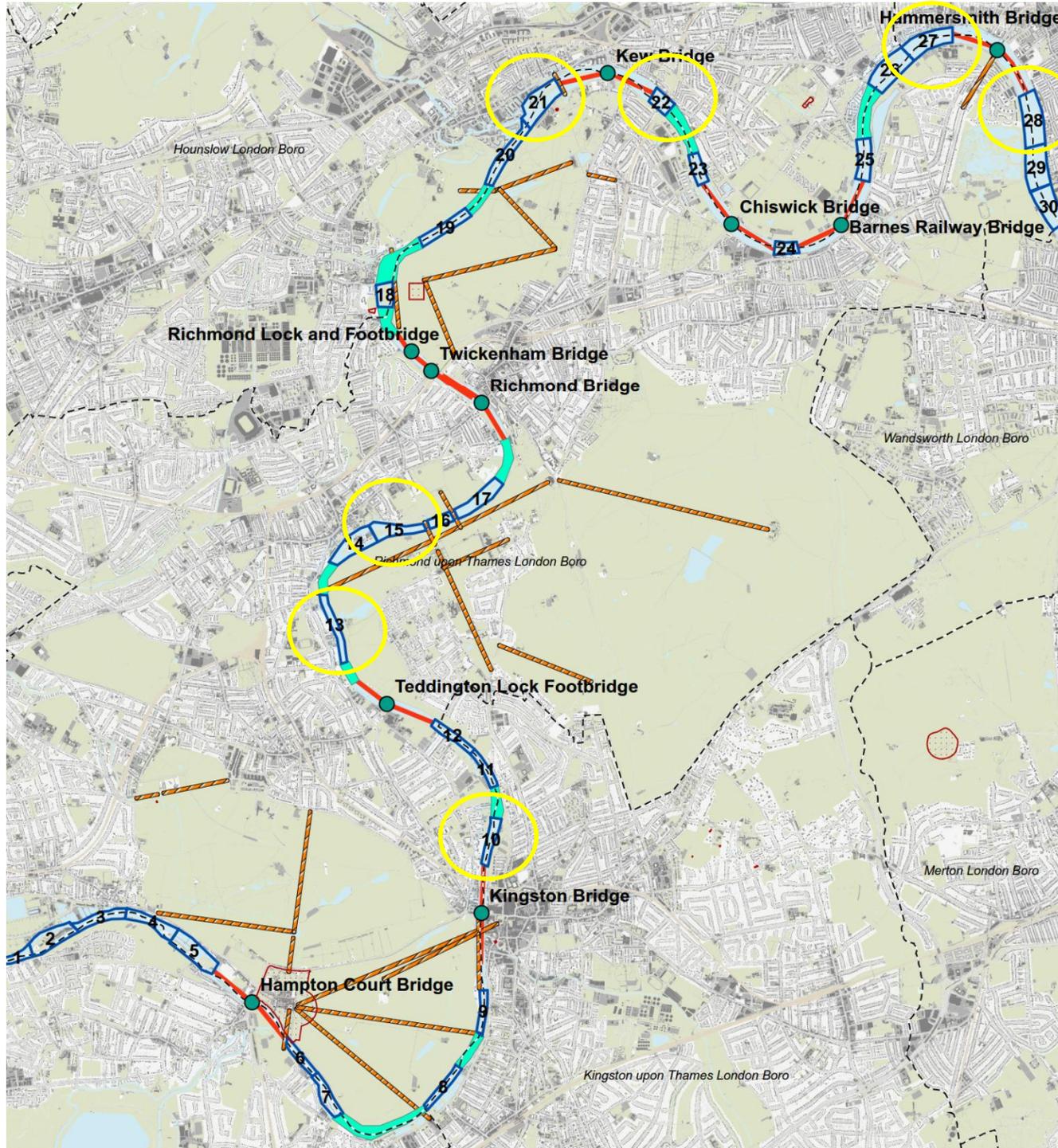


WALKING AND CYCLING DEMAND - APPROACH



- Key assumptions made regarding demand, including 2km/8km catchment, no mode shift from tube/rail, mode shift targets cycling/walking
- The scale of development is relatively low, with around 2,000 residential units, 26,000sqm education, 90,000sqm office and 25,000sqm retail space planned within a 2km catchment of the bridges. The largest residential development in relatively close proximity is 910 units, which is located about 1km from bridge 21b

SHORTLISTED SITES



SHORTLISTED SITES DISCOUNTED

Bridge 10a

650m north of Kingston Bridge

Critical issues

- Compulsory purchase of prestige houses required to accommodate ramps and connection to the main road at west side of the bridge.
- No major route or Public Right of Way connection to west.

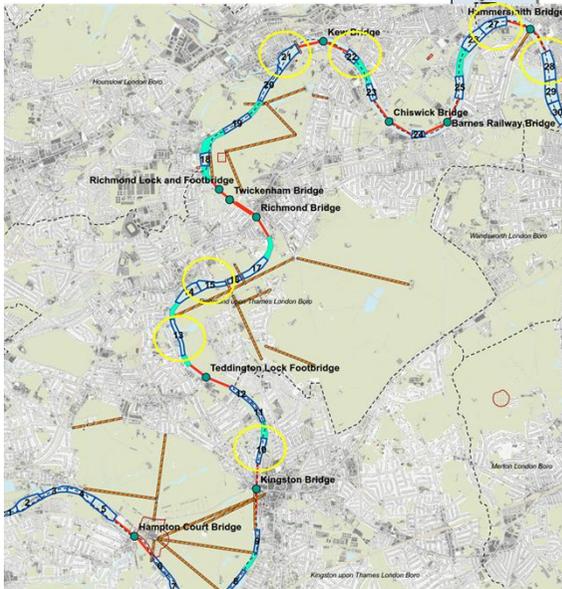


Bridge 10b

1100m north of Kingston Bridge

Critical issues

- Major impacts on adjacent boathouse (Grade 2 listed structure).

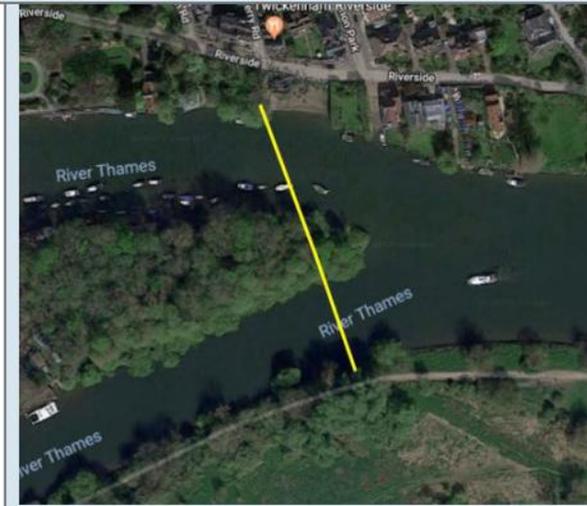


Bridge 15a

2.1km south of Richmond Bridge

Critical issues

- Difficult to gain addition height to the north of bridge to avoid high risk flood area.
- Northern landing site is within private gardens and insufficient land available for ramp. Adjacent access to Twickenham Yacht Club
- Conservation area, wildlife/habitat on Eel Pie Island
- High flood risk area to south of bridge

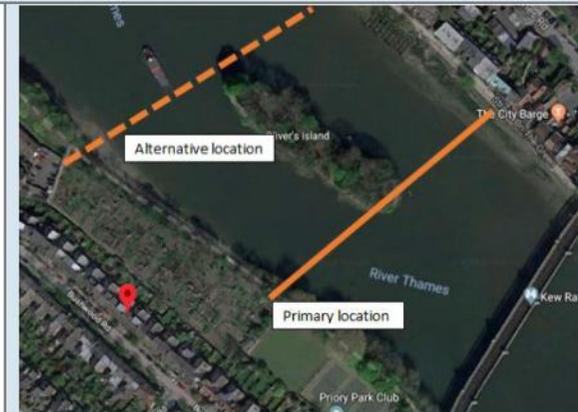


Bridge 22

500m east of Kew Bridge

Critical issues

- Use of allotment land required to south side. Compulsory purchase of residential properties needed to connect to Bushwood Road, or need use of Priory Park Tennis Club land to access Forest Road.
- Compulsory purchase of residential property required on north side to provide adequate access to Thames Road.
- Likely rights to light and intrusion issues with bridge landing to north side.

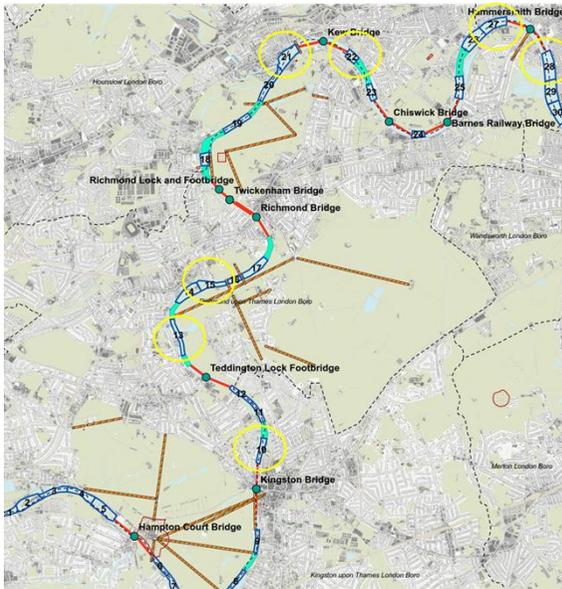


Bridge 28

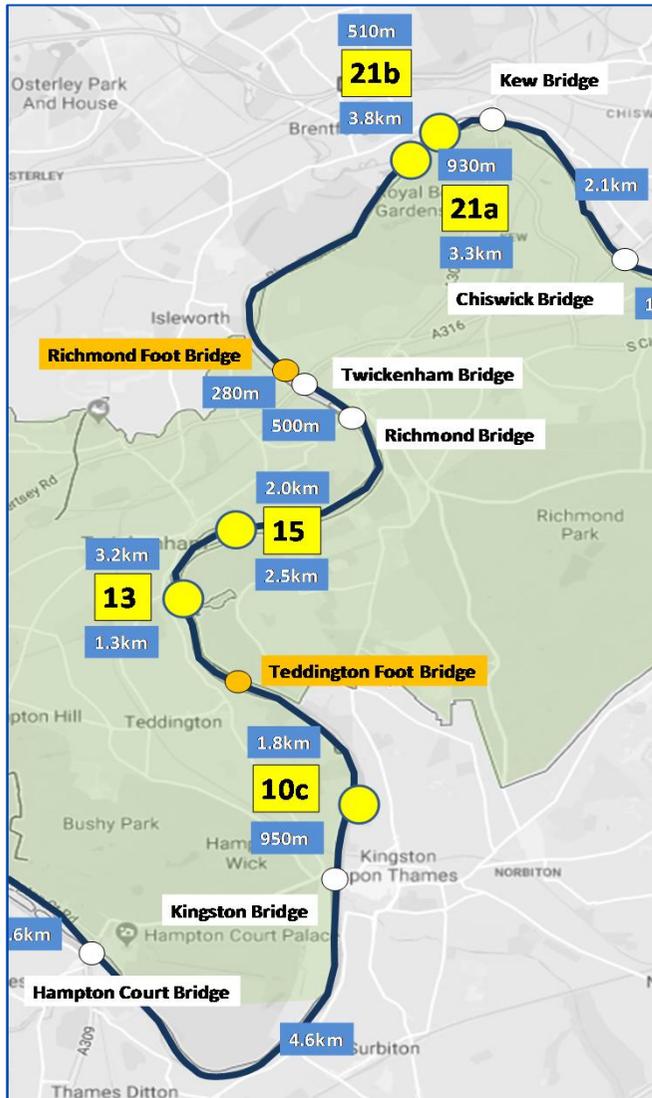
670m south of Hammersmith Bridge

Critical issues

- Compulsory purchase of residential property required on east side to provide adequate access to Rainville Road.
- Lack of existing direct access from bridge landing sites at north and south to existing road network.
- Alternative site to north (shown below) provides good landing site to west on 'Metropolitan Open Land', with direct access to local network. However, similar constraints to other locations in terms of lack of through route to network. New development to the east presents even more of a constraint.



