

Oxpens River Bridge

RIBA Stage 1 | Report

October 2021

Introduction

This document is the final report of RIBA Stage 1 of Oxpens River Bridge in Oxford.

The new bridge will sit at the heart of the surrounding developments and will play an important role to the identity and connectivity of the site, the river and the city itself.

This report aims to develop an understanding of the major destinations and therefore the desire lines. It also intends to provide an overview of the main constraints of the project site and the opportunities identified within the project scope, in order to develop the concept design in the subsequent stage.

Designing a fitting bridge relies on a thorough understanding of the site's key considerations and establishing the aspirations of the scheme.

The last part of the document shows the initial study of different options for the bridge alignment. At this stage these alternatives are only connectivity diagrams to identify the potential; strengths and challenges, of each alignment.

It includes views of the structure from key viewpoints to consider the integration of the design itself on the site and in connection with Oxpens development. Also considering the user's experience with the view from the bridge deck is crucial for the design.

Content

The site

1. Elements of the site

Study of the context

Connectivity

2. Destinations

3. Desire Lines

Hierarchy of destinations

Requirements for the connection

Pedestrian and Cyclist Flow

Constraints and Opportunities

4. Site Constraints

4.1 Railway bridge proximity

4.2 Geometrical constraints

4.3 Impact on trees

Bridge Location

5. Constraints

At North Landing

At South Landing

6. Opportunities

At North Landing

At South Landing

7. Project Aspirations

7.1 Connectivity Aims

7.2 Placemaking Aims

7.3 Sustainability Aims

Connectivity Diagrams

8. Alignment Options

8.1 Option One

8.2 Option Two (A) and Option Two (B)

8.3 Option Three

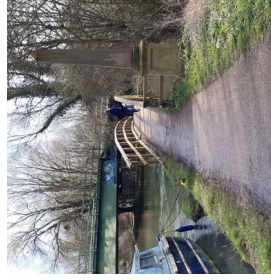
8.4 Option Four

The site

The future pedestrian and cyclist bridge will connect the new development planned at Osney Mead and Oxpens over the River Thames, and further to Oxford city centre and the train station.



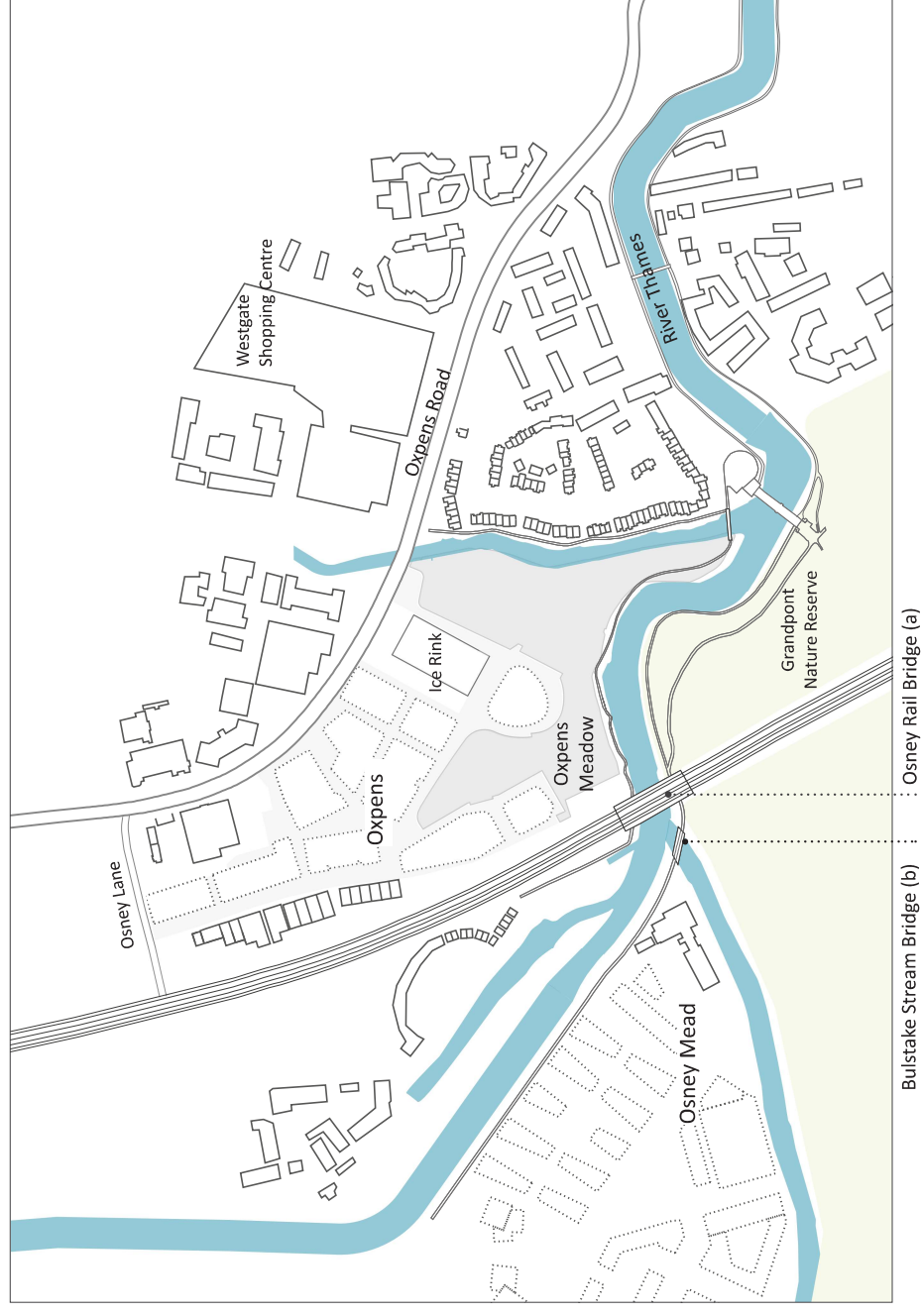
(a) Osney Rail Bridge



(b) Bulstake Stream Bridge

Study the relationship with Elements of the Site:

- Watercourse; River Thames and other streams
- Towpaths along River Thames at both banks
- Railway Line and Osney Rail Bridge
- Oxpens Road and Osney Lane; limits of the Oxpens development
- Grandpont Nature Reserve at south of the river
- Oxpens Meadow; at north side of the river and the field in trust area
- Existing built development
- Emerging proposals for new developments; Oxpens and Osney Mead



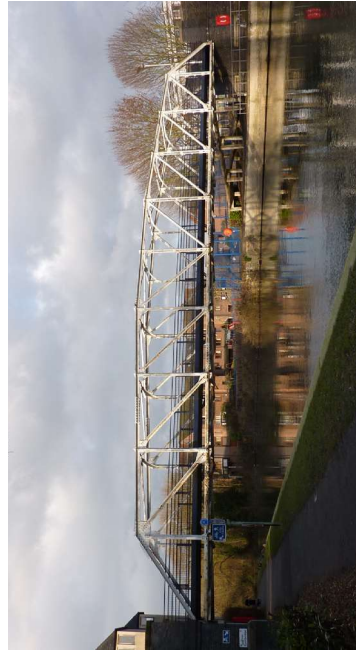
The neighbouring bridges of the future structure are Osney Rail Bridge to the west and Gasworks Bridge and Gasworks Pipe Bridge to the east.

The diagram below shows the existing routes that link the south of the river to the north and the ongoing connection towards the city centre and train station.

The proposed new crossing will provide a more enjoyable, intuitive and seamless connection for users crossing the river and those walking or cycling along its banks.



(c) Gasworks Bridge



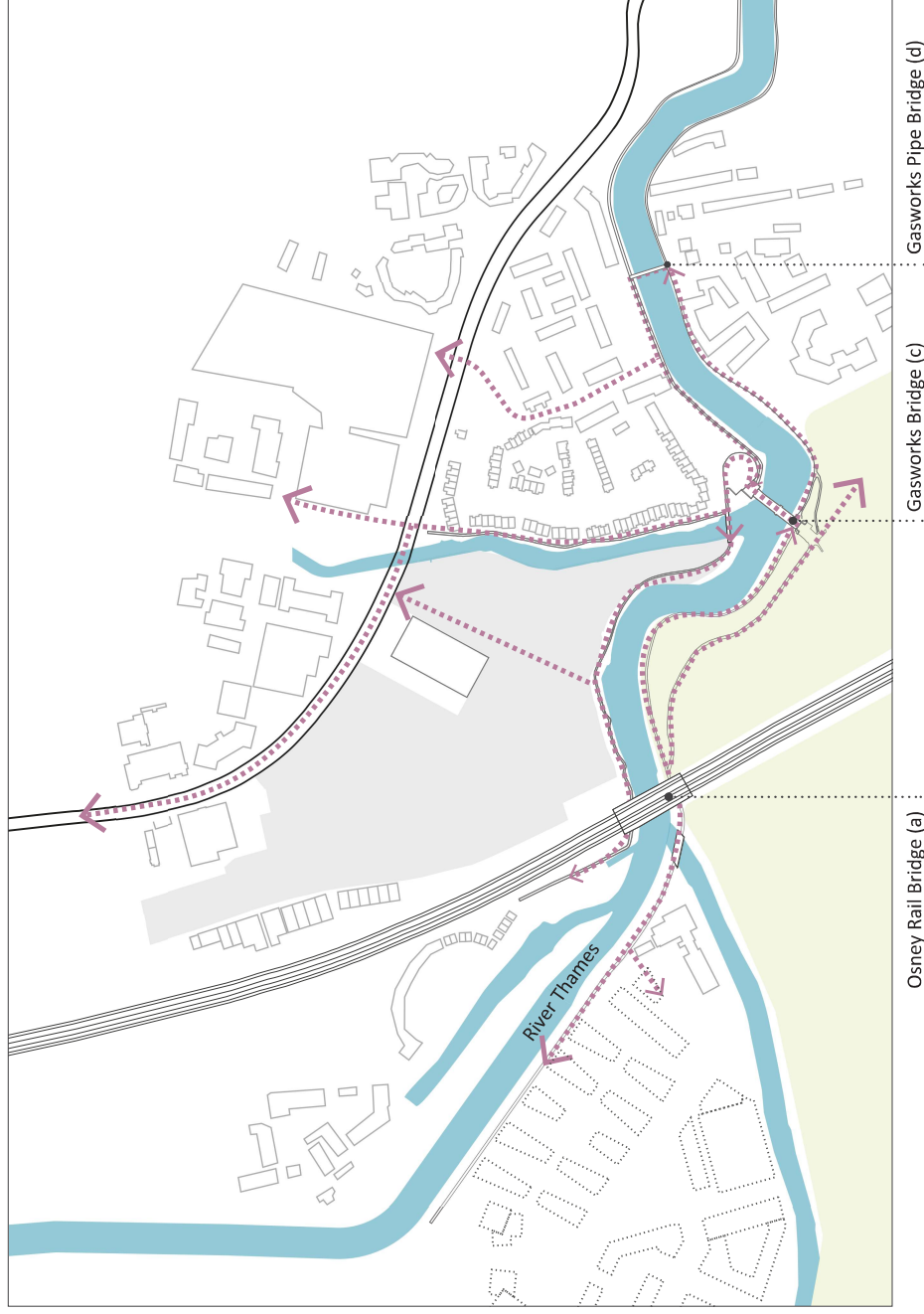
(d) Gasworks Pipe Bridge

Gasworks Bridge

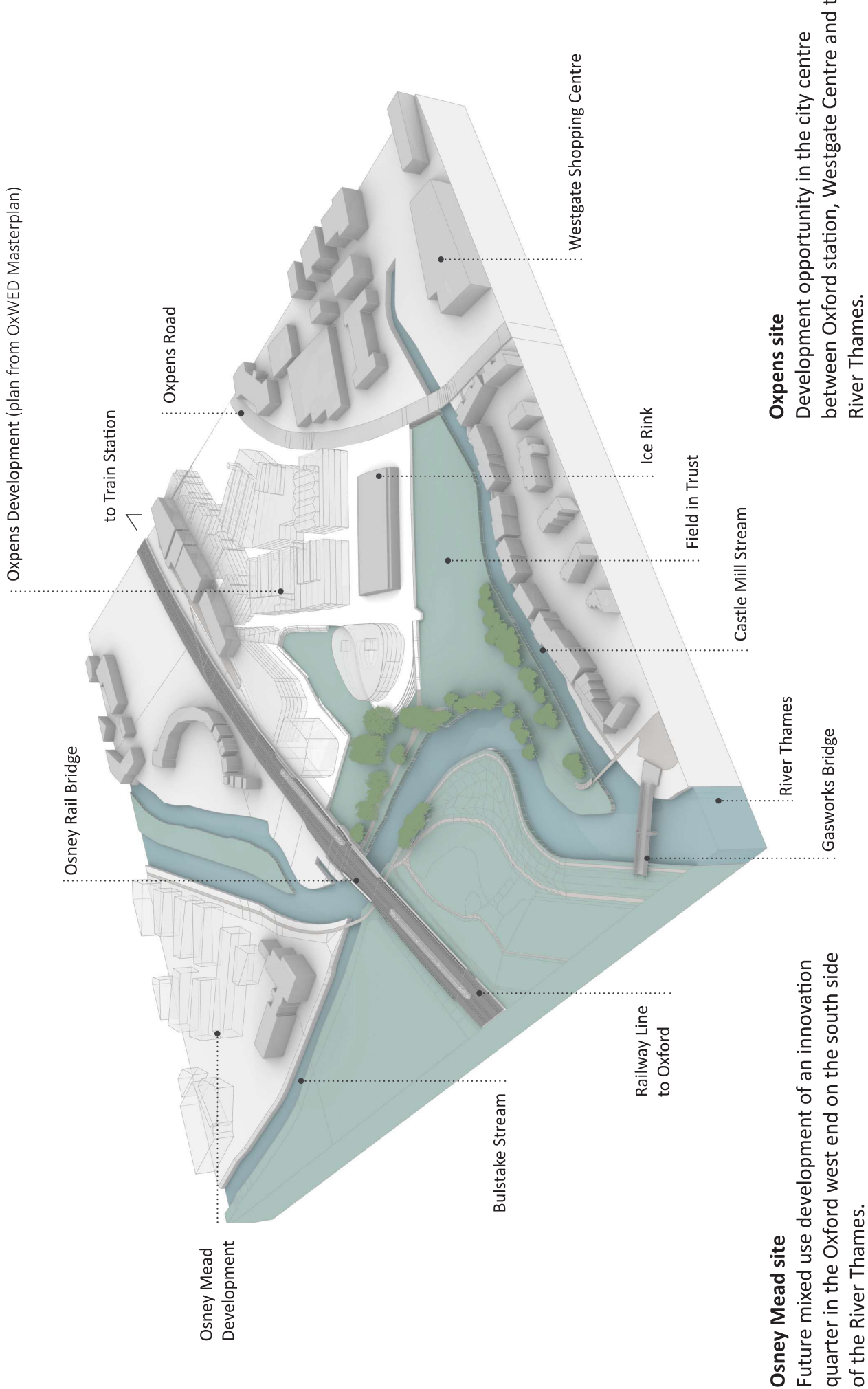
- Pedestrian bridge linking St Ebbes to the Grandpont nature reserve
- Iron bridge constructed by Oxford & District Gas company in 1886 for a short railway branch line to carry coal to the gas works
- Two spans with an intermediate support on the river