SHORTLISTED BRIDGE LOCATIONS - DEMAND

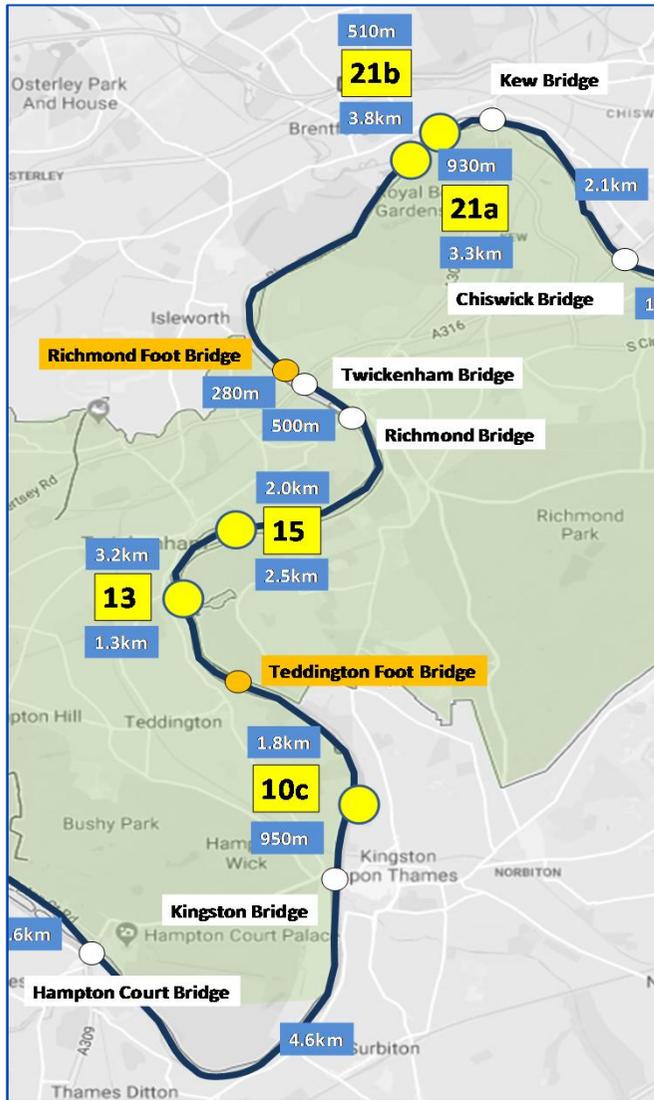


	Hammersmith	Barnes FB	Chiswick	Kew	Richmond FB	Twickenham	Richmond	Teddington FB	Kingston	Hampton Court	Total % diversion
% Diversion walking to new bridges											
Bridge 10c	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.0	-10.2	0.0	-16.2
Bridge 13	0.0	0.0	0.0	0.0	-1.8	-0.5	-10.5	-44.8	-1.0	0.0	-58.7
Bridge 15	0.0	0.0	0.0	0.0	-4.3	-4.1	-21.4	-24.1	-4.6	0.0	-58.5
Bridge 21a	0.0	0.0	0.0	-10.9	-0.6	0.0	0.0	0.0	0.0	0.0	-11.5
Bridge 21b	0.0	-3.1	-0.6	-41.5	-1.2	0.0	0.0	0.0	0.0	0.0	-46.4
% Diversion cycling to new bridges											
Bridge 10c	0.0	0.0	0.0	0.0	0.0	-0.5	0.0	-11.0	-7.4	0.0	-19.0
Bridge 13	0.0	0.0	0.3	-0.2	-1.5	-1.1	-9.6	-37.9	-0.2	0.0	-50.3
Bridge 15	0.0	0.0	0.3	-1.4	-7.1	-4.4	-18.9	-22.8	-5.1	0.0	-59.4
Bridge 21a	0.0	0.0	0.0	-11.3	-2.2	0.0	-0.3	0.0	0.0	0.0	-13.7
Bridge 21b	0.0	-3.2	-1.1	-22.7	-2.5	-0.5	0.0	0.0	0.0	0.0	-30.0

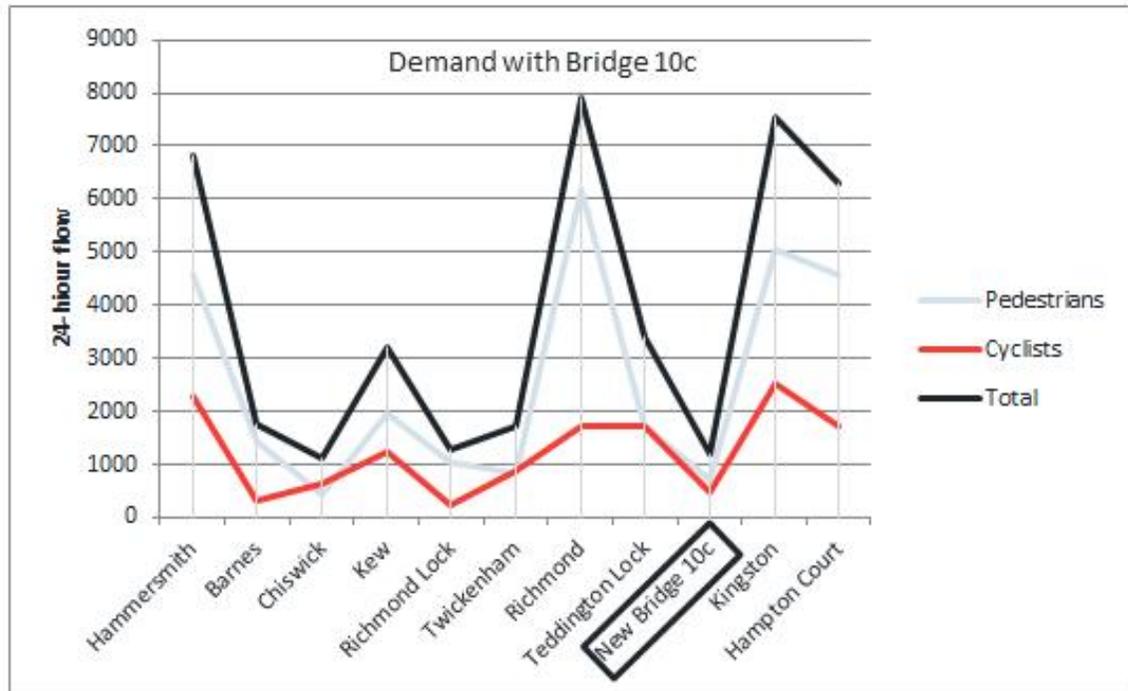
Bridges adjacent to new bridge

	Bridge 10c		Bridge 13		Bridge 15		Bridge 21a		Bridge 21b		Total
	Walking	Cycling	Walking	Cycling	Walking	Cycling	Walking	Cycling	Walking	Cycling	
Trip diversion (24-hr flow)											
Walking	683		1547		2097		220		872		5419
Cycling		340		649		813		148		306	2256
Bus	30	41	0	87	0	177	0	11	44	162	552
Car	5	83	0	152	0	163	0	125	0	250	778
Trip generation (24-hr flow)											
Development	0	0	30	1	16	16	24	8	84	10	189
Induced	14	9	63	36	106	58	5	6	20	15	332
Total	732	473	1640	924	2219	1227	248	298	1020	743	9525
Combined Total Walking & Cycling	1205		2564		3446		546		1763		

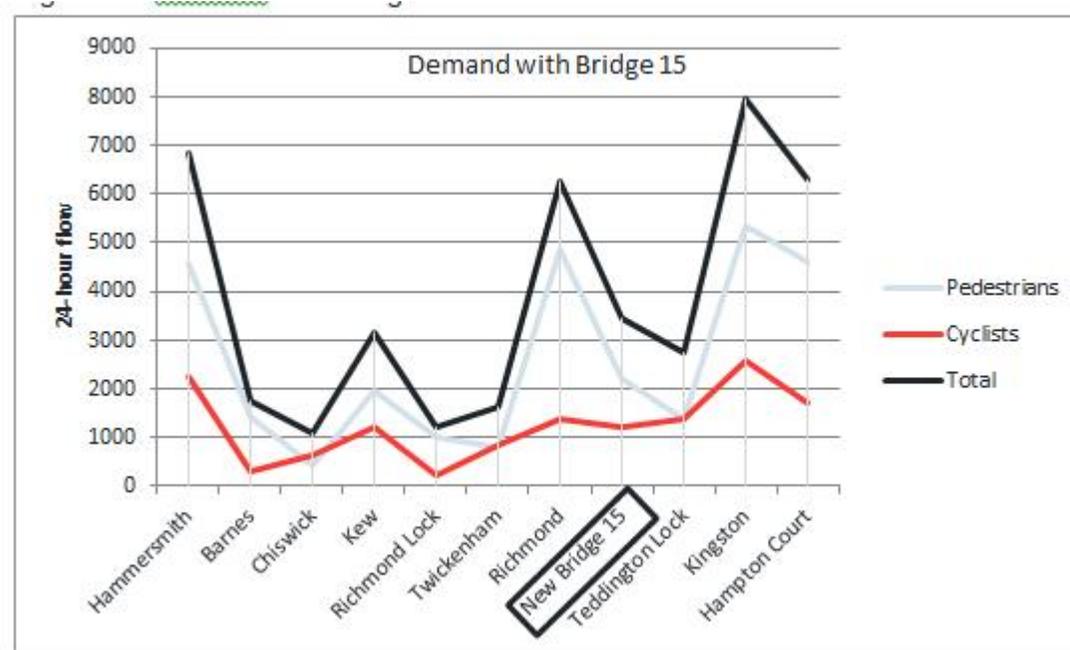
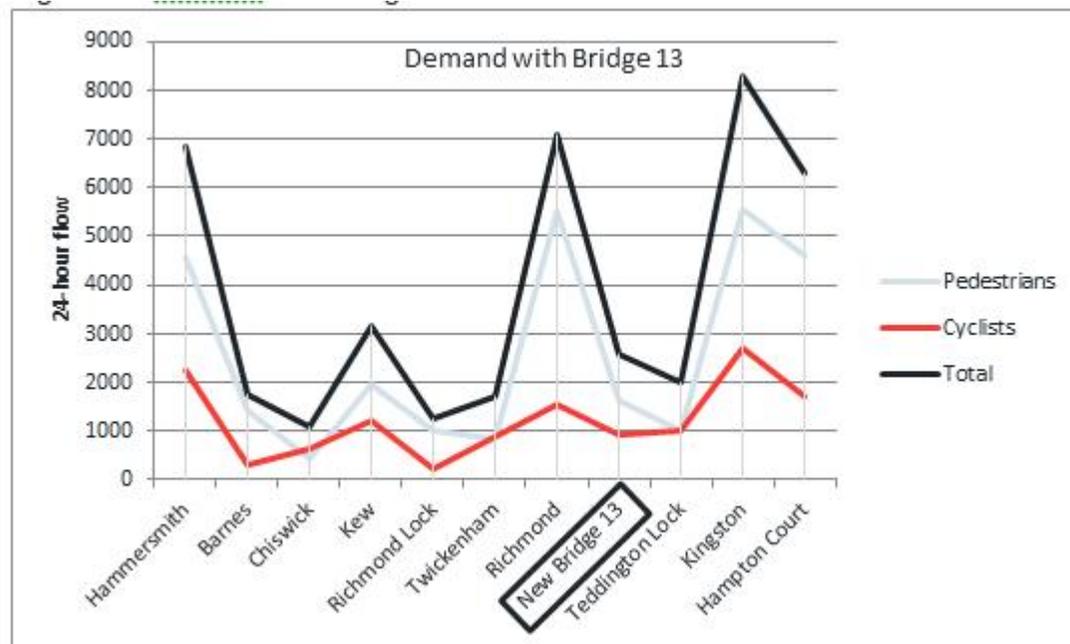
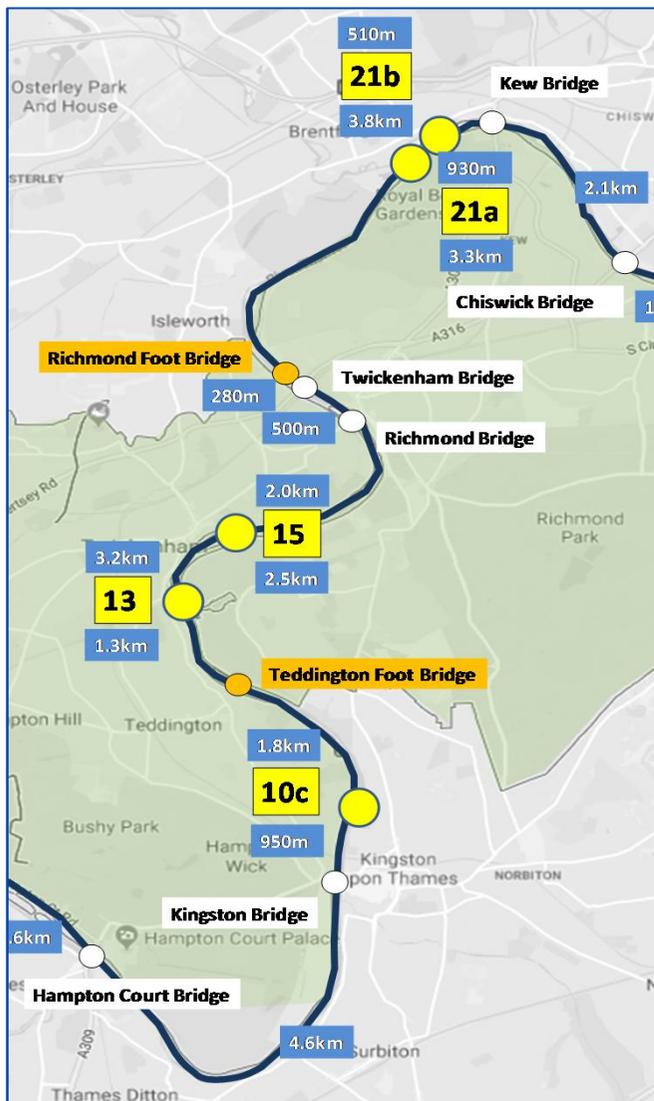
DEMAND COMPARED TO EXISTING BRIDGES



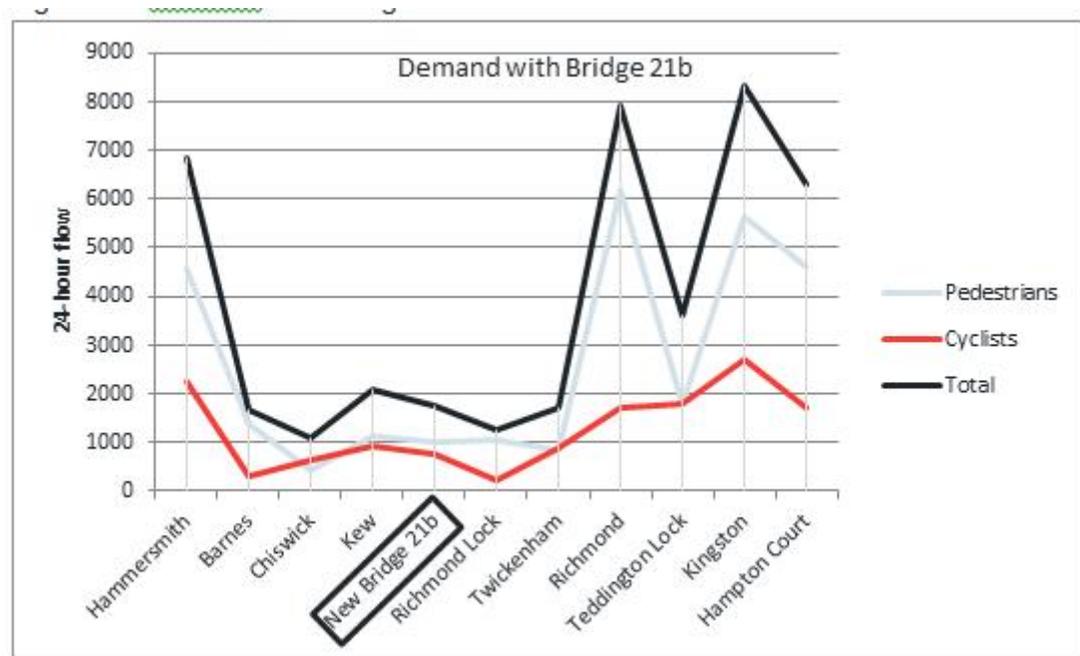
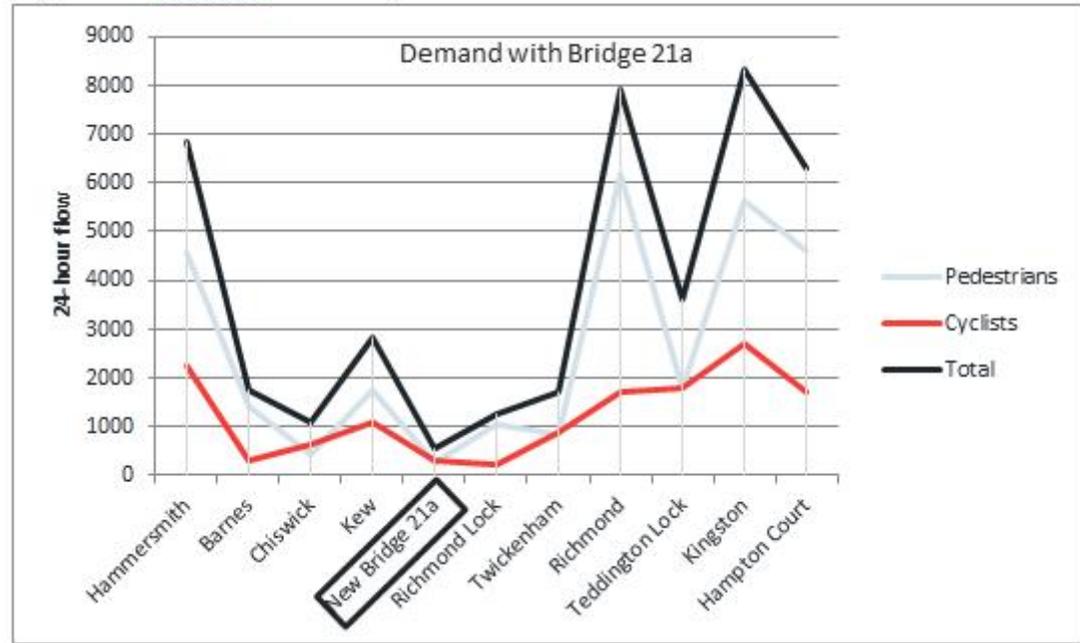
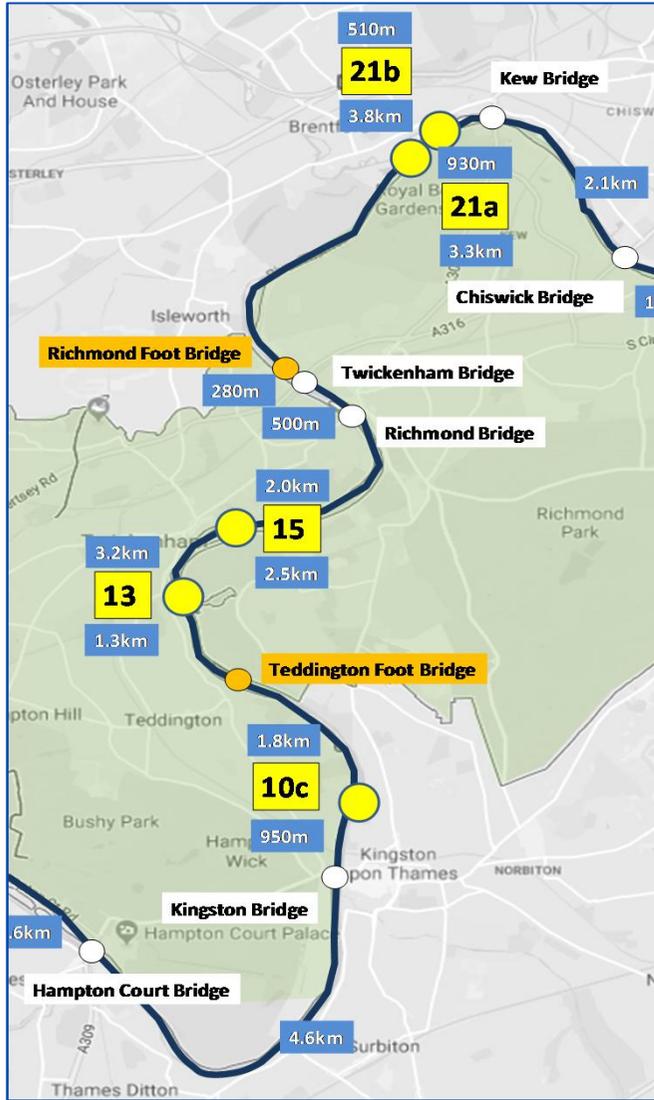
- 1. Bridge 15 – 3446 pedestrian and cycle trips, 5th busiest bridge
- 2. Bridge 13 – 2564 pedestrian and cycle trips, 6th busiest bridge
- 3. Bridge 21b – 1763 pedestrian and cycle trips, 7th busiest bridge
- 4. Bridge 10c – 1205 pedestrian and cycle trips, 10th busiest bridge
- 5. Bridge 21a – 546 pedestrian and cycle trips, 11th busiest bridge