Gasworks Pipe Bridge

- Temporarily closed due to concerns over its safety, it is currently being assessed
- It links the river towpath with Friars Wharf
- Diversion routes to alternative nearby pedestrian crossing across the river have been put in place



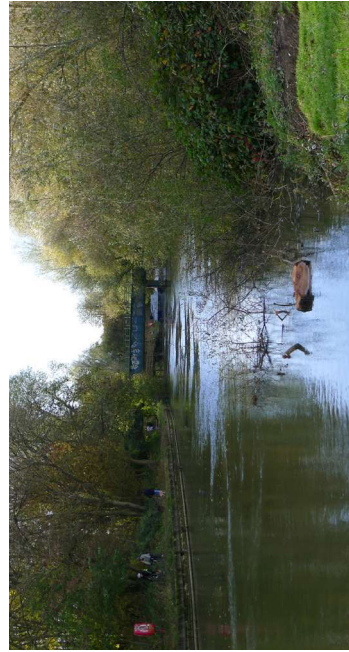
1. Elements of the site



The site

Walking along the river - it shows that given the meandering shaping of the river the views are not too long.

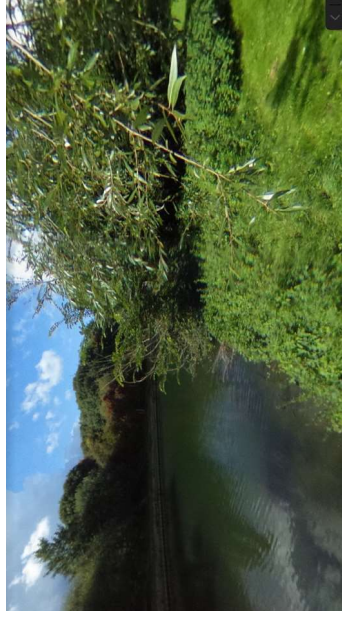
- the crossing should act as an event in the users movement along the river
- the new bridge aims to orientate users and relate their position to other destinations in the surrounding area



1. From North bank



2. From North bank



3. From North bank



6a. From South bank looking to West



6. From South bank



5. From South bank



6b. From South bank looking to East

Connectivity

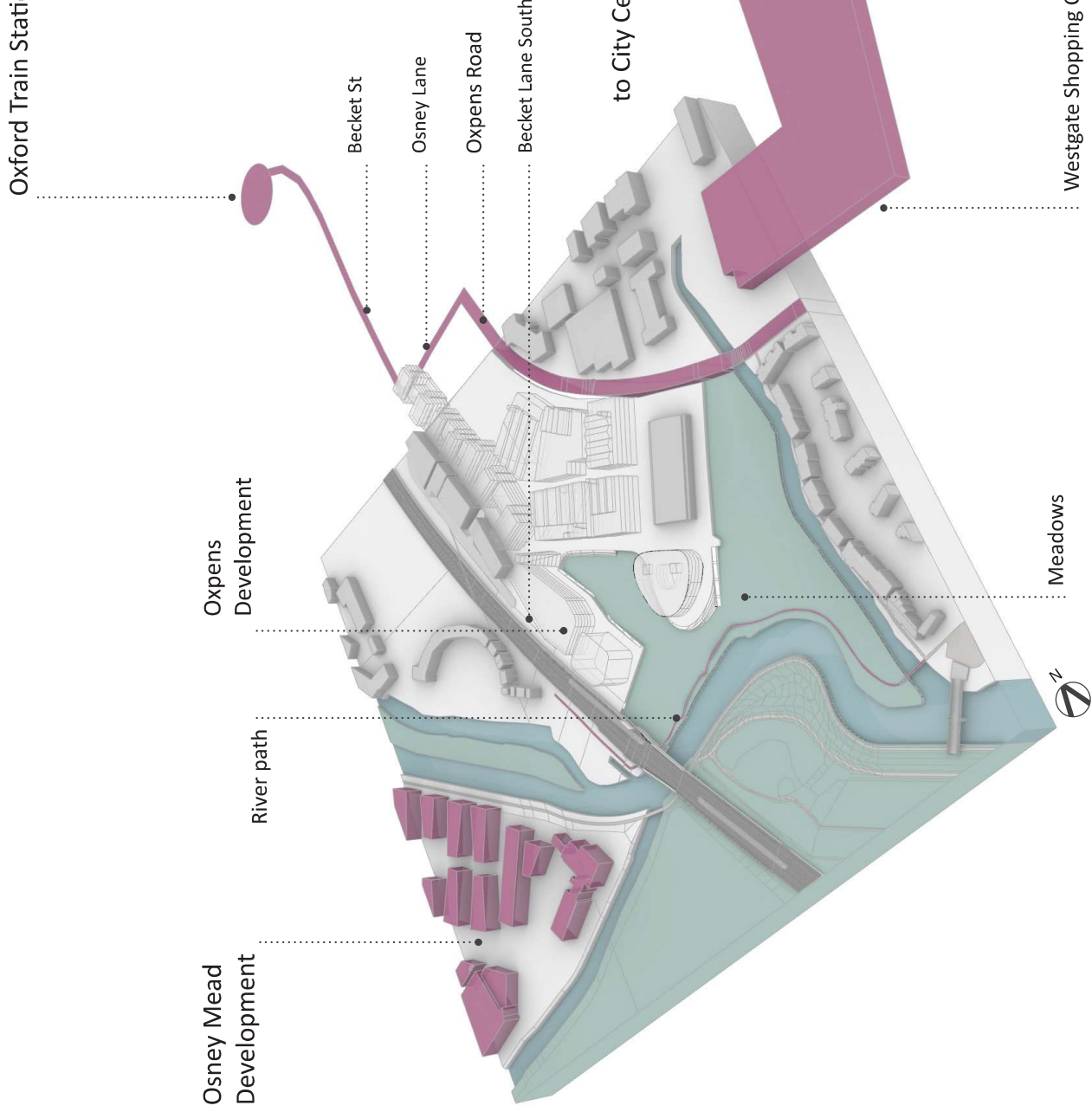
2. Destinations

A brief recap of the main destinations for the crossing will include;

At the **south** of the river, the current main destination remains the west end development of Osney Mead.

The most likely destinations from the **north** landing will be;

- Oxford train station
- Oxford city centre
- Oxpens Development
- Osney Mead Development
- Oxpens Road as a main road within central Oxford
- The tow path alongside the river is also a desired destination
- Access to the meadows itself and on the way towards Westgate area and city centre



Main destinations

3. Desire Lines

Hierarchy of destinations

1st: Osney Mead to Oxford city centre

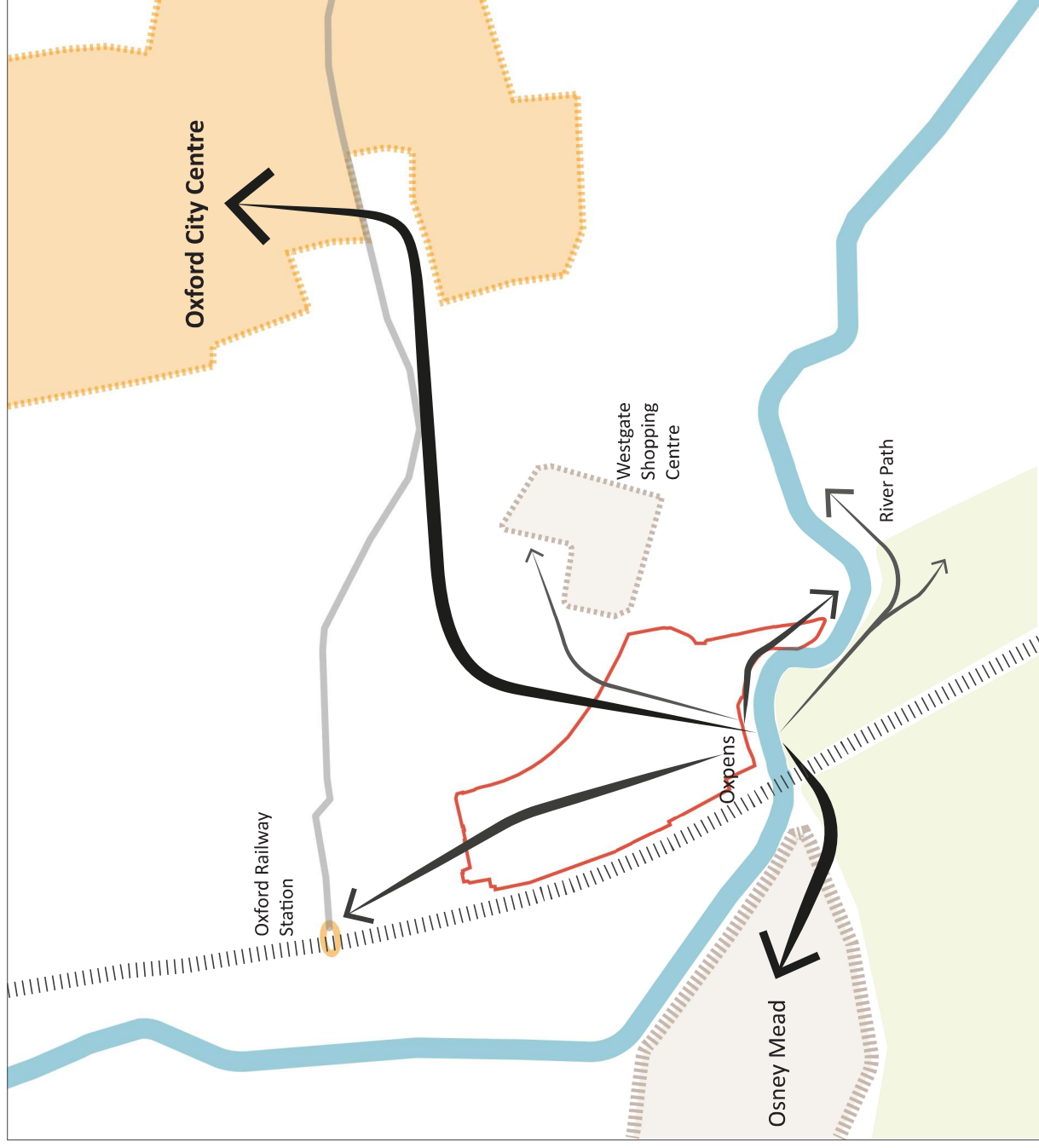
2nd: Osney Mead to Railway station

3rd: Osney Mead to north river tow path

Linking with the high level of new development and lower level of the meadows.

Requirements for the connection

- connect to a main route, preferably Oxpens Road
- provide a convenient link to the railway station and city centre
- connect to the adopted footpath along the north side of the river



Desire connections and destinations

Connectivity

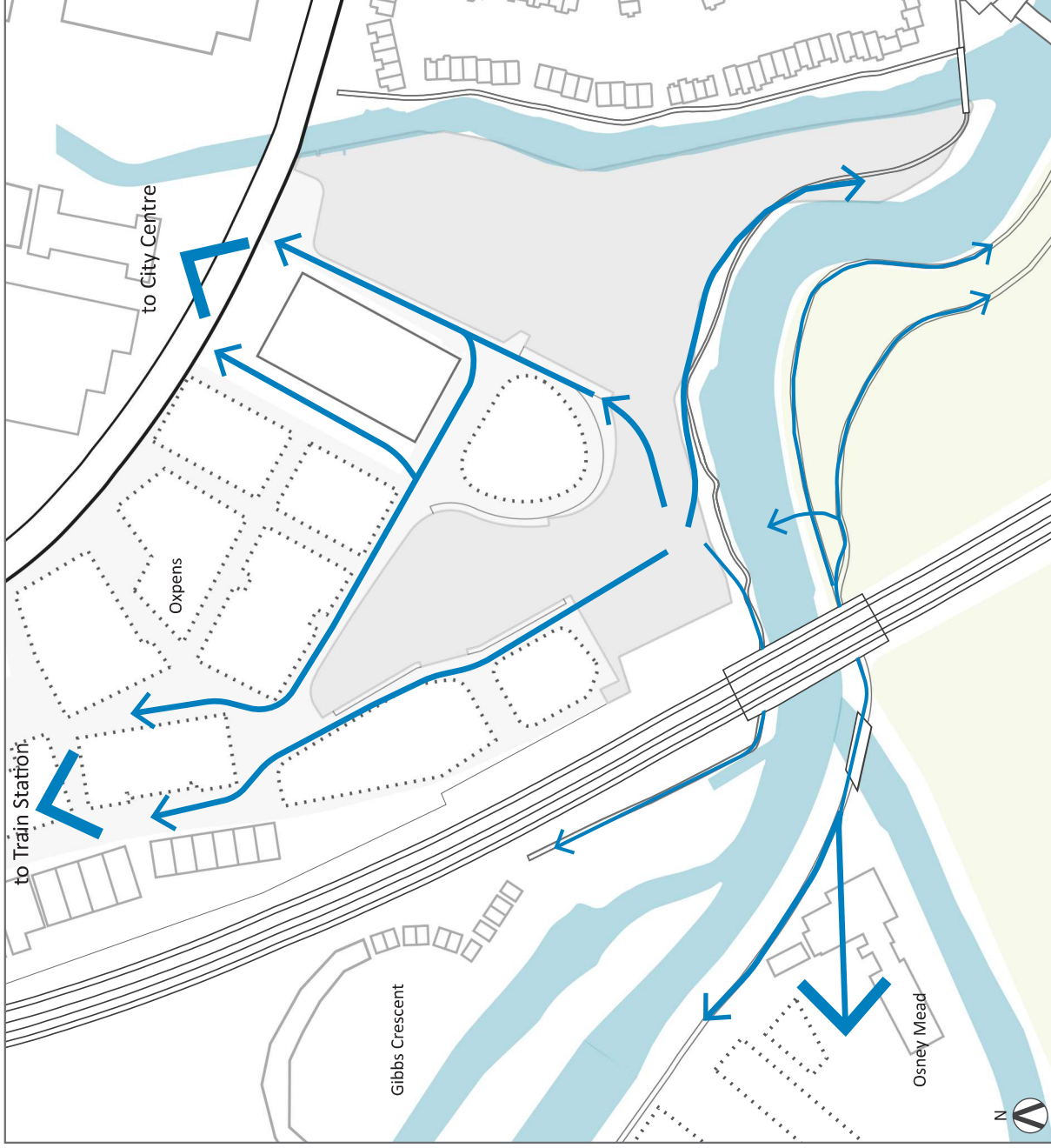
The bridge will not exist in isolation but it will be an integral part of people's journeys. It will be designed to respond to desire lines, onward connections and the axis of the wider Oxpens masterplan. It will provide enjoyable, intuitive and seamless connections for both users crossing the river and those walking or cycling along its banks.

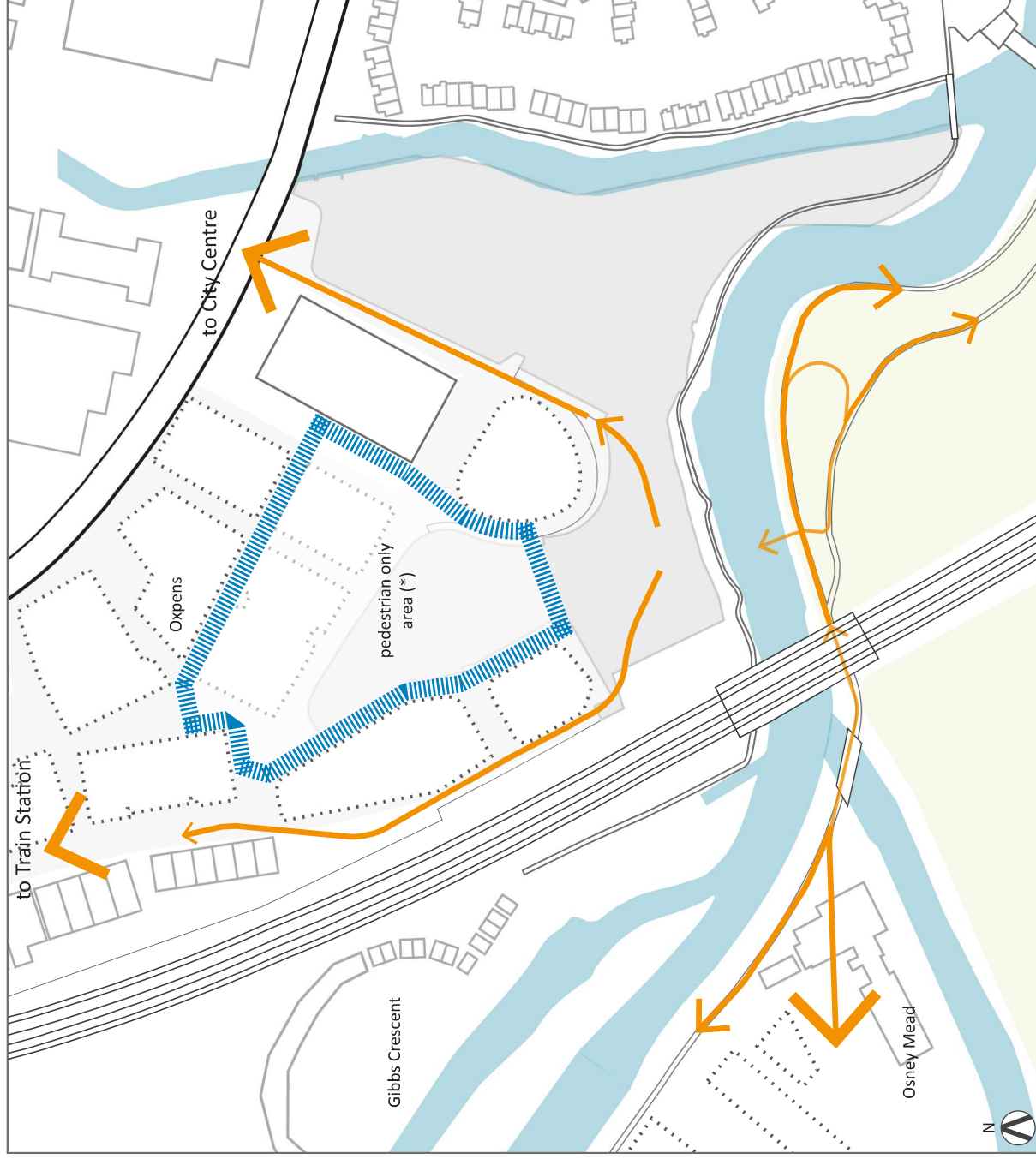
→ Pedestrian Desire Lines

Pedestrian Flow

Pedestrian will be landing to high-level platform to North side of river, and will make their way through the new area or across the meadows heading to the city centre or station.

Pedestrian will also walk along the river at both banks and also into Osney Mead and Gibbs Crescent.





||||| Pedestrian only area (*) based on initial discussions with OXWED

→ Cyclist Desire Lines

Cyclist Flow

Cyclist are more likely to aim for straightforward routes, that allow them to avoid conflict with slower pedestrians.

The most appealing route for them to city centre should aim to connect quickly with Oxpens Road from here they would be able also to reach the station in a more urban alternative.

The route to the west of the development will allow for a quiet, cyclist focused connection to the station.

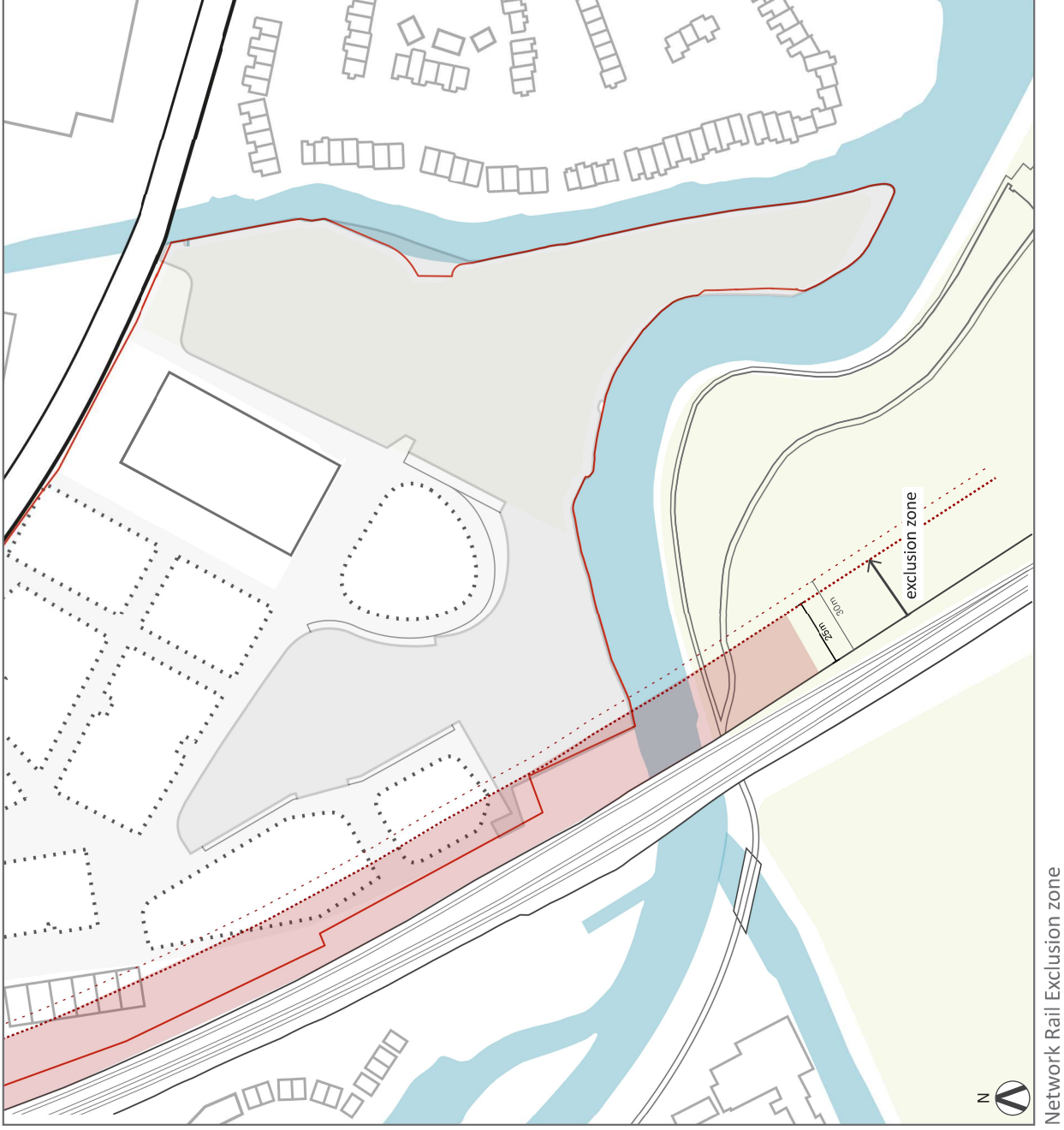
Cyclist will also use the towpath along the southern river bank into Osney Mead and Grandpont.

Constraints and Opportunities

4. Site Constraints

4.1 Railway bridge proximity

Early discussions with Network Rail have indicated that the new structure should not be constructed within 25m of the railway boundary, and ideally the foundations would be 30m distance offset from it, unless additional approvals from NR are obtained.



4. Site Constraints

4.2 Geometrical constraints

The vertical alignment of the bridge will need to include a clearance of 2.4m over the tow paths at both sides of the river. It will land at +57.6 to interface with the development platform.

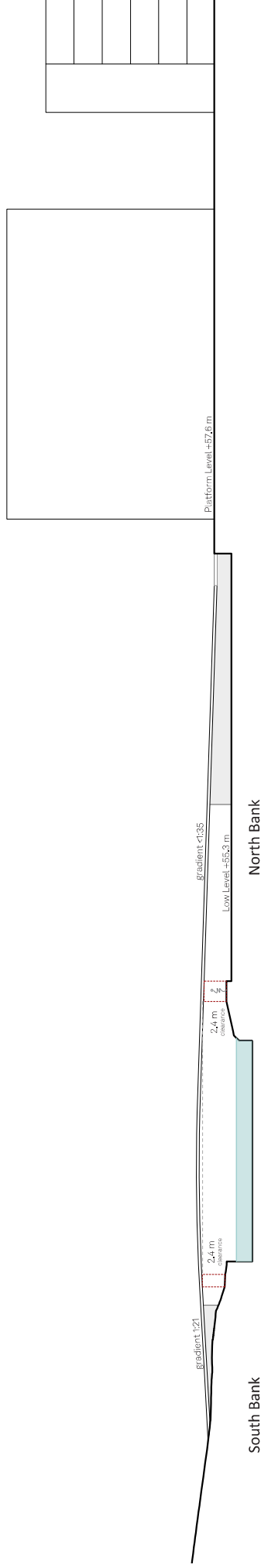
The navigation envelope over the river at this location has not been confirmed by EA yet. It will be also a constraint for the vertical alignment of the new structure.

It is intended that the bridge gradient to the south will be limited to 1:21 and a shallower continuous gradient to the north.

For gradients shallower than 1:22, intermediate landings are not required.

For gradients between 1:20 and 1:22; there will be a maximum desirable length of gradient. (Design Manuals LTN 1/20, CD 353 and CD 195).

Flooding, is a key consideration. Whilst the topography on the south of the Thames is steep enough to provide a relatively low-impact tie-in, the northern approach (alongside the rest of the surrounding development) will require a clear understanding of the impacts on flow and capacity.



Longitudinal Section

Constraints and Opportunities


4. Site Constraints

4.3 Impact on trees

The alignment for the bridge in relation with the trees will need to be explored later, when more information about the environmental impact and landscape will be completed for both sides on the river.

The latest tree survey at the north bank shown in this slide was undertaken by OxWED.

The information shown here has been provided by Gillespies Landscape Architects. This tree survey was undertaken by Midland Forestry in August 2020 for the Oxpens development.



Client: Church Trust and Development Ltd

Submission: Options

Ref: 001-14072113

Drawing Title: Tree Constraints Plan

DPA No: 001-131-1200-01

Date: 23.08.20

Scale: 1:500 @ A3

Key

Tree and Value Categories
(Values adjacent to ID number)

- Category U: Unassailable
- Category A: High
- Category B: Moderate
- Category C: Low

Current condition
Condition score

- 1: Very poor
- 2: Poor
- 3: Fair
- 4: Good
- 5: Very good

Tree protection zone
(DPA calculated on BS5822 Table 2)

- 1: 1m
- 2: 2m
- 3: 3m
- 4: 4m
- 5: 5m
- 6: 6m
- 7: 7m
- 8: 8m
- 9: 9m
- 10: 10m
- 11: 11m
- 12: 12m
- 13: 13m
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- 93: 93m
- 94: 94m
- 95: 95m
- 96: 96m
- 97: 97m
- 98: 98m
- 99: 99m
- 100: 100m

This tree protection zone is for informational purposes only and is not a legal requirement. It is not a guarantee of protection and is not a substitute for a tree preservation order (TPO).