DEMAND COMPARED TO EXISTING BRIDGES



DEMAND COMPARED TO EXISTING BRIDGES

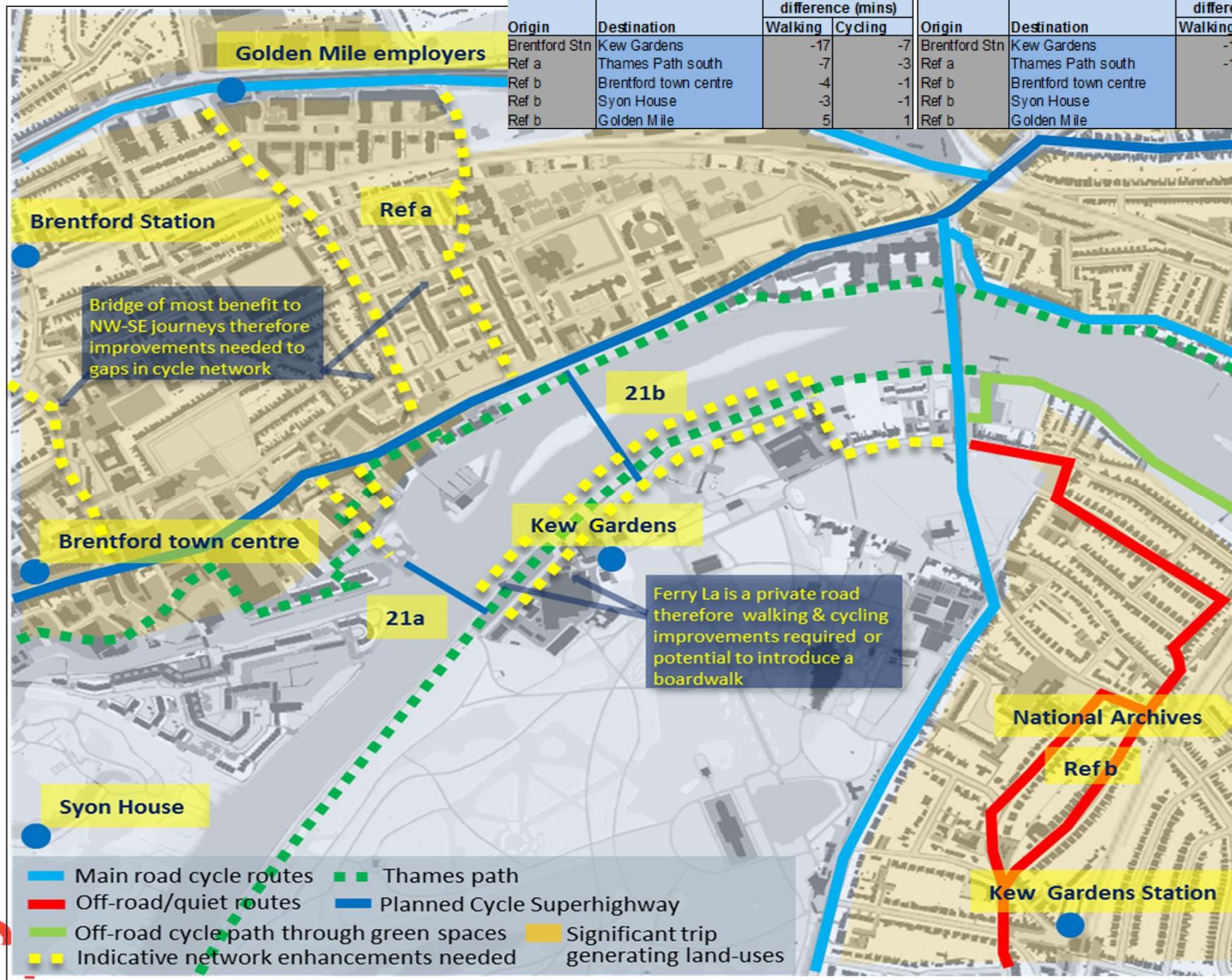


ACCESSIBILITY – BRIDGES 21A & 21B

Table 7.1 Bridge 21a: journey time difference (mins)

Table 7.2 Bridge 21b: journey time difference (mins)

Origin	Destination	Journey time difference (mins)		Origin	Destination	Journey time difference (mins)	
		Walking	Cycling			Walking	Cycling
Brentford Stn	Kew Gardens	-17	-7	Brentford Stn	Kew Gardens	-10	-5
Ref a	Thames Path south	-7	-3	Ref a	Thames Path south	-17	-6
Ref b	Brentford town centre	-4	-1	Ref b	Brentford town centre	-5	-1
Ref b	Syon House	-3	-1	Ref b	Syon House	-4	-1
Ref b	Golden Mile	5	1	Ref b	Golden Mile	-1	0



ACCESSIBILITY – BRIDGES 21A & 21B

Figure 7.2 Walking journey time contours

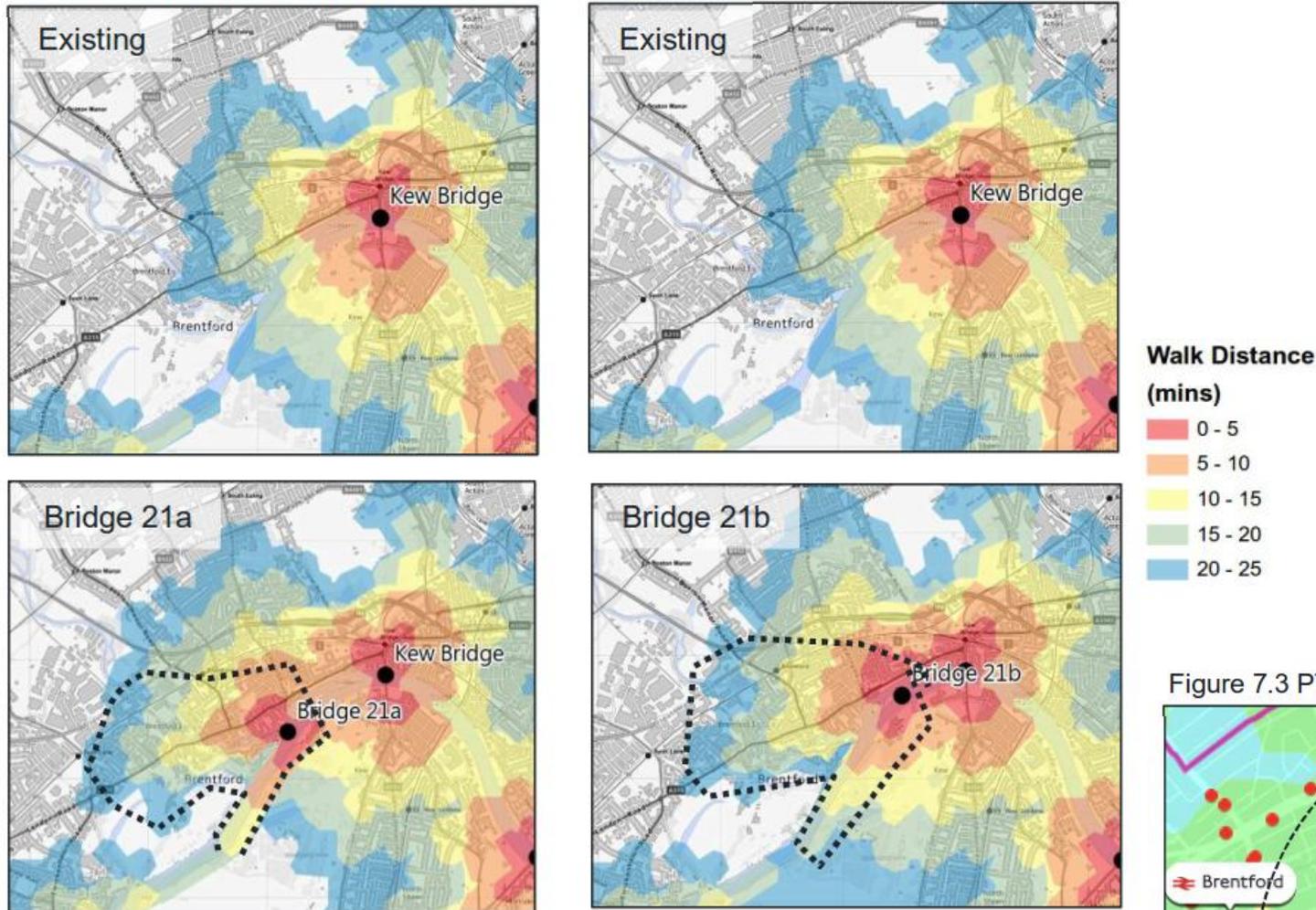


Figure 7.3 PTAL map



ACCESSIBILITY – BRIDGES 13 & 15

Table 7.3 Bridge 13: journey time difference (mins)

Origin	Destination	Journey time difference (mins)	
		Walking	Cycling
Ref b	Strawberry Hill Station	-19	-6
Ref c	Ham Lands	-27	-7
Ref c	Richmond Park	-10	-3
Ref b	Twickenham town centre	-22	-7
Ref b	Twickenham Station	-29	-8

Table 7.4 Bridge 15: journey time difference (mins)

Origin	Destination	Journey time difference (mins)	
		Walking	Cycling
Ref a	Ham Lands	-33	-8
Ref a	Thames Path south	-38	-11
Ref a	Richmond Park	-8	-3
Ref b	Twickenham town centre	-23	-7
Ref b	Twickenham Station	-24	-7



ACCESSIBILITY – BRIDGES 13 & 15

Figure 7.5 Walking journey time isochrones

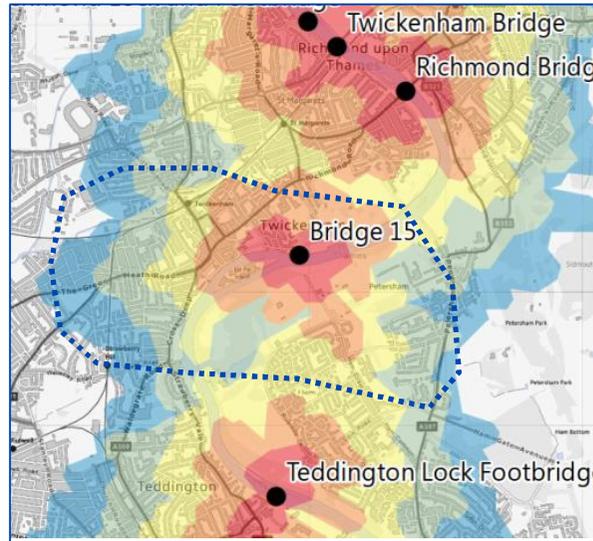
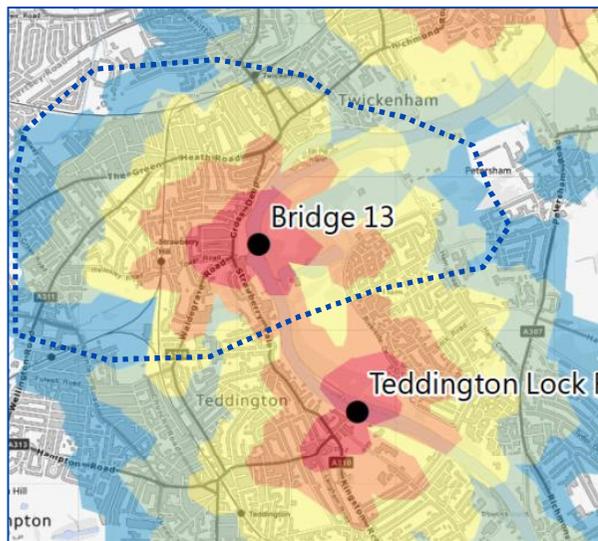
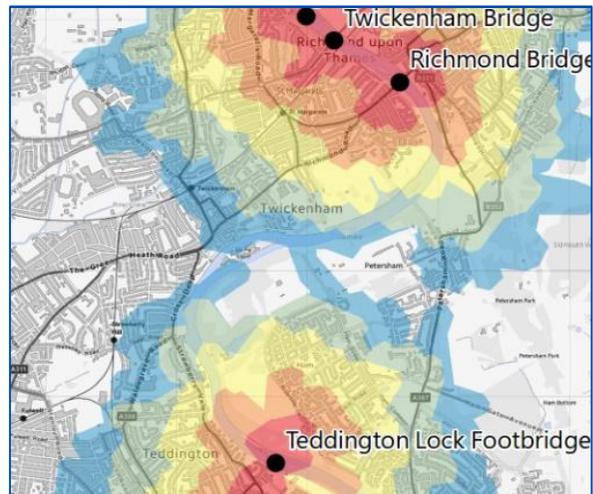
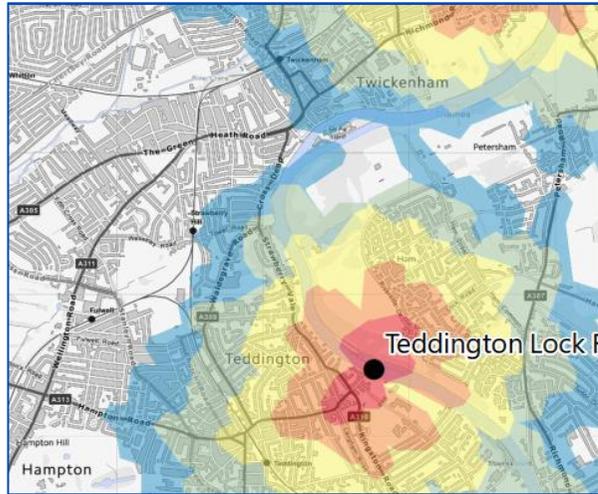
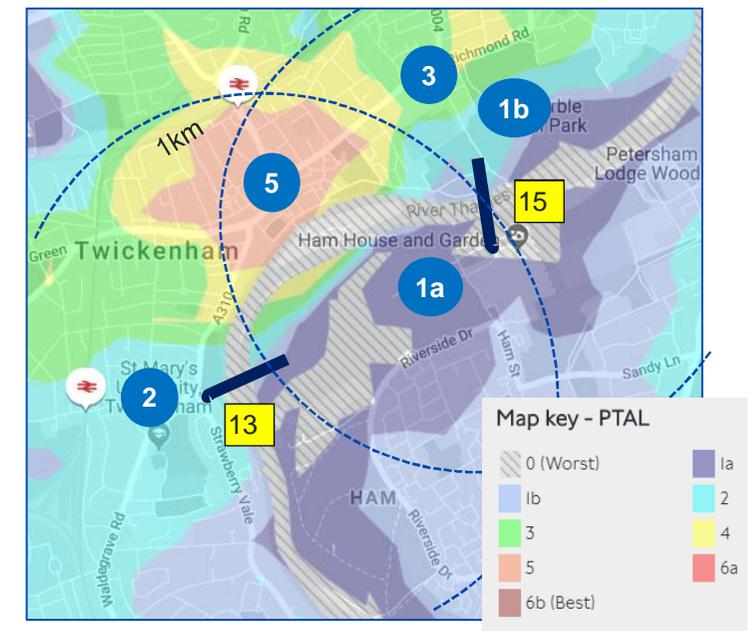


Figure 7.6 PTAL map



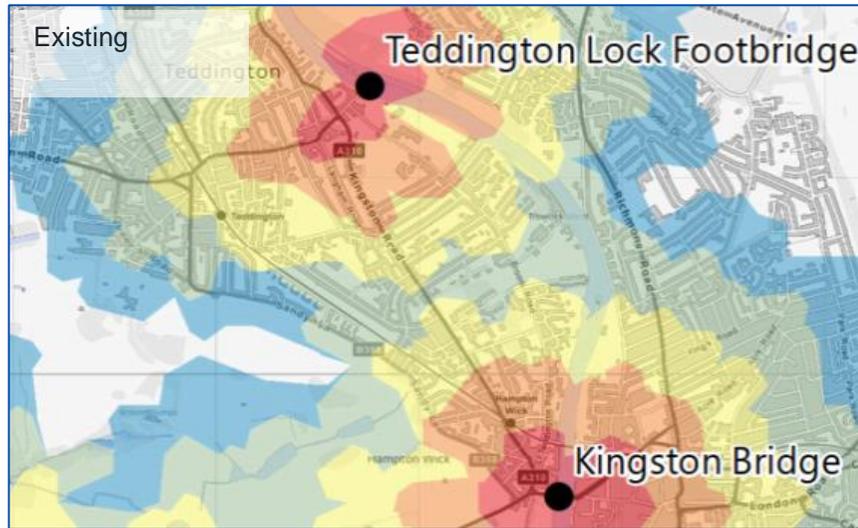
ACCESSIBILITY – BRIDGES 10C

Origin	Destination	Journey time difference (mins)	
		Walking	Cycling
Ref a	Richmond Park	-5	-1
Ref a	Sainsbury's	3	-1
Ref b	Hampton Wick	0	0
Ref b	St Mary's University	-9	-3



ACCESSIBILITY – BRIDGES 10C

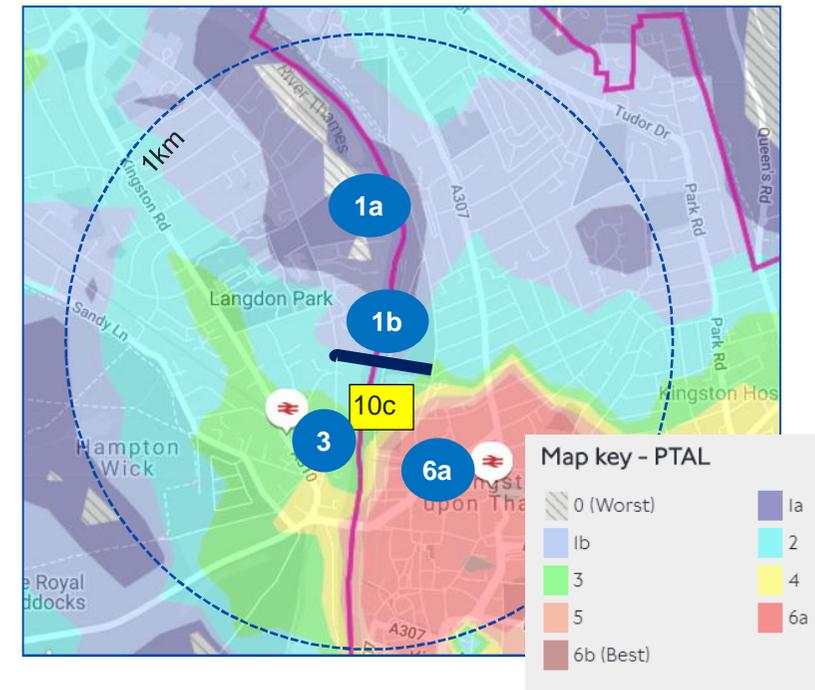
Figure 7.8 Walking journey time isochrones



Walk Distance (mins)

- 0 - 5
- 5 - 10
- 10 - 15
- 15 - 20
- 20 - 25

Figure 7.9 PTAL map



BRIDGE DESIGN

Figure 8.3 Bridge design assumptions

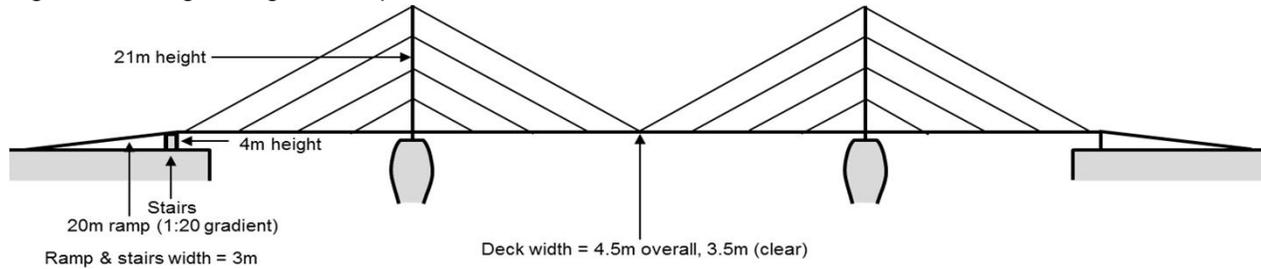


Figure 8.1 Bridge design types

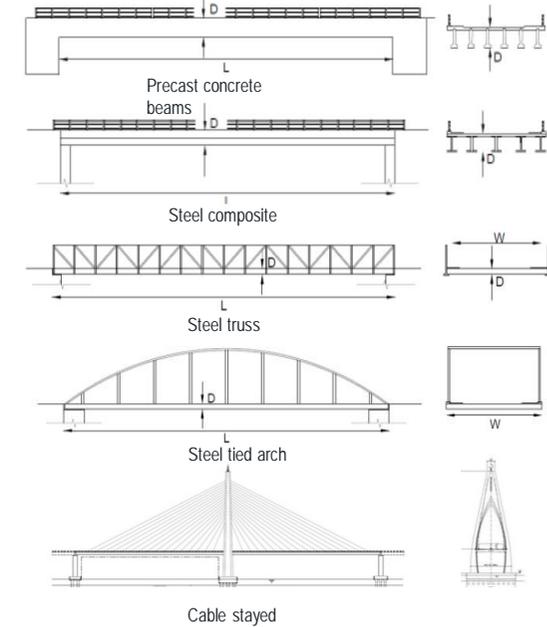


Table 8.1 Bridge costs

	Bridge 10c	Bridge 13	Bridge 15	Bridge 21a	Bridge 21b
Length	110m	90m	90m	125m	180m
Construction cost (£)*					
Bridge build	6,635,000	8,185,000	8,185,000	6,972,500	10,390,000
20% risk	927,000	837,000	837,000	994,500	1,278,000
10% design	463,500	418,500	418,500	497,250	639,000
Total	8,025,500	9,440,500	9,440,500	8,464,250	12,307,000
Maintenance cost (£) (p.a.)**	21,639	20,723	20,723	26,212	26,212
Connecting network link (£)	0	100,000	0	0	0
PLA cost (£) (p.a)	40,388	33,262	33,262	65,328	65,328

* 2018 price base

** Indicative annual cost, averaged out over bridge lifespan (2010 prices)

LANDING SITE CONSIDERATIONS

Site specific assessment of the constraints and risks for each location, which include the following:

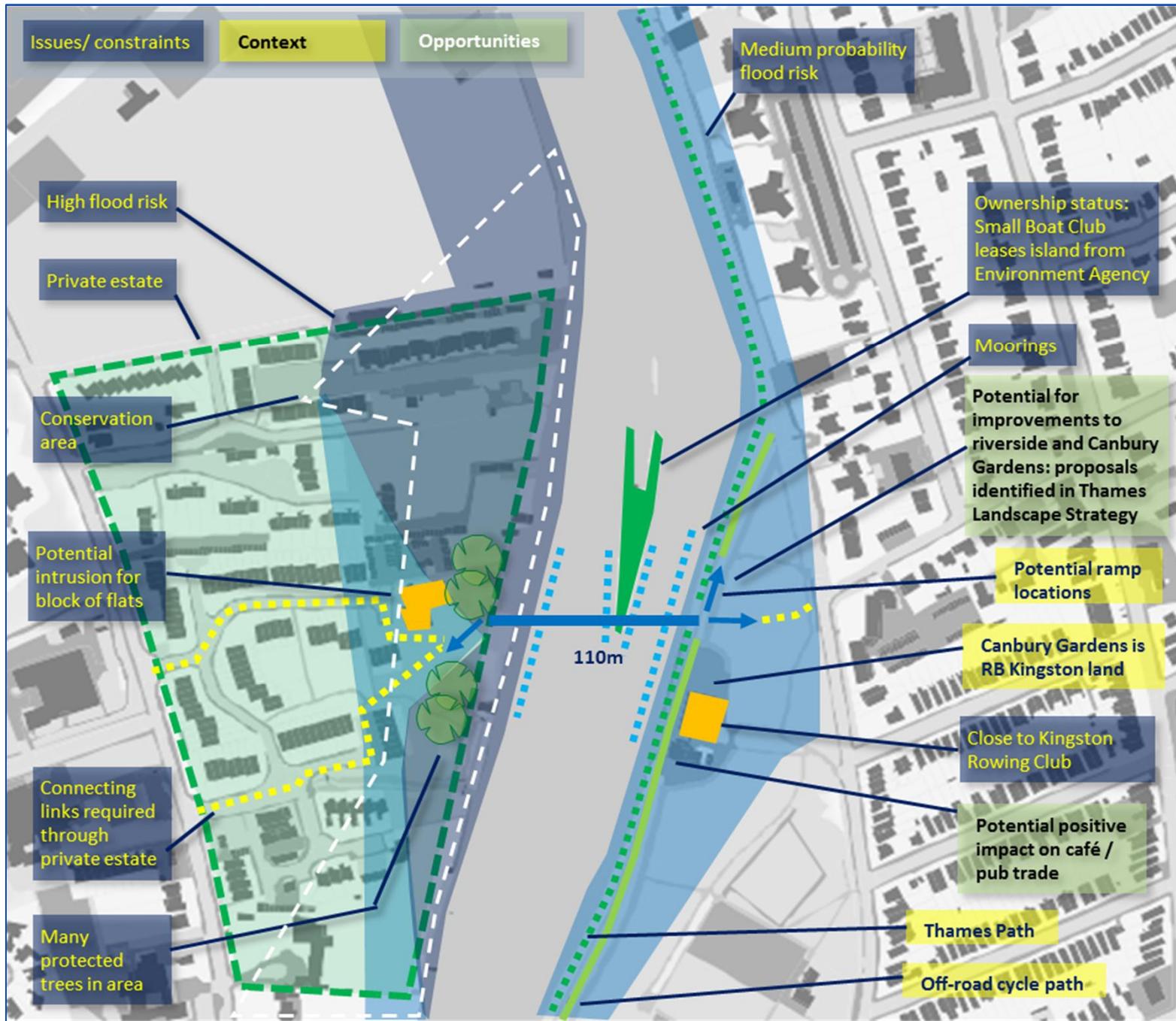
- Land ownership
- Network connections
- Aesthetic and heritage sensitivities
- Flood risk
- Moorings
- Conservation areas
- Protected trees
- Visual intrusion
- Opportunities
- Potential for commercial activity and/or development
- Local area enhancement