Midland Forestry
01543 802100
www.midlandforestry.co.uk

ID No.	Species	Ht. (m)	Dia. (mm)	N	S	W	E	Ht. Clr. hr.	Phys. Cond	Structural condition & Notes	Management recommendations	Ret. span	QV
70	Ash	14	850	9	9	9	9	1.5	2	Recent inspection only, due to appearance in good condition with a slight hollow in the trunk. No signs of decay. No dead wood rot at the base. Old pruning wounds on the trunk, but in good state of occlusion.	No action required at time of survey.	40+	A1
69	Hawthorn	9	420	2.9	3.5	3	2.4	0.5	1	Multiple crown stems from Limb 1 and 2, but no apparent decay. No apparent significant defects.	No action required at time of survey.	20+	B1
67	Alder	10.5	300	4.7	3.3	4.3	3.1	2.5	2.5	Epiphytic growth on the lower stem around old pruning wounds. No apparent significant defects.	No action required at time of survey.	20+	B1
68	Cock willow	8	1433	5.5	5	5	5	1	2	Well-maintained crown, but no apparent significant defects.	No action required at time of survey.	20+	C1

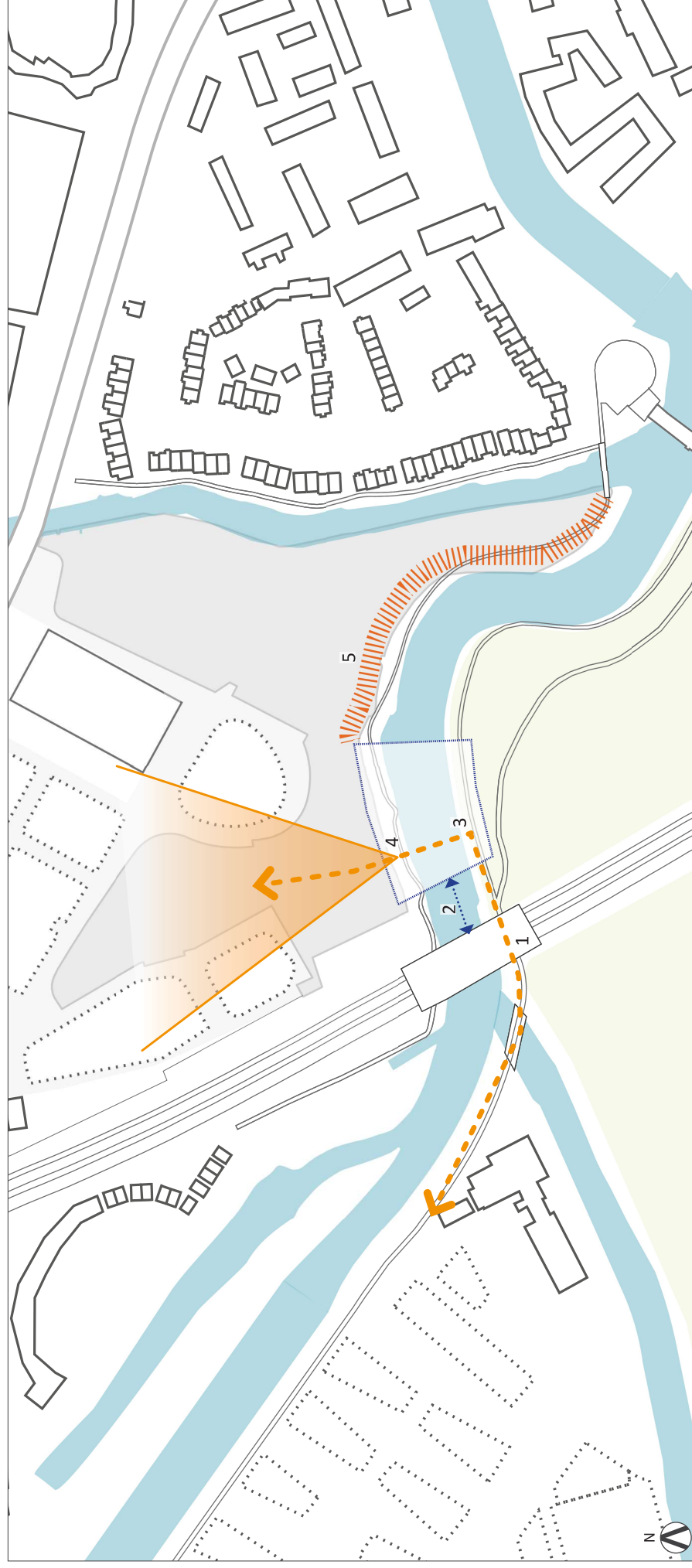
ID No.	Species	Ht. (m)	Dia. (mm)	MCRS	Ht. 1 st hr.	Cr. Clr.	Life Stage	Phys. Cond	Structural condition & Notes	Management recommendations
TC038	Cock willow	16	750	10	1	1	M	F	Recent inspection only, due to appearance in good condition with a slight hollow in the trunk. No signs of decay. No dead wood rot at the base. Old pruning wounds on the trunk, but in good state of occlusion.	Continue to monitor for decay.
TC039	Cock willow	20	850	8	2	2	M	G	Group of very large trees beside the river, but no apparent decay. No apparent significant defects.	No action required at time of survey.
TC041	Alder, ash, hornbeam, goat willow, elder	14-5	150	3	1	1	RM	F	Understorey to TC039. Recent inspection only, due to appearance in good condition with a slight hollow in the trunk. No signs of decay. No dead wood rot at the base. Old pruning wounds on the trunk, but in good state of occlusion.	No action required at time of survey.



2. **Proximity to the rail line** to create an interaction between the two elements and an interesting viewpoint especially from the train to the new structure. (*)

- ### 5. Reducing the impact on the Field in Trust (FIT) designation area in the Oxpens Meadows.

(*) The new structure is placed further than the 25m to the Network Rail line.



Constraints and Opportunities

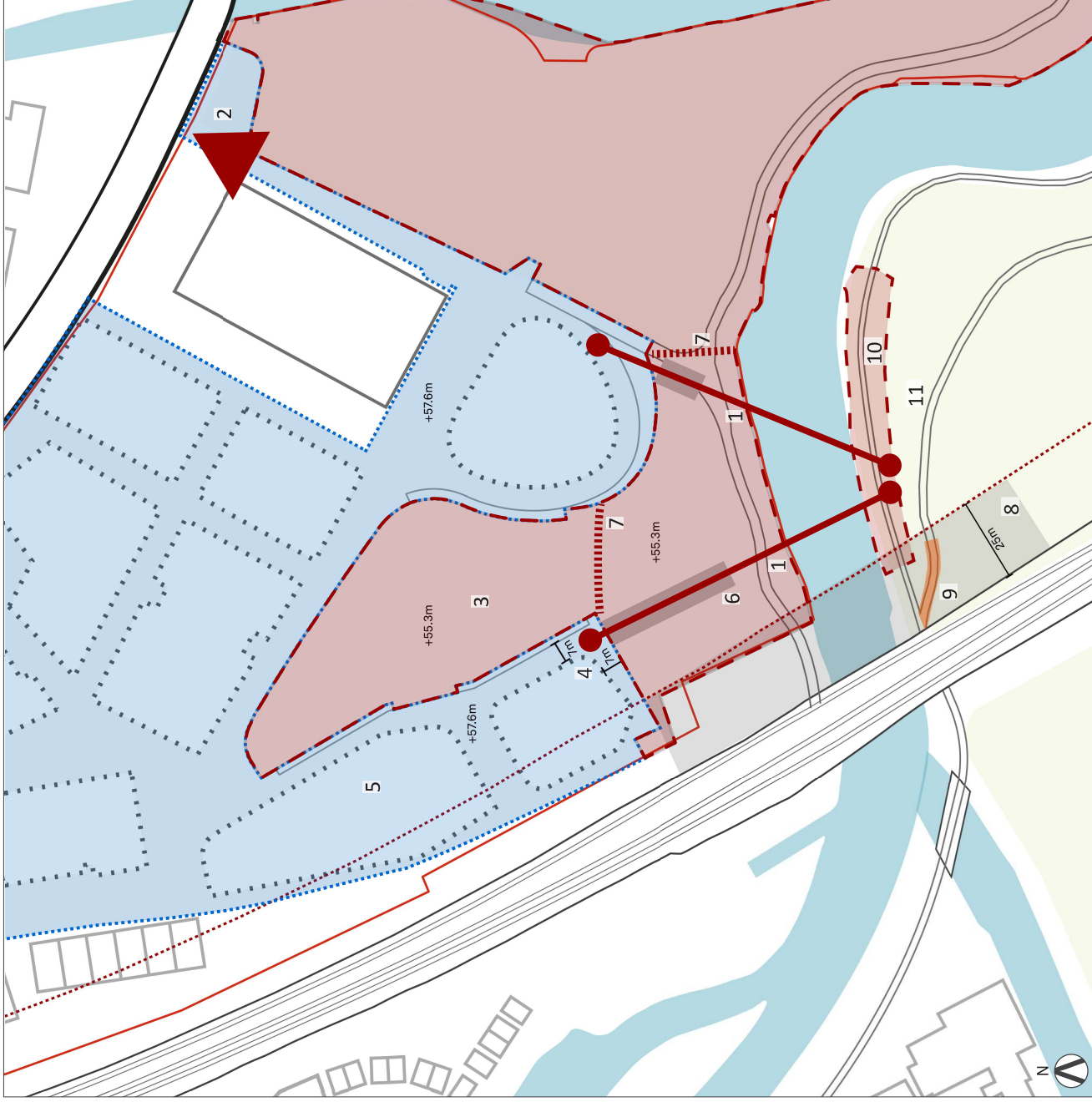
5. Constraints

North Landing

1. Provide a dry route between both banks at all times, including in the event of flooding.
2. Provide a desire line route towards Oxford city centre.
3. Levels on the new development responding to the flood requirements. Development red line.
4. Limited space in Oxpens high level built-up platform for the bridge landing.
5. Pedestrian public realm approach in Oxpens development.
6. Reduced allowance available for the bridge embankment at north bank, as Oxpens development does not provide spare flood capacity.
7. Avoid visual severance from low-level areas to the river front.
8. Network Rail Exclusion zone.

South Landing

8. Network Rail Exclusion zone and impact on approach ramp gradient.
9. Steep connection (not suitable for cyclist, wheelchair user).
10. Clearance over towpath, flood issues.
11. Lighting in an ecological sensitive area.



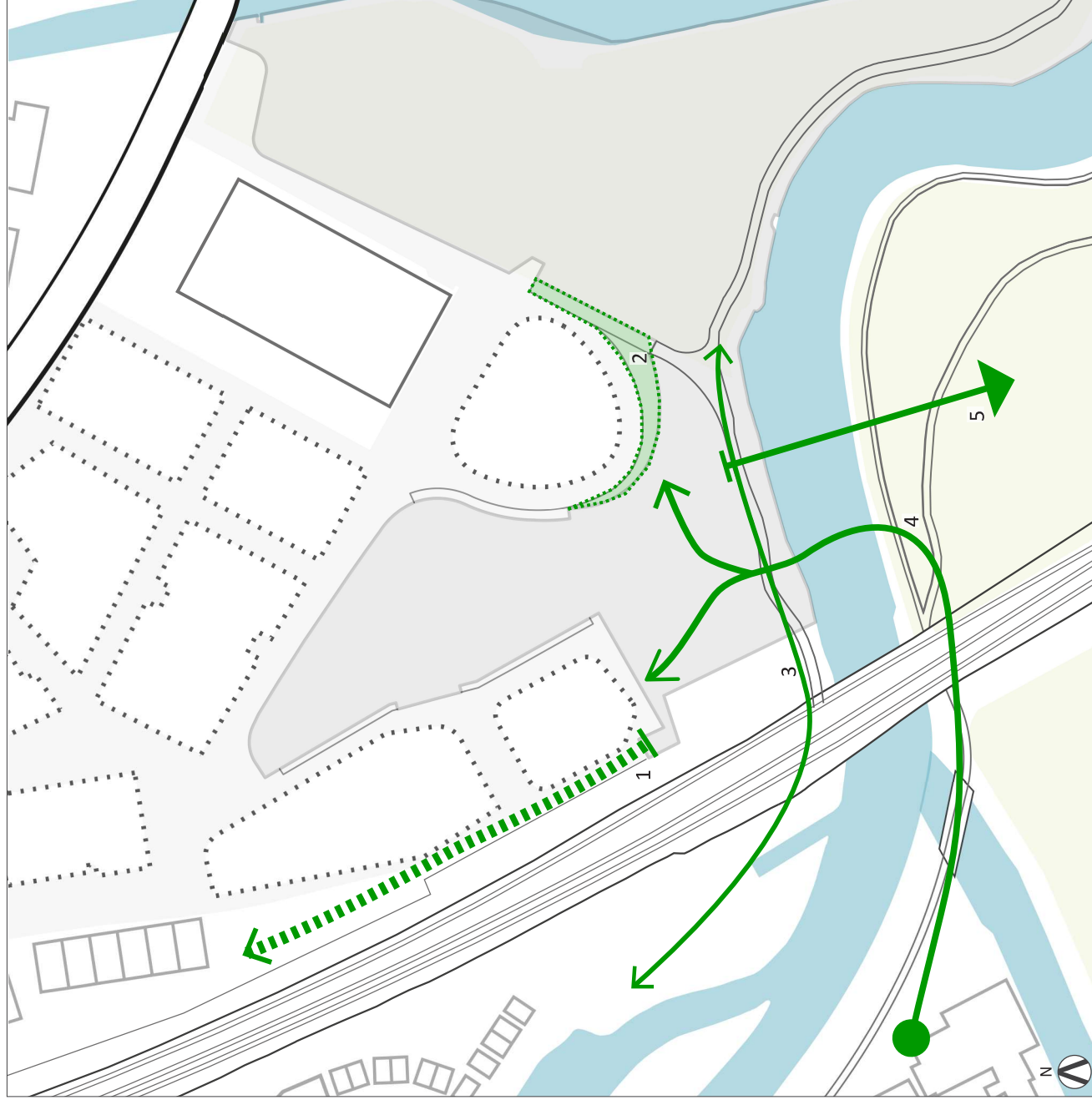
6. Opportunities

North Landing

1. Potential attractiveness of an off road route at the western edge of the development, in connection with the train station.
2. Landing at the eastern high level built-up platform, reducing the approaching ramp span and need of embankment.
3. Provide a pedestrian access to the path towards west to Gibbs Crescent and along the river towards the east.

South Landing

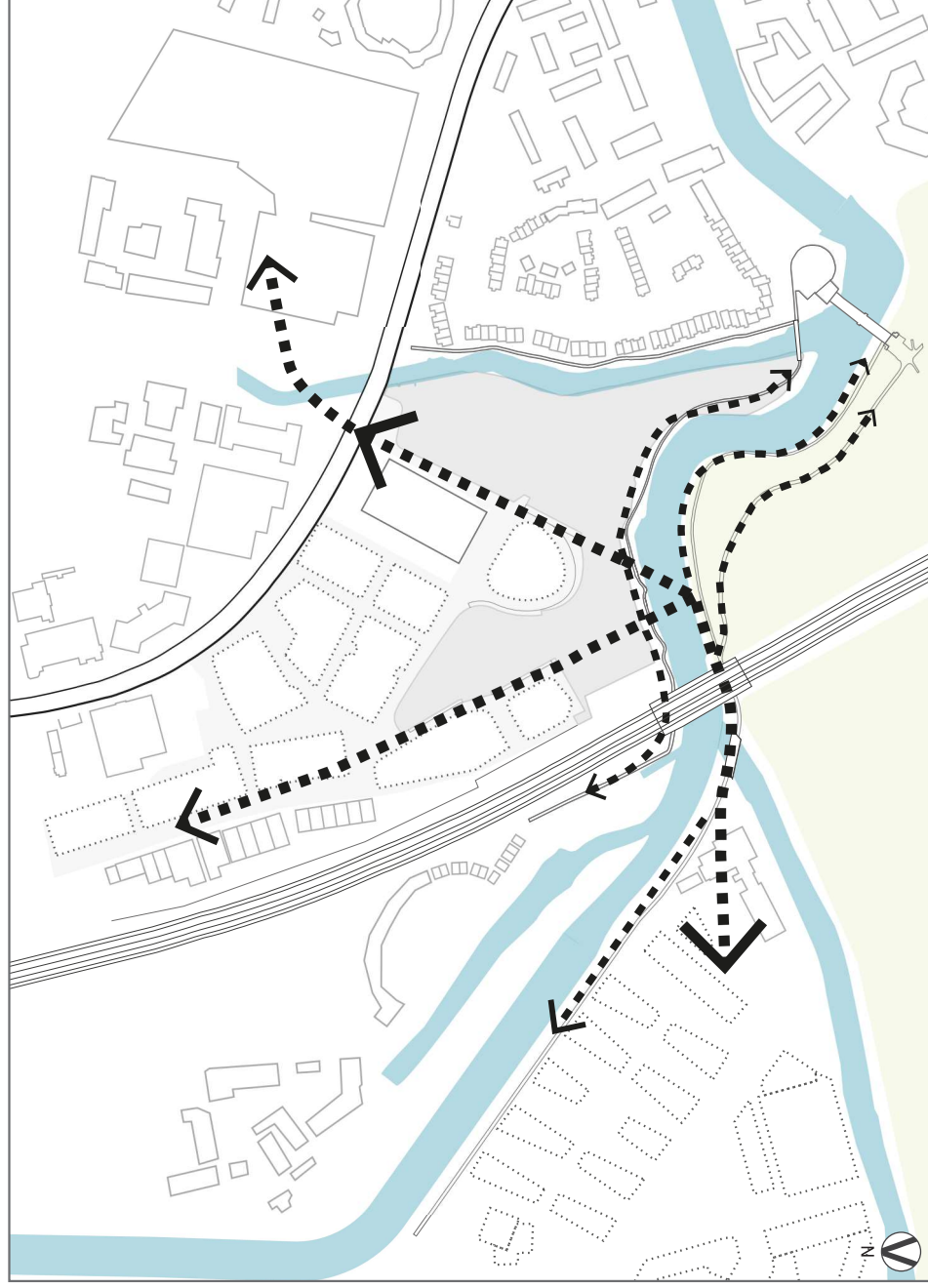
4. Improve the connectivity between the west end development of Osney Mead with the north bank destinations; city centre, train station, north tow path.
5. Improve the connectivity to Grandpont nature reserve.



7. Project Aspirations

7.1 Connectivity Aims:

- Connecting Osney Mead and Oxpens development to the wider walking and cycling network; improving accessibility for pedestrians and cyclists and reinforcing legibility.
- Ensuring routes along the river are maintained and enhanced.
- Contributing to the wider proposals to improve walking and cycling networks, thorough the proposed new crossing.
- Improving accessibility between south west end areas (including future developments) to the train station, shopping centre and Oxford city centre, through dry routes available at all times in event of flooding.
- Wayfinding purpose, so the new structure is able to guide people through the physical site to enhance their understanding and experience of the space.



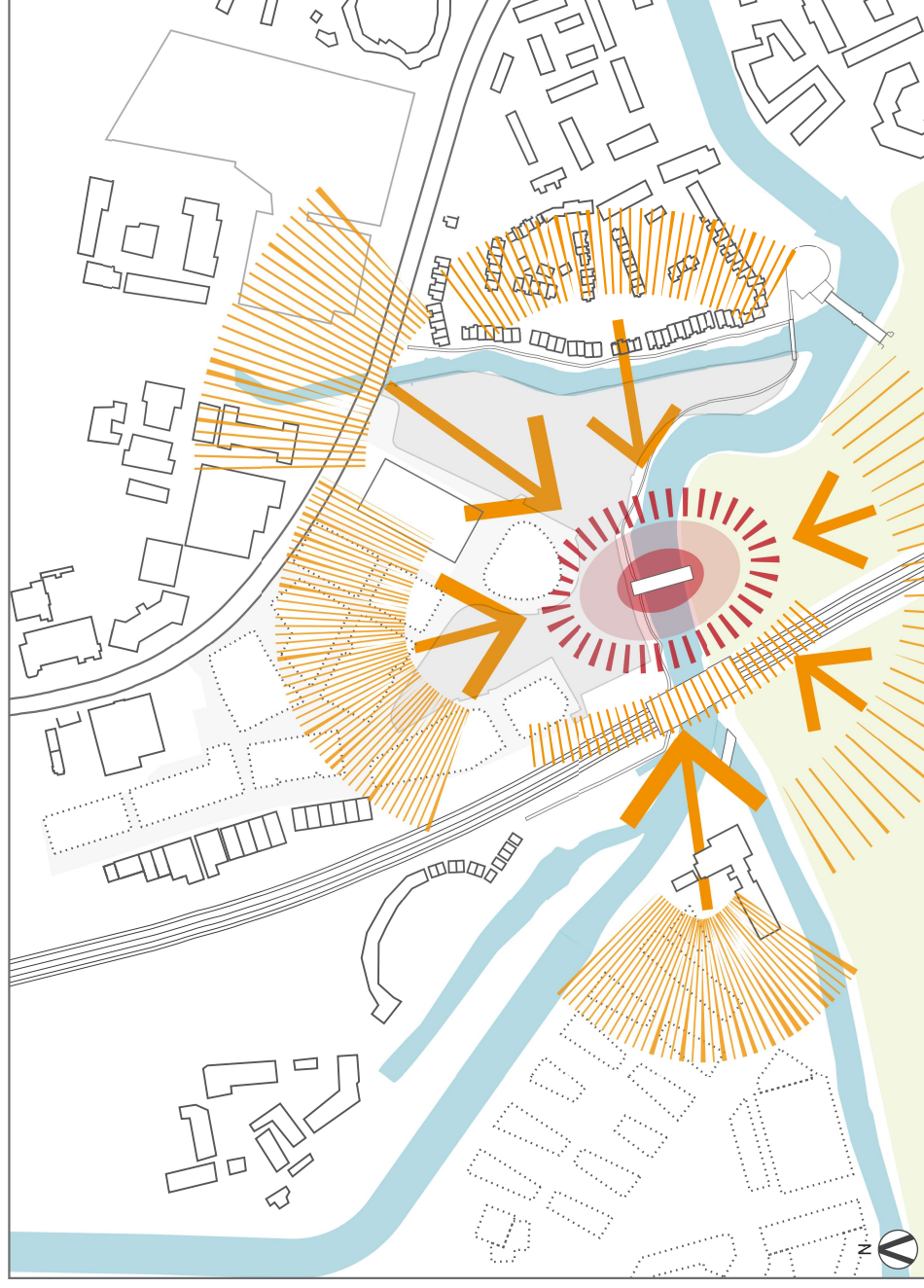
Connectivity and desire lines diagram

7.2 Placemaking Aims:

- Bridge to respond to the specific characteristic of the site. Becoming a recognisable and appealing structure synonymous with the surrounding development and responding positively to the high architectural quality of Oxford city centre.
- Bridge will act as a connector responding to the constraints and opportunities at both ends and the users' needs and aspirations for the new structure.
- The new structure respond to the natural setting and its proximity to the railway.
- Legibility purpose, so that the landing design is clear to navigate and eases access by integrating into the landscape.

7.3 Sustainability Aims:

- Aim for the project to address embodied energy and adaptability for a long-life.
- Contribute to the overall sustainability of the project.



Placemaking diagram

Connectivity Diagrams

8.1 Option One

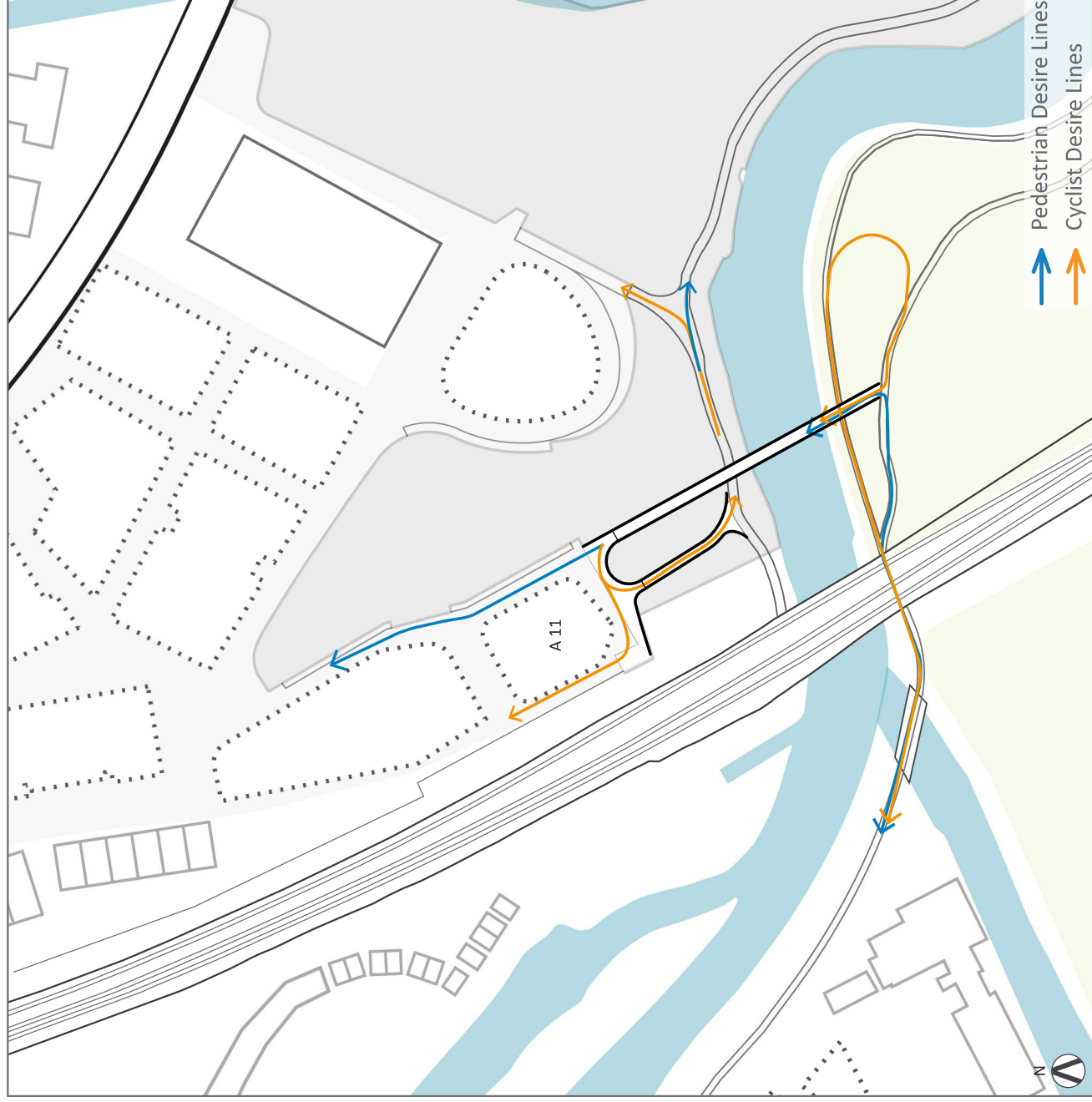
Aligning the bridge axis with the east side of the building A11 of the new development, the approach ramp is placed to the west of the bridge axis.

The **strengths** of this proposal are;

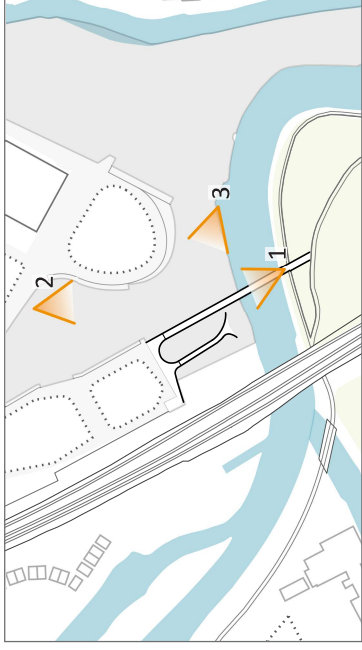
- it provides the bridge with a strong connection to the masterplan, as onward views when crossing would be focused on the theatre rather than on the south facade of building A11.
- extra separation from the railway bridge, so approach ramp is outside the exclusion zone.
- it provides a dry route through the development.