LANDING SITE CONSIDERATIONS – BRIDGE 10C

Figure 8.5 Bridge 10c location: views from Canbury Gardens



LANDING SITE CONSIDERATIONS – BRIDGE 10C



LANDING SITE CONSIDERATIONS – BRIDGE 13

Figure 8.7 Bridge 13 location



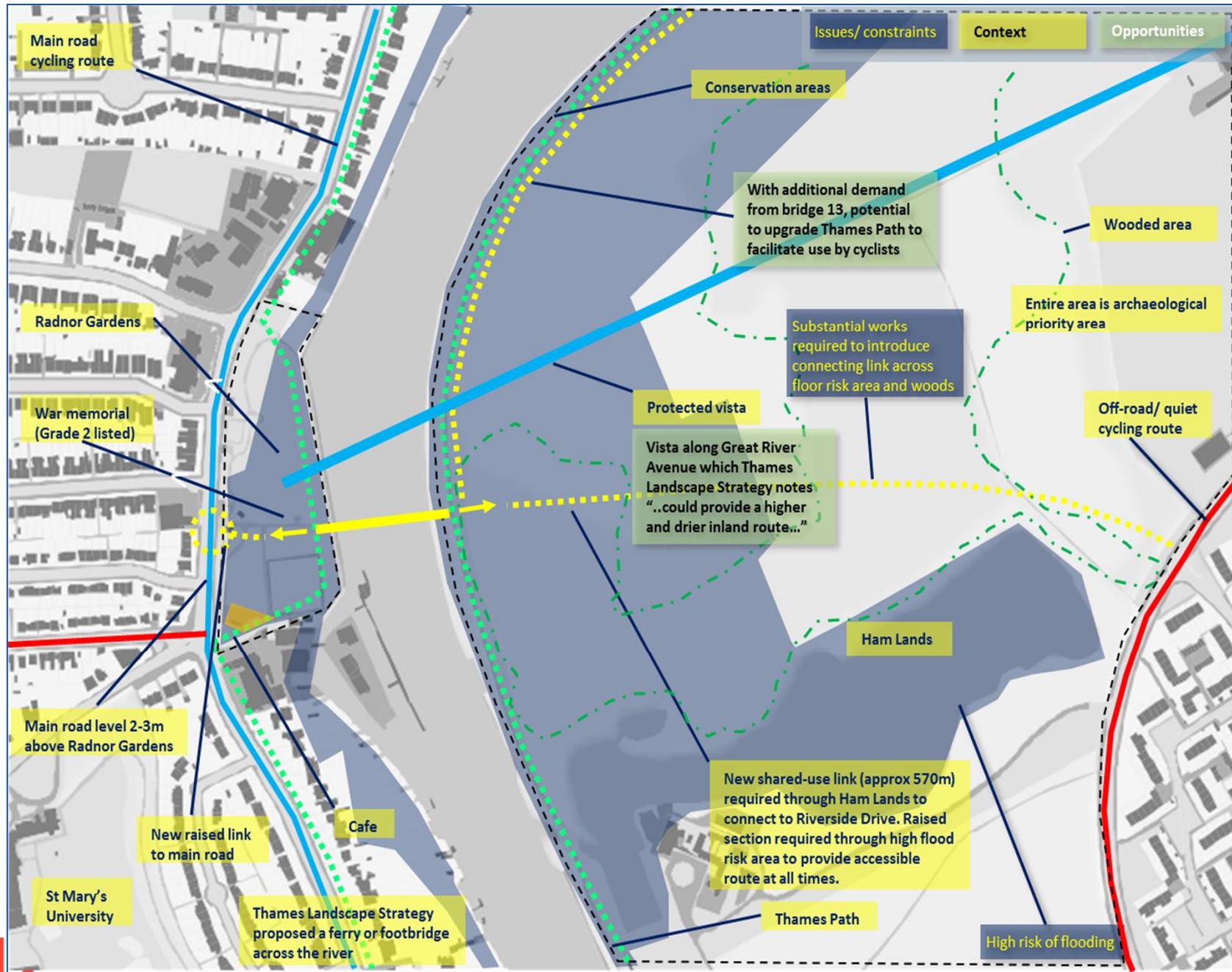
View east through Ham Lands where new shared use path is required to connect to Riverside Drive



View north along Thames Path (east side)

LANDING SITE CONSIDERATIONS – BRIDGE 13

Figure 8.6 Bridge13 landing site considerations



LANDING SITE CONSIDERATIONS – BRIDGE 15

Figure 8.9 Bridge 15 location

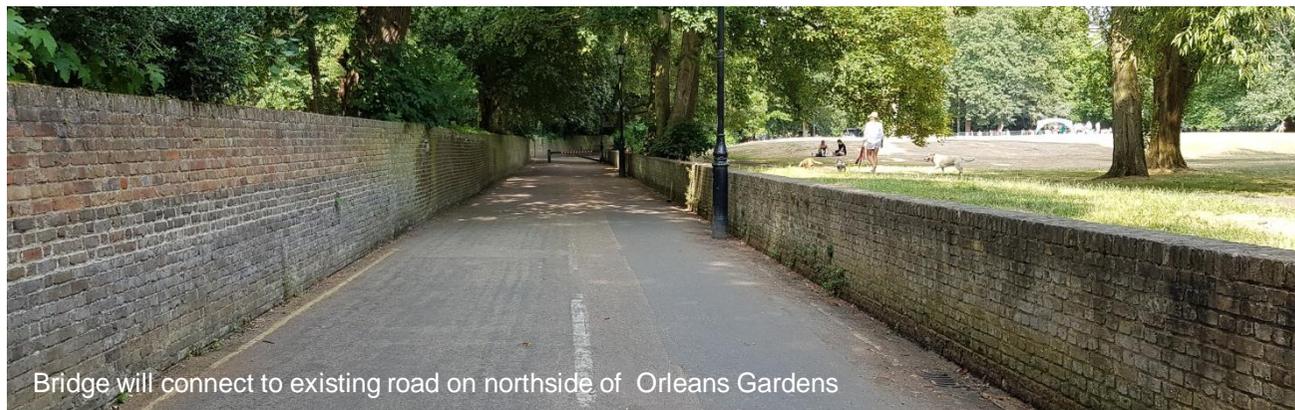
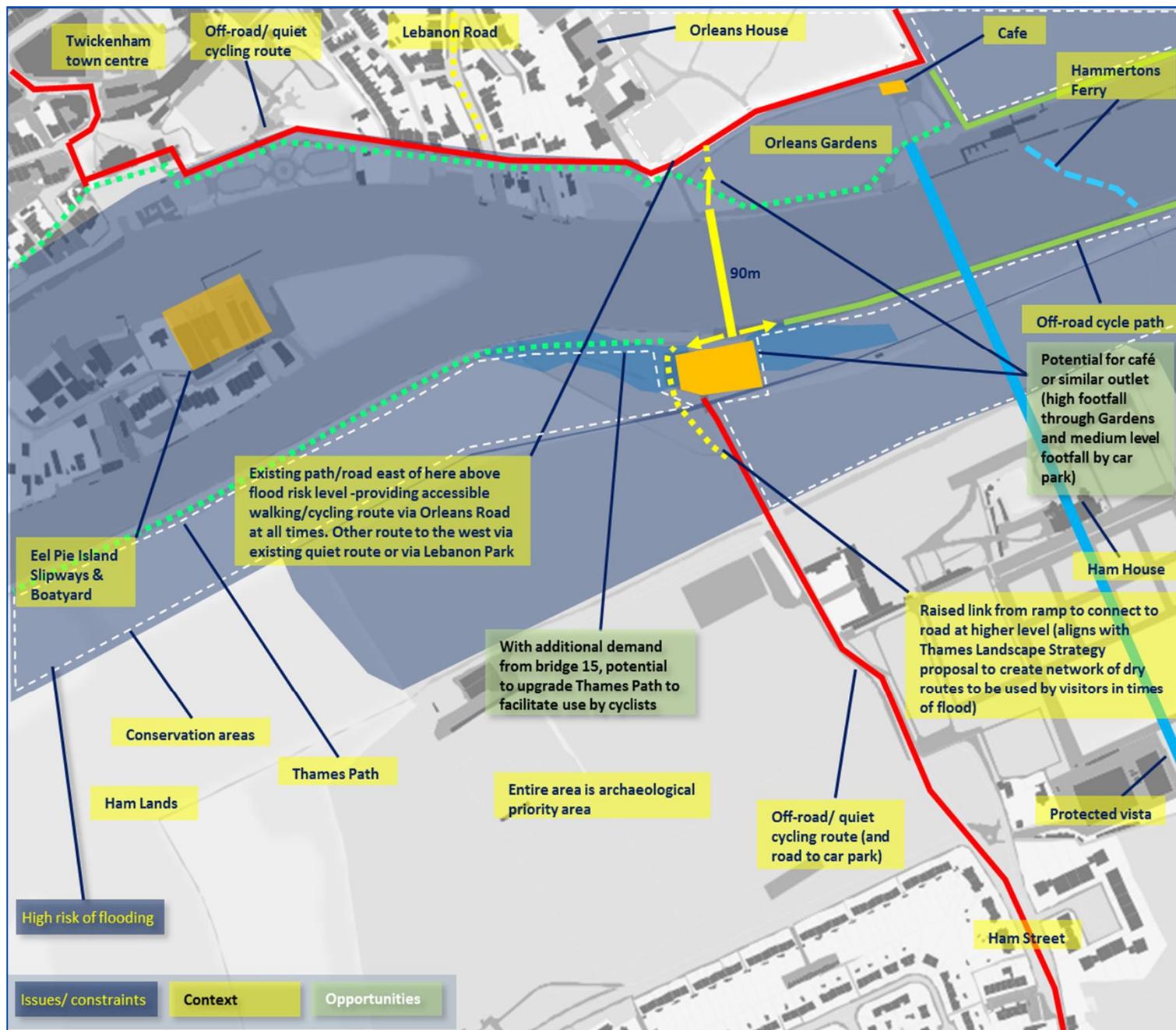