The **challenges** of this proposal are;

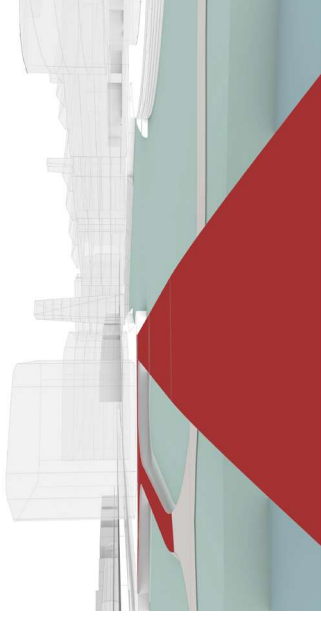
- the landing space at the high-level platform is very limited, especially as various directions of travel can be taken at that point, leading to possible clashes between users.
- the landing ramp to ground directs users back to the river in a loop that crosses under the main crossing, which reduces the fluidity of the crossing and may even feel unsafe.
- it can result in a less intuitive and lengthy connection to the towpath as well as routes to the city centre.
- all users land at the high-level yet many will have to connect back to the ground level.



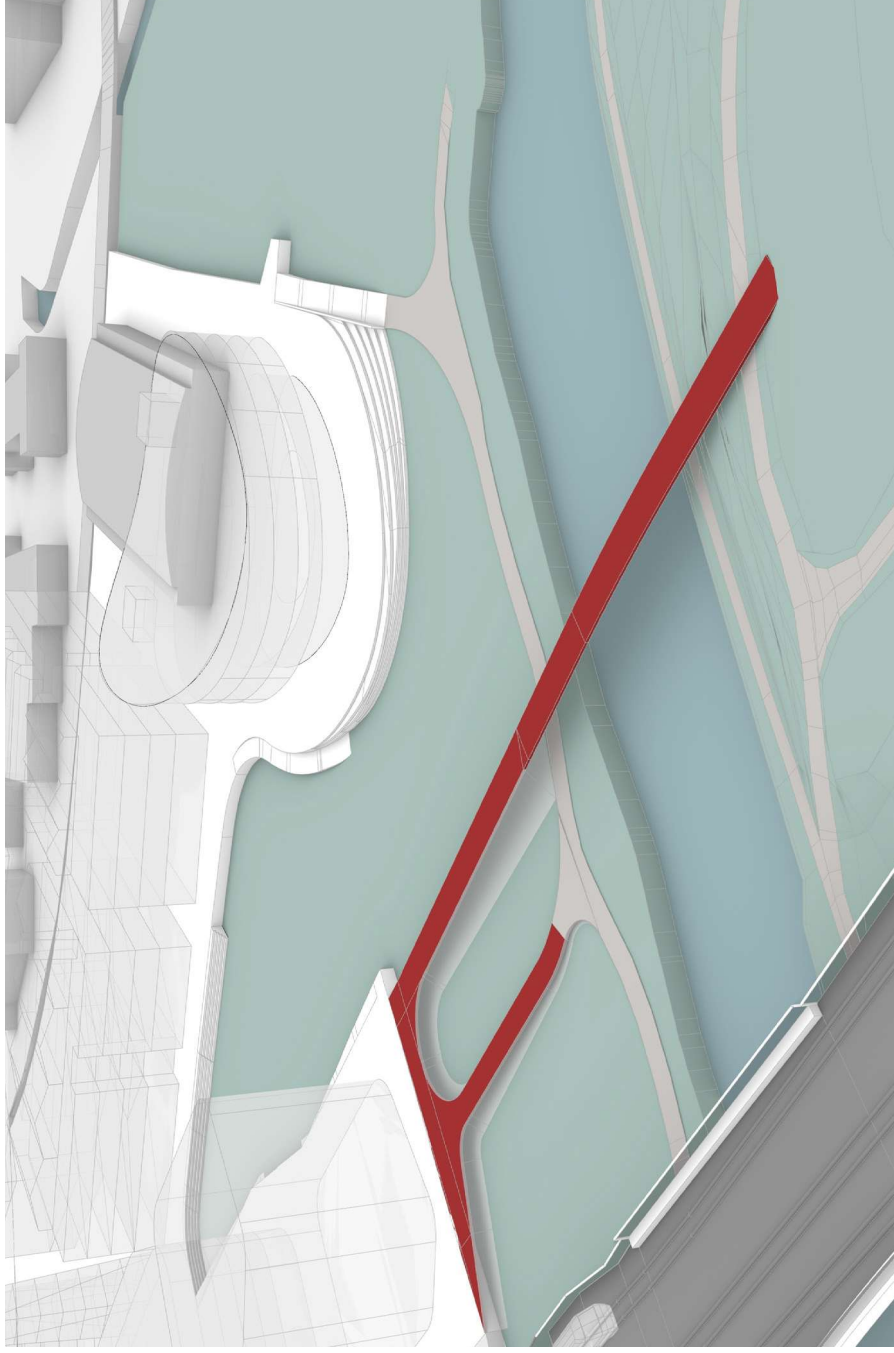
Plan and Cyclist/Pedestrians desire lines over Proposed layout as part of Oxpens development.



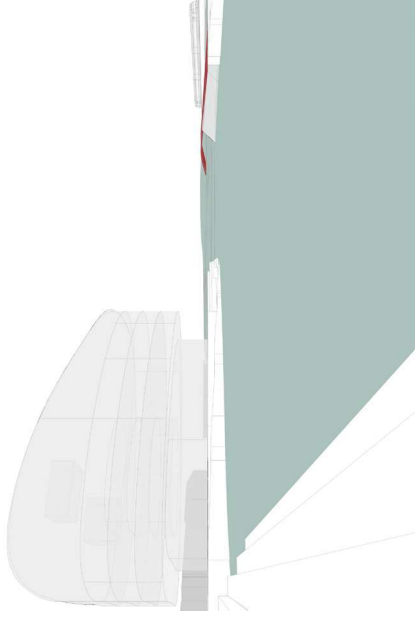
Option One



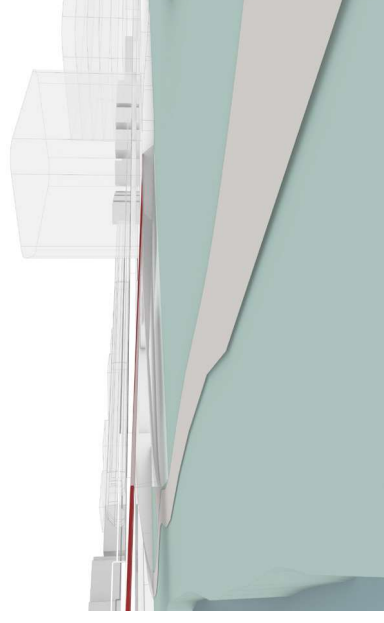
View from bridge (1)



Overview Option One



View from new development (2)



View from towpath (3)

Connectivity Diagrams

8.2 Option Two (A)

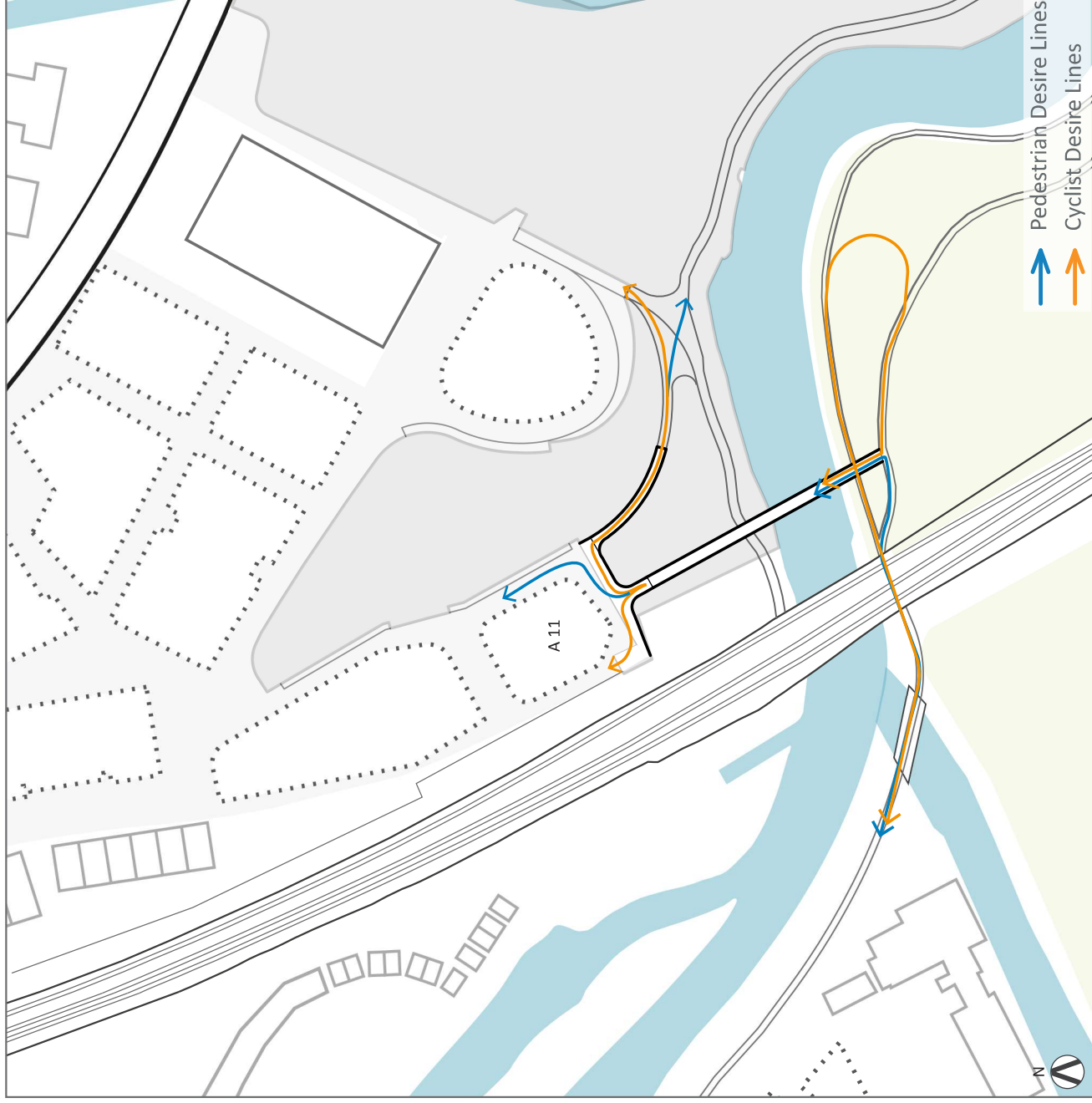
Aligning with the central axis of building A11, with the approach ramp to the east of the bridge axis connecting smoothly at-grade paths at ground level.

The **strengths** of this proposal are;

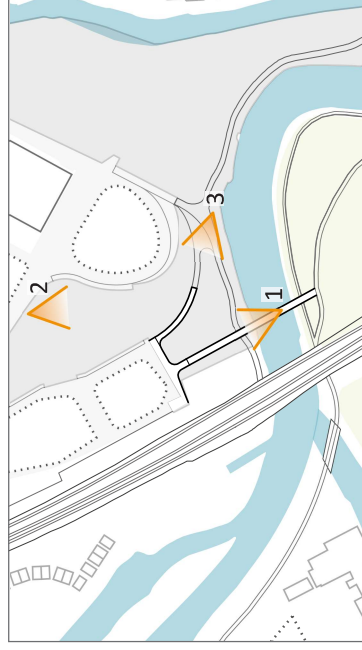
- the approach ramp aims to touch ground quickly and connect with a route that will direct users along east side of building A10, heading towards the city centre.
- the approach ramp avoids looping back on itself, making onward connectivity more intuitive.
- it provides a dry route through the development.

The **challenges** of this proposal are;

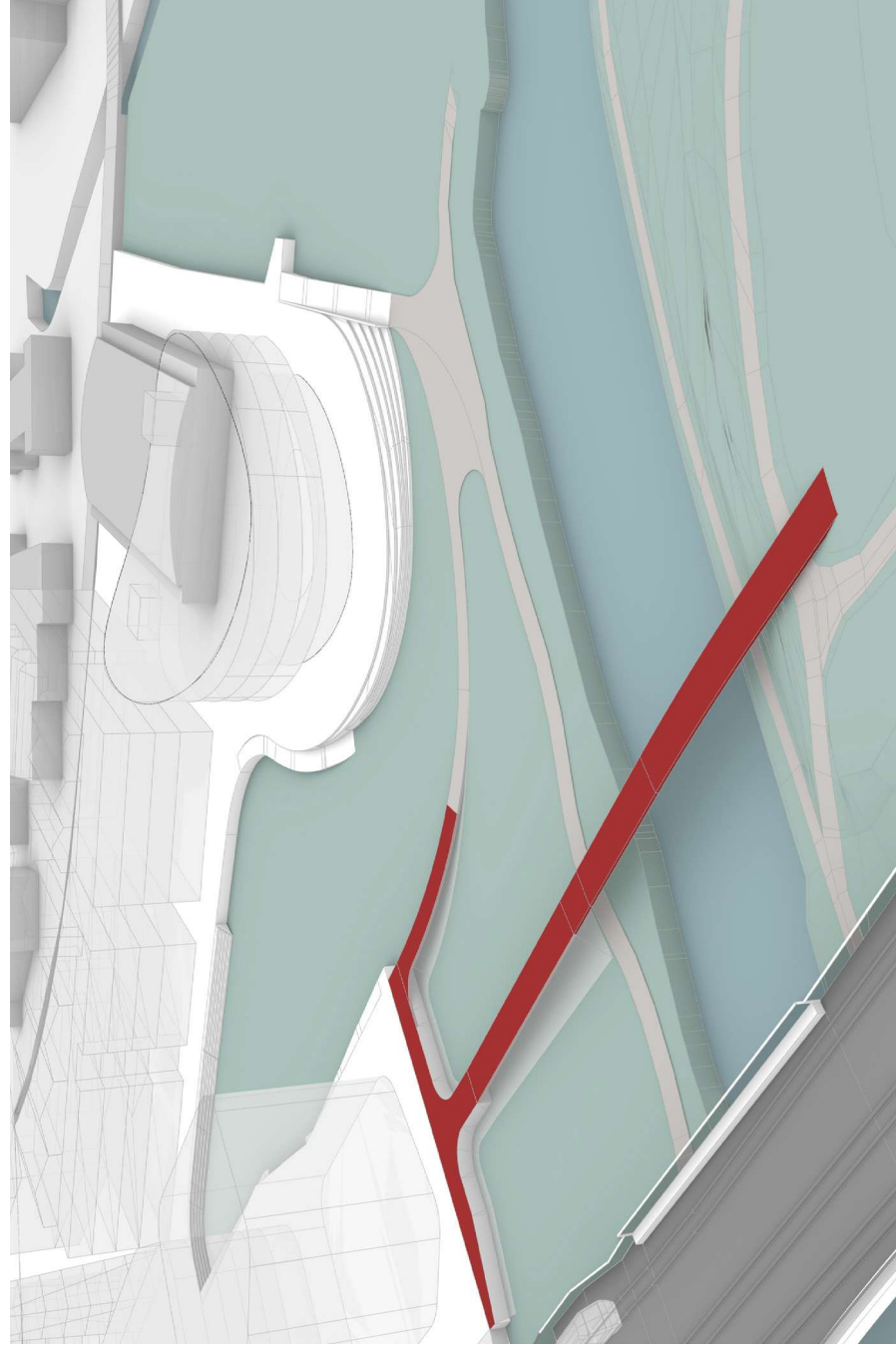
- the landing space at the high-level platform is very limited leading to potential clashes between users.
- the approach ramp should be designed to minimise the intrusion into the flood plain and the visual connection between the development and the river.
- landing all users at a high-level requires having to connect many back to the ground level.
- the bridge will be less visible from the development, diminishing the placemaking aims of the structure.
- the alignment is close to the NR boundary.



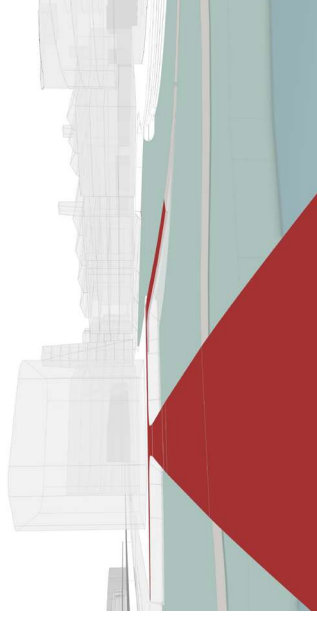
Plan and Cyclist/Pedestrians desire lines over Proposed layout as part of Oxpens development.



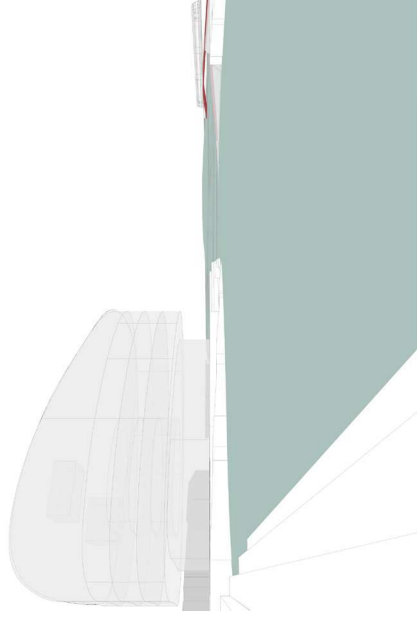
Option Two (A)



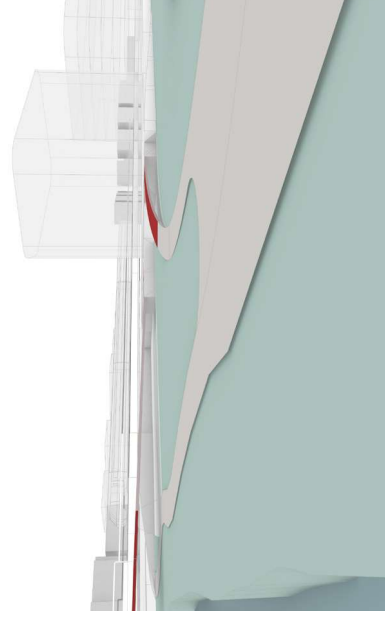
Overview Option Two (A)



View from bridge (1)



View from new development (2)



View from towpath (3)

Connectivity Diagrams

8.2 Option Two (B)

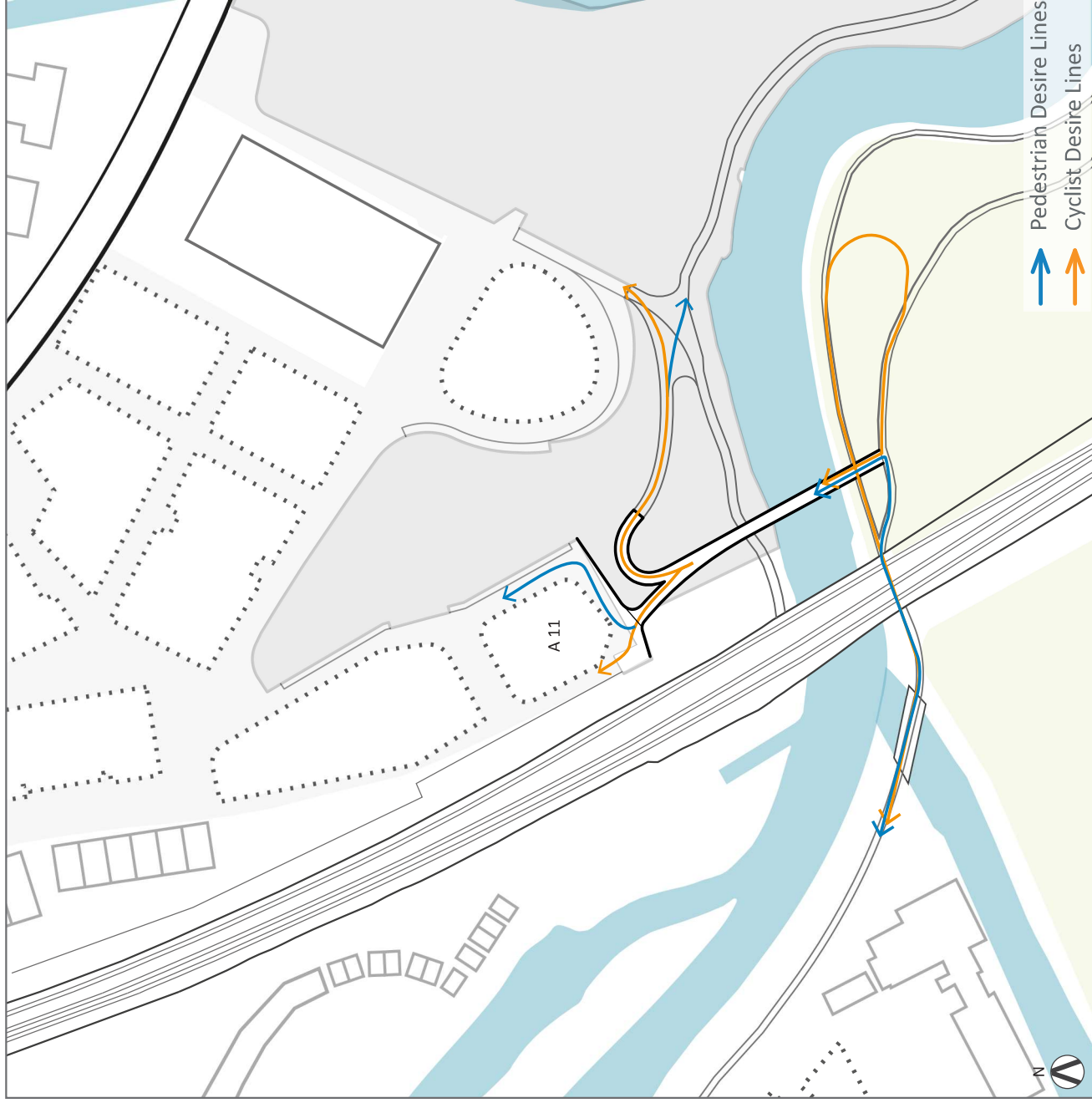
Aligning with the central axis of building A11, with a split approach ramp. One branch connecting to the high-level platform and the other connecting to the ground level.

The **strengths** of this proposal are;

- the easterly approach ramp aims to touch ground quickly, avoiding the need to reach the high-level, resulting on a shorter ramp.
- the approach ramps are more closely aligned to users desire lines.
- it provides a dry route through the development.

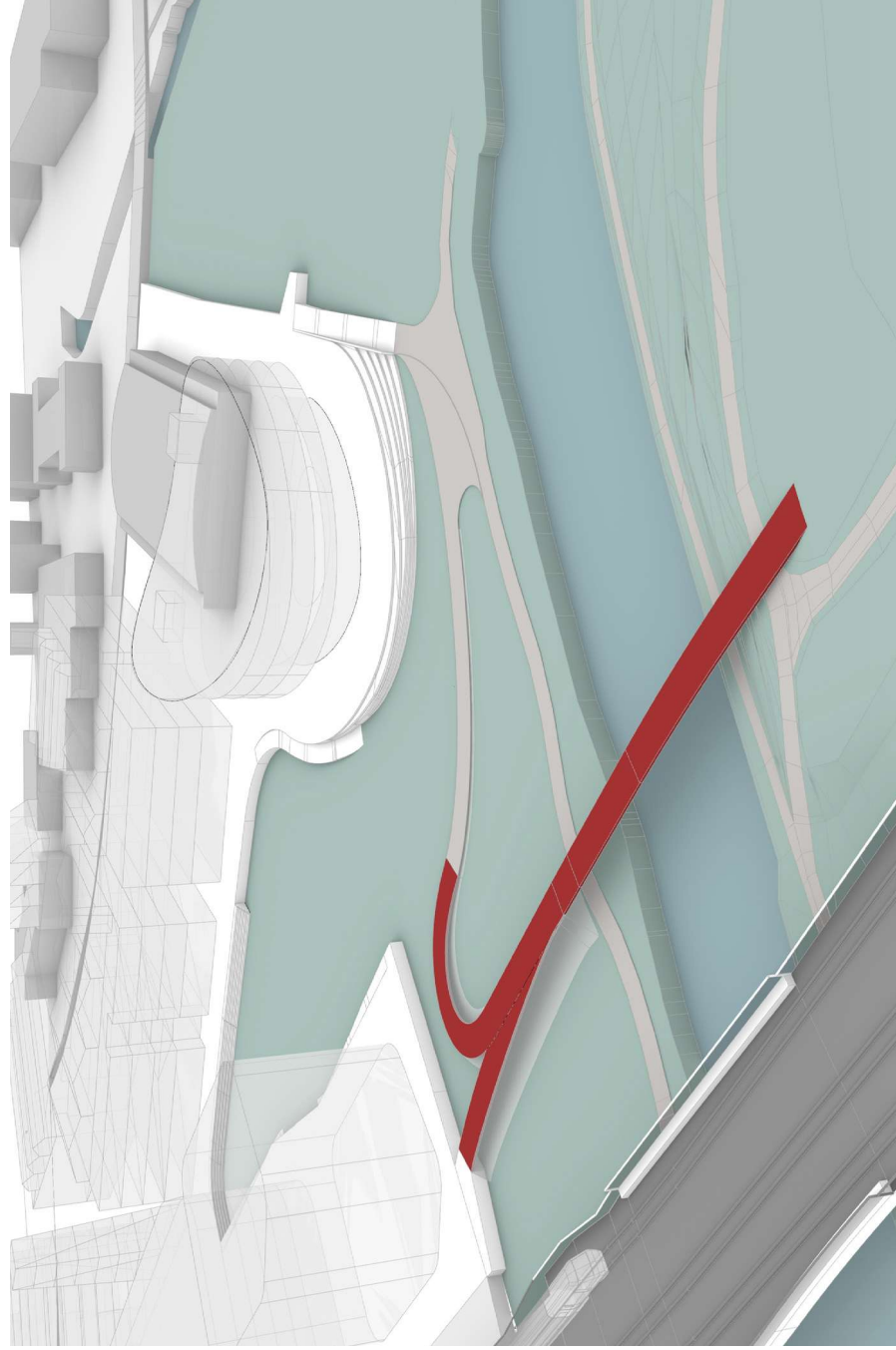
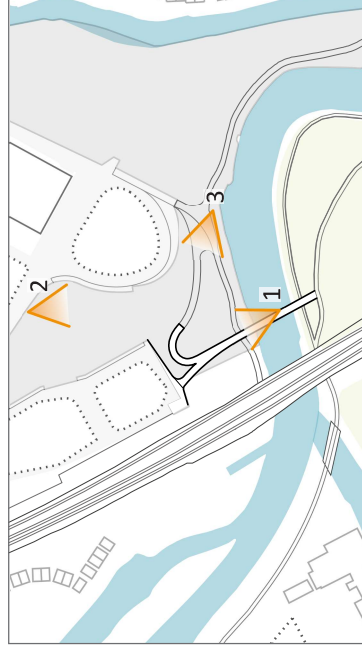
The **challenges** of this proposal are;

- the approach ramp to ground should be designed to minimise the intrusion into the flood plain and the visual connection between the development and the river.
- the bridge will be less visible from the development, diminishing the placemaking aims of the structure.
- the alignment is close to NR boundary.