Figure 8.10 Bridge 15 location



LANDING SITE CONSIDERATIONS – BRIDGE 15

Figure 8.8 Bridge15 landing site considerations



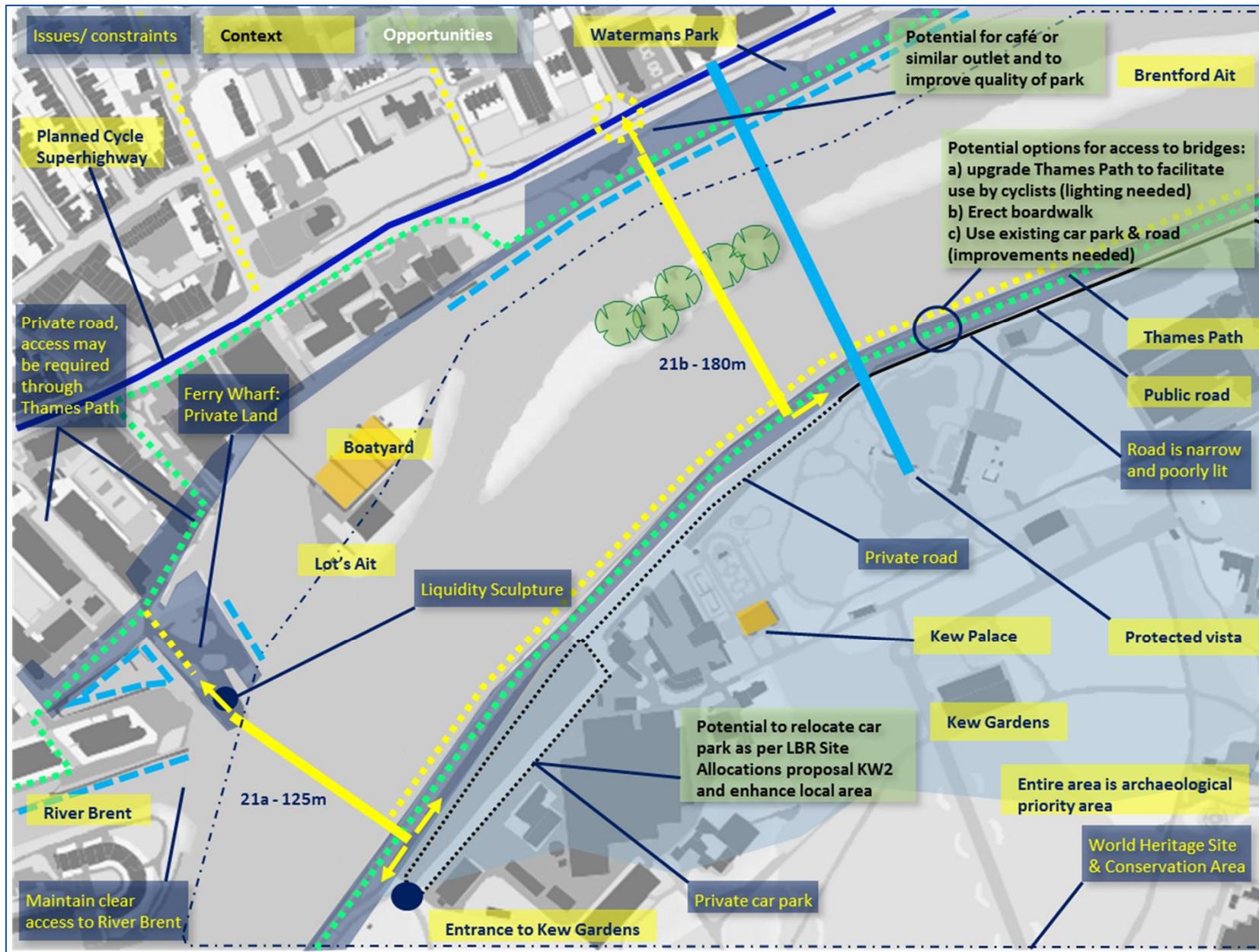
LANDING SITE CONSIDERATIONS – BRIDGE 21A & 21B

Figure 8.12 Bridge 21a location



LANDING SITE CONSIDERATIONS – BRIDGE 21A & 21B

Figure 8.11 Bridge21a and 21b landing site considerations



LANDING SITE CONSIDERATIONS – SUMMARY

Table 8.2 Summary of landing site constraints, issues and opportunities

Constraints and Issues	Opportunities
Bridge 10c	
<ul style="list-style-type: none"> ▪ West side landing site is on private land ▪ West side landing site is within an area with high probability of flood risk ▪ West side landing site has trees which are protected and is within a conservation area ▪ Central island owned by EA and leased to the Small Boat Club (since the 1960's) ▪ Less critical are visual intrusion from nearby residential buildings to the west and proximity of moorings 	<ul style="list-style-type: none"> ▪ Potential to improve east riverside and Canbury Gardens ▪ Positive impact on east side café and pub, helping to active the area
Bridge 13	
<ul style="list-style-type: none"> ▪ Substantial new link (approx. 570m) to connect back to the network at Riverside Drive. Will pass through woodland ▪ Initial 200m-300m of link would need to be raised to mitigate for flood risk ▪ Western site is within a conservation area 	<ul style="list-style-type: none"> ▪ The additional demand may justify upgrading the Thames Path to allow cyclists. This will provide a continuous riverside link to Richmond ▪ An alternative access route is along the line of the protected vista along Greater River Avenue ▪ Note: both sides of the bridge are public land

LANDING SITE CONSIDERATIONS – SUMMARY

Bridge 15	
<ul style="list-style-type: none"> On both sides of the river there is a high risk of flooding Southern site is within a conservation area With the introduction of the bridge the sustainability of the Hammerton Ferry operation is likely to be compromised 	<ul style="list-style-type: none"> The additional demand may justify upgrading the Thames Path to allow cyclists. This will provide a continuous cycle path between Kingston and Richmond With the demand generated it may be financially viable for a business to operate a café or similar outlet at the southside bridge landing point The bridge will provide the opportunity to make localised public realm and landscaping improvements in the vicinity of the southern landing location Note: both sides of bridge are public land
Bridge 21a and Bridge 21b	
<ul style="list-style-type: none"> The landing points for both bridges are in areas of high flood risk The landing site for bridge 21a is within Ferry Wharf which is privately owned For bridge 21a it is likely that access to the A315 will be made along the Thames Path and via Goat Wharf. Permission may be required to allow cyclists to use this section of the Thames Path Within Ferry Wharf there is a 6m high artwork called the 'liquidity sculpture'. This will need to be 	<ul style="list-style-type: none"> The introduction of bridge 21b will provide potential to make localised public realm and landscaping improvements in the vicinity of the northern landing site. The additional activity at this location may provide the demand for a café or similar outlet The Thames Path is relatively wide at 3-4m and connects back into Ferry Lane. This has the potential for upgrading to allow cyclists Richmond's Site Allocations Plan contains a proposal to relocate the car park to provide space to introduce a bridge or ferry, and to generally improve the quality of the river frontage
<p>relocated in order to build bridge 21a</p> <ul style="list-style-type: none"> The landing sites for both bridges on the south bank are likely to be located on private land which is owned by Kew Gardens Ferry Lane is quite narrow and poorly lit Bridge 21a crosses Brentford Ait and it likely that a pier will need to be installed on the island to build the bridge Due to the close proximity of the bridges to Kew Gardens, the context sensitive nature will need to be considered in the bridge design The bridges are also within a world heritage site and a conservation area 	

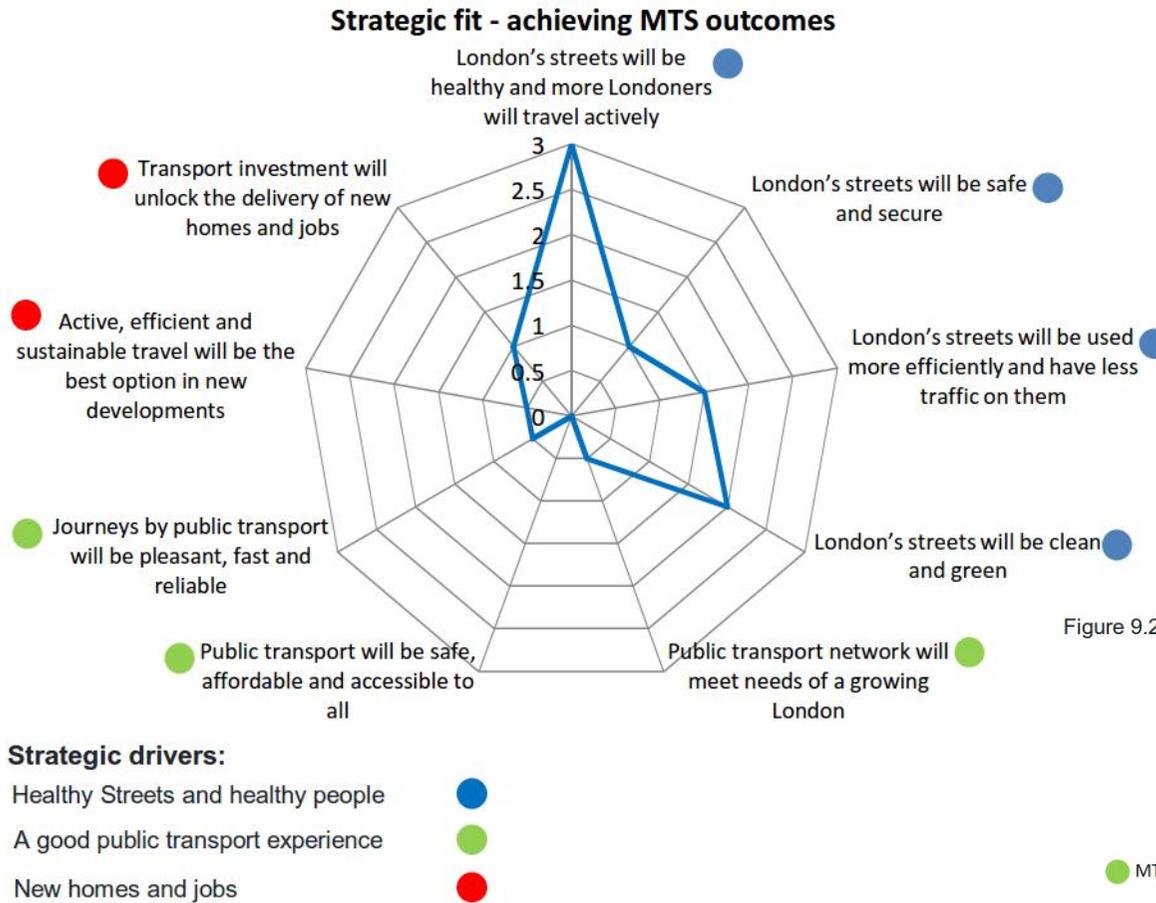
LANDING SITE ASSESSMENT

Table 8.3 Landing site assessment

Ref	Landing Site Considerations - Key Criteria for Stage 2 Review	Criteria Scoring			Bridges					Comments
		RED	AMBER	GREEN	10c	13	15	21a	21b	
1	Land ownership	Not publicly accessible	Public space or a public accessible space one side of bridge	Public space or a public accessible space both sides of bridge						10c - north side private, 21a north side private, 21b south side private
3	Planning areas	Over approved planning areas.	Over planning areas with pending decision or in planning areas where the landing site could be incorporated into design.	Outside any identified planning areas.						Site 21b - Waterman's Park, planning application in to redevelop for moorings
4	Green Spaces	N/A	Not a green space	Is a green space. Assumption that long term improvement can be made to green space and temporary impacts can be mitigated.						
5	Protected vistas, heritage and aesthetic sensitivities	Significant impact	Minor impact	No impact						Thames Strategy (not a formal document) mentions vista from Richmond Hill. 13 - close to protected vista. 15 - Twickenham riverside contains historic residential buildings (not protected). 21b aesthetic sensitivities as close to protected vista.
6	Flood risk	High Probability	Medium Probability	Low or Very Low probability						
7	Moorings and other river uses (e.g. boatyards, rowing clubs)	Significant presence/historical significance	Minor presence/historical significance	No presence/historical significance						10c - moorings on all banks including island
8	Topography	Land drops away on egress from	Landing site at 5-6m say and level from river bank	Landing is high (say above 8m) and/or space to raise ground levels as integrated solution (e.g. parks).						21b - A315 to north of Watermans Park 3-4m above landing point
9	Conservation areas/ Site of Nature Importance	Both side of bridge within these areas	One side of bridge within these areas	Neither side of bridge within these areas						
10	Protected trees	Large number of protected trees	Small number of protected trees	No protected trees						
11	Proximity to residential buildings	< 20m to residential building.	Approx. 20m from building with windows facing landing point	If: a) bridge landing arrives significantly far from a residential area (> 20m); b) is not a residential building; c) there are no windows facing the bridge landing.						
12	Service Utilities	Assumed all landing sites have the same level of complexity.	Assumed all landing sites have the same level of complexity.	Assumed all landing sites have the same level of complexity.						
13	Listed building	The footprint of a listed building forms part of landing site.	Adjacent to listed building	No listed building						
14	Building of townscape merit	N/A	The footprint of a building of townscape merit forms part of landing site.	No building of townscape merit						
15	Requirement for improvements to connecting links	Substantial improvements required	Small-scale improvements required	Very minor improvements required						13- Substantial length new links required through Ham Lands
16	Potential for commercial activity and/or development	No potential	Limited potential	Significant potential						e.g. café potential for 21a 21b north side, 15 northside
17	Potential for local area enhancement	No potential	Limited potential	Significant potential						

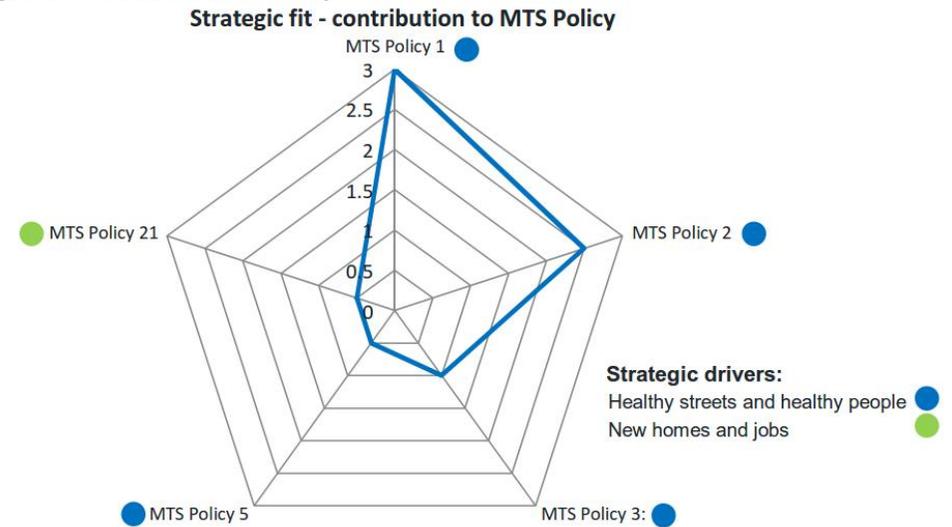
BUSINESS CASE ASSESSMENT

Figure 9.1 Achieving MTS outcomes



Strategic Case

Figure 9.2 Contribution to MTS Policy



Policies:

MTS Policy 1 - Reduce dependency on cars in favour of active, efficient and sustainable modes of travel

MTS Policy 2 - Seek to make London a city where people choose to walk and cycle more often

MTS Policy 3 - Adopt Vision Zero for road danger in London

MTS Policy 21 - Ensure that new homes and jobs in London are delivered in line with the transport principles of Good Growth

MTS Policy 5 - Prioritise space efficient modes of transport to tackle congestion and improve the efficiency of streets for the movement of people and goods

BUSINESS CASE ASSESSMENT - COSTS

Table 9.2 Capital cost of bridges

Cost Item	Cost					Price Base
	Bridge 10c	Bridge 13	Bridge 15	Bridge 21a	Bridge 21b	
Capital Cost	£8,025,500	£9,440,500	£9,440,500	£8,464,250	£12,307,000	2018
CapEx in 2010 Prices	£7,060,161	£8,304,960	£8,304,960	£7,446,137	£10,827,546	2010
CapEx in Market Prices	£8,401,592	£9,882,902	£9,882,902	£8,860,903	£12,884,779	2010
CapEx in Market Prices with Optimism Bias	£12,602,388	£14,824,353	£14,824,353	£13,291,354	£19,327,169	2010
CapEx in Market Prices with Optimism Bias, Discounted	£8,631,952	£10,153,877	£10,153,877	£9,103,856	£13,238,061	2010

Table 9.4 Annual average maintenance costs

Cost Item	Indicative Annual Cost (2010 Prices)				
	Bridge 10c	Bridge 13	Bridge 15	Bridge 21a	Bridge 21b
Port of London Authority Costs	£40,388	£33,262	£33,262	£65,328	£65,328
General Inspection	£436	£436	£436	£436	£436
Principal Inspection	£582	£582	£582	£582	£582
Structural Inspection	£109	£109	£109	£109	£109
Bearing Replacement	£3,702	£3,702	£3,702	£3,702	£3,702
Lighting (a)	£3,199	£3,199	£3,199	£3,506	£3,926
Lighting (b)	£5,834	£5,834	£5,834	£5,976	£6,692
Painting	£5,344	£4,878	£4,878	£6,055	£6,780

BUSINESS CASE ASSESSMENT - BENEFITS

Quantified Benefits

The following impacts of the bridge have been quantified and valued:

- Journey time savings
- Safety
- Ambience
- Health
- Emissions
- Absenteeism
- Decongestion

Net Benefit to Passengers and Private Sector (including tax impacts)		£ PV
1a. User Benefit - Time Saving		27,910,527
1b. User Benefit - Ambience		52,781
1c. User Benefit - Absenteeism		810,105
1d. User Benefit - Health Benefit		613,334
2. Revenue Benefit		
3. Non User Benefits - Road Decongestion		2,657,583
4. Non User Benefits - Noise, Air Quality, Greenhouse Gases, Accident Benefits and Others		118,377
5. Indirect Taxation		-76,407
Sub-Total (a)		32,086,300
Costs to Government (broad transport budget)		
1. Grant (Capital) Costs		8,631,952
2. Operating and Maintenance Costs		1,511,700
Sub-Total (b)		10,143,651
Net Present Value (NPV) (a-b)		21,942,649
Benefit Cost Ratio to Government (BCR) (a/b)		3.16
Wider Economic Benefits Impact (c)		
Net Present Value including Wider Economic Benefits (NPV) (a+c-b)		21,942,649
Benefit Cost Ratio to Government (BCR) including Wider Economic Benefits ((a+c)/b)		3.16

Bridge	Modification to Calculated Demand						
	-20%	-10%	-5%	Central	+5%	+10%	+20%
10c	2.53	2.85	3.01	3.16	3.32	3.48	3.80
13	4.01	4.51	4.76	5.01	5.26	5.51	6.01
15	4.06	4.56	4.82	5.07	5.33	5.58	6.09
21a	0.45	0.51	0.54	0.57	0.59	0.62	0.68
21b	1.39	1.56	1.65	1.73	1.82	1.91	2.08

APPRAISAL SUMMARY

Summary of bridge features and outputs

Table 10.1 Summary of key features and outputs for the bridges

		Bridge 10c	Bridge 13	Bridge 15	Bridge 21a	Bridge 21b
Bridge length		110m	90m	90m	125m	180m
Landing site location	North/ West	Richmond	Richmond	Richmond	Hounslow	Hounslow
	South/ East	Kingston	Richmond	Richmond	Richmond	Richmond
Landing site public/ private land	North/ West	Private	Public	Public	Private	Private
	South/ East	Public	Public	Public	Private*	Private*
Distance to next bridge	North	1.8km	3.2km	2.0km	0.5km	0.9km
	South	0.9km	1.3km	2.5km	3.8km	3.3km
Demand (24hr period)	Walking	732	1,640	2,219	248	1,020
	Cycling	473	924	1,227	298	743
	Total	1,205	2,564	3,446	546	1,763
Rank out of 11 bridges for demand (1=busiest)		10	6	5	11	7
Bridge cost (£)	Capex	8,025,500	9,540,500	9,440,500	8,464,250	12,307,000
	Opex (p.a.)	62,027	53,985	53,985	91,540	91,540
Benefit-Cost Ratio		3.16	5.01	5.07	0.57	1.73

* Option identified to connect directly to Thames Path which is a public asset

APPRAISAL SUMMARY

Impacts assessment

Table 10.2 Bridge impacts assessment

Assessment factor	Bridge					Scoring	
	10c	13	15	21a	21b		
1 Benefit-cost ratio	Yellow	Green	Green	Red	Red	G = high	R = low
2 Demand for walking & cycling	Yellow	Green	Green	Red	Yellow	G = high	R = low
3 Cost	Green	Yellow	Yellow	Green	Red	G = low	R = high
4 Accessibility benefit	Red	Green	Green	Yellow	Yellow	G = high	R = low
5 Potential increase in PTAL	Red	Red	Red	Red	Red	G = high	R = low
Landing site considerations:							
6 Landing sites: LB Richmond/ other	Yellow	Green	Green	Yellow	Yellow	G = both <u>LBR</u>	A = one <u>LBR</u>
7 Landing sites: public or private	Yellow	Green	Green	Red	Red	G = both public	R = both private
8 Flood risk	Red	Red	Red	Yellow	Green	G = low	R = high
9 Link improvements required	Yellow	Red	Yellow	Yellow	Green	G = minor	R = major
10 Potential: commercial activity	Red	Red	Yellow	Yellow	Yellow	G = high	R = low
11 Potential: local area enhancement	Red	Yellow	Yellow	Yellow	Yellow	G = high	R = low

Achieving project objectives

Objectives	Bridge				
	10c	13	15	21a	21b
1 Provide a more pleasant and safer journey experience	✓	✓	✓	✓	✓
2 Improve the health and wellbeing of residents and others by affecting a mode shift	✓	✓	✓✓	✓	✓✓
3 Provide a more direct and coherent route for short journeys and to link into the wider network	✓	✓✓	✓✓✓	✓	✓
4 Support the potential for growth and regeneration	✓	✓	✓	✓	✓
5 Contribute to improving the public realm and public spaces	✓	✓✓	✓✓	✓	✓✓

APPRAISAL SUMMARY

Delivery risks

Table 10.4 Delivery risks assessment

Delivery risks		Bridge					Factors
		10c	13	15	21a	21b	
1	Political	xxx	x	x	xxx	xx	Stakeholder approval, public consultation
2	Economic	xx	xxx	xx	xx	xxx	Provision of funding, cost escalation
3	Social	xxx	x	xx	xxx	xx	Visual intrusion and noise impact on residents
4	Technological	xx	xxx	xx	xx	x	Buildability of bridge and links to address flood risk
5	Legal	xxx	x	x	xxx	xx	Land agreement/ acquisition, planning
6	Environmental	xx	xxx	xx	xx	xxx	Conservation, ecology/biodiversity, arboriculture
xxx - higher risk x - lower risk							

Recommendations

Regarding the feasibility, benefits and deliverability of the bridges, they are prioritised as follows:

1. Bridge 15
2. Bridge 13
3. Bridge 21b
4. Bridge 10c
5. Bridge 21a

However, given the key issues and constraints identified, it is recommended that **further consideration is given to bridge 15 and bridge 13 only.**