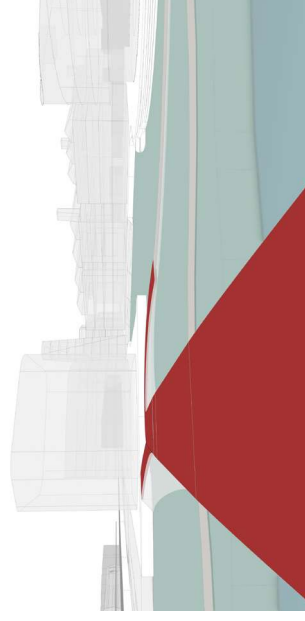


Plan and Cyclist/Pedestrians desire lines over Proposed layout as part of Oxpens development.

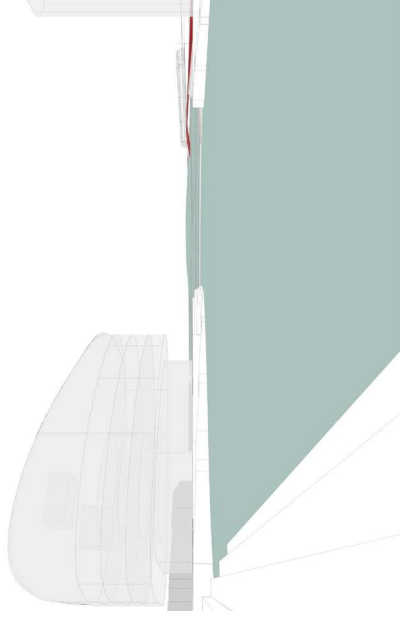
Option Two (B)



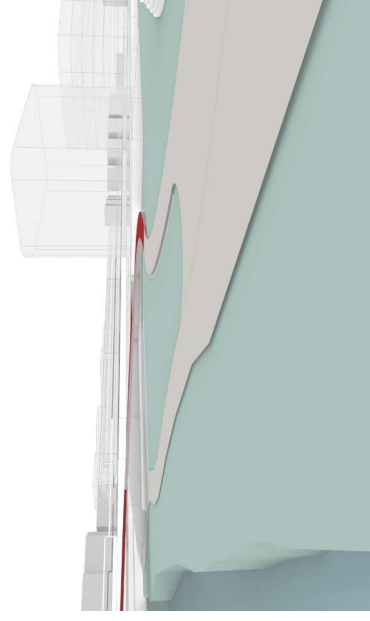
Overview Option Two (B)



View from bridge (1)



View from new development (2)



View from towpath (3)

Connectivity Diagrams

8.3 Option Three

Connecting with the eastern platform of the new development, where building A10 is located. The westerly approach ramp forms part of the terrace down to ground level, and the other directs users towards the city centre.

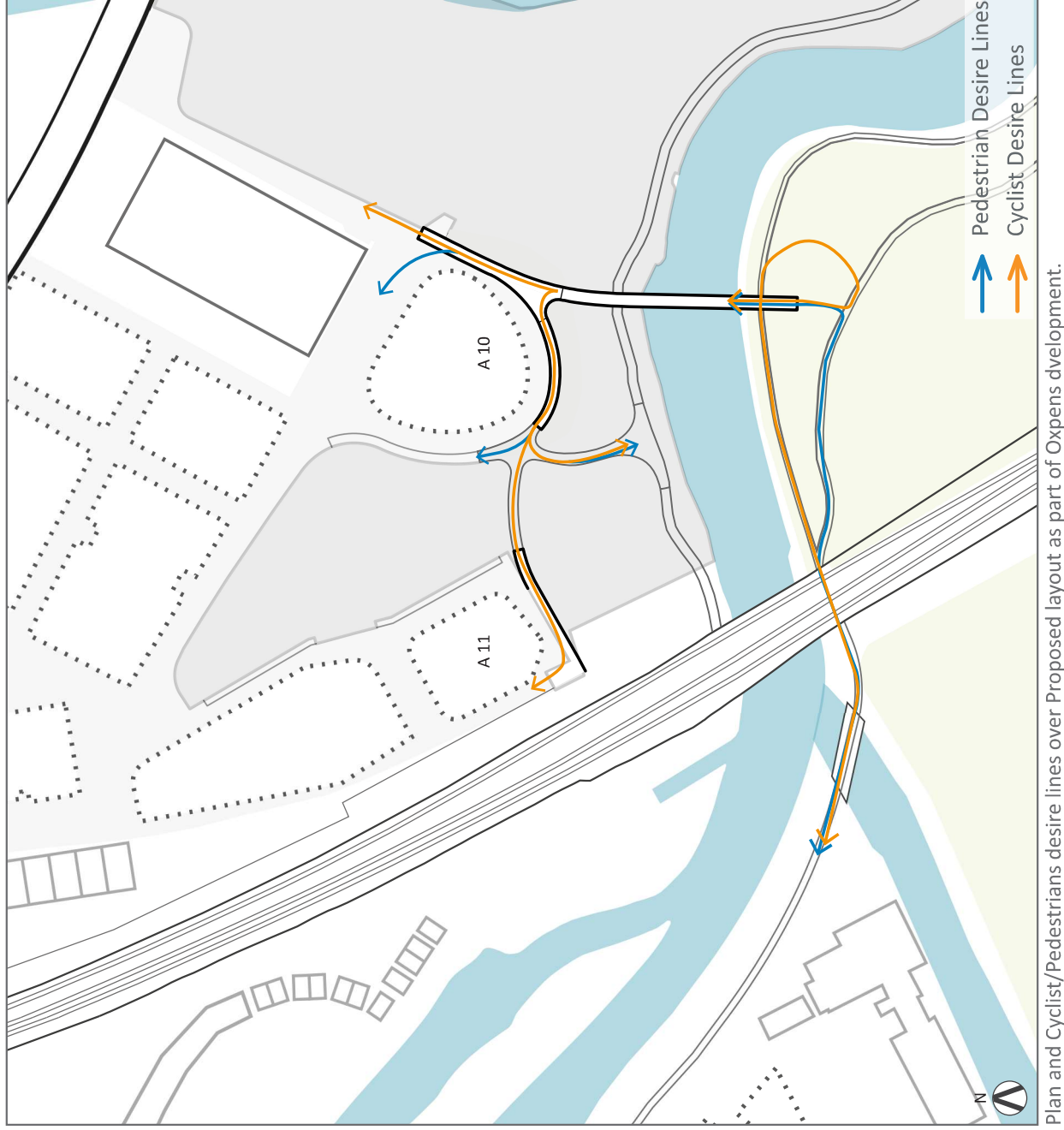
A second ramp alongside the south of building A11 would bring cyclists back up to Becket Lane South.

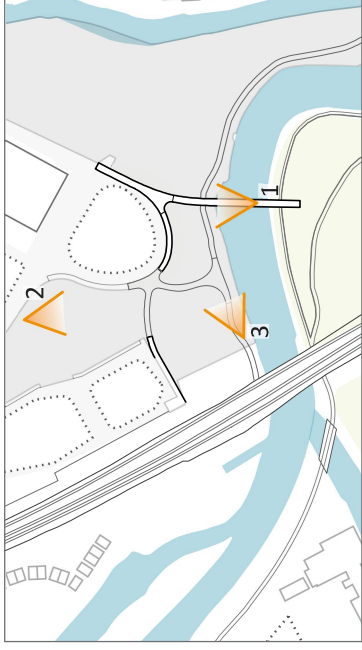
The **strengths** of this proposal are;

- it significantly reduces the footprint of approach ramp required.
- it favours what is seen to be the dominant route to the city centre.
- it lessens the impact on the meadows and the visual severance between development and river front.
- it eases the connection to the south side of the river as there is less space limitations at that point.
- it provides a dry route through the eastern edge of the development.

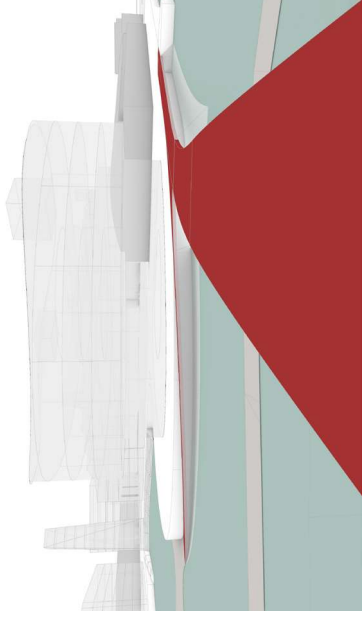
The **challenges** of this proposal are;

- ensuring the structure does not contribute to the severance between the meadows.
- integrating the structure with the development, so it remains as an united approach to the masterplan.
- it needs to provide an additional connection with the high-level platform at building A11 for cyclists or an alternative route through the development.

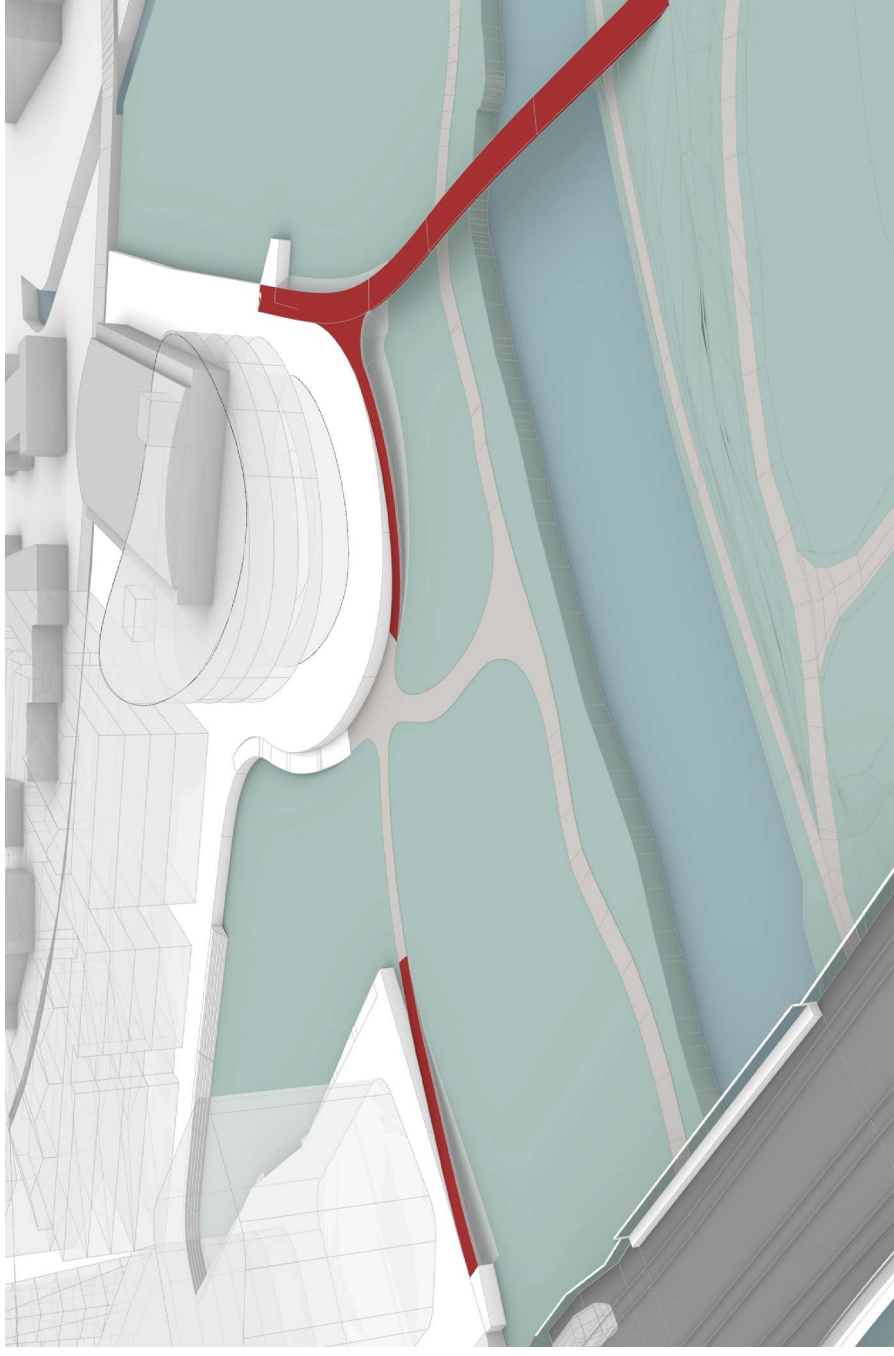




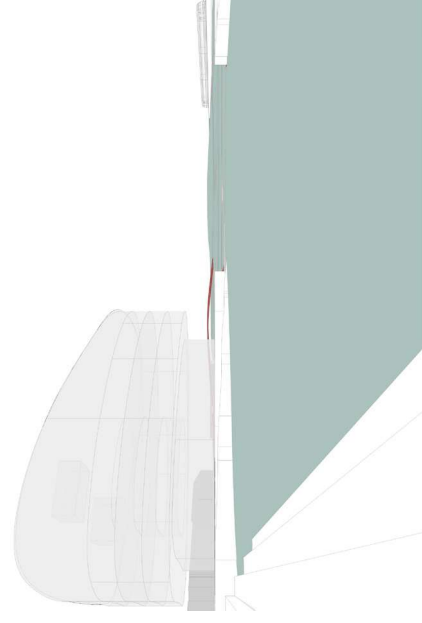
Option Three



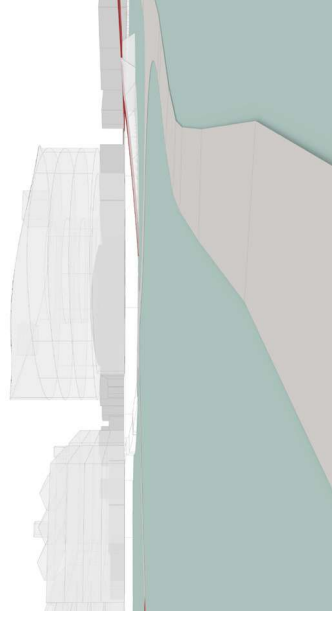
View from bridge (1)



Overview Option Three



View from new development (2)



View from towpath (3)

Connectivity Diagrams

8.4 Option Four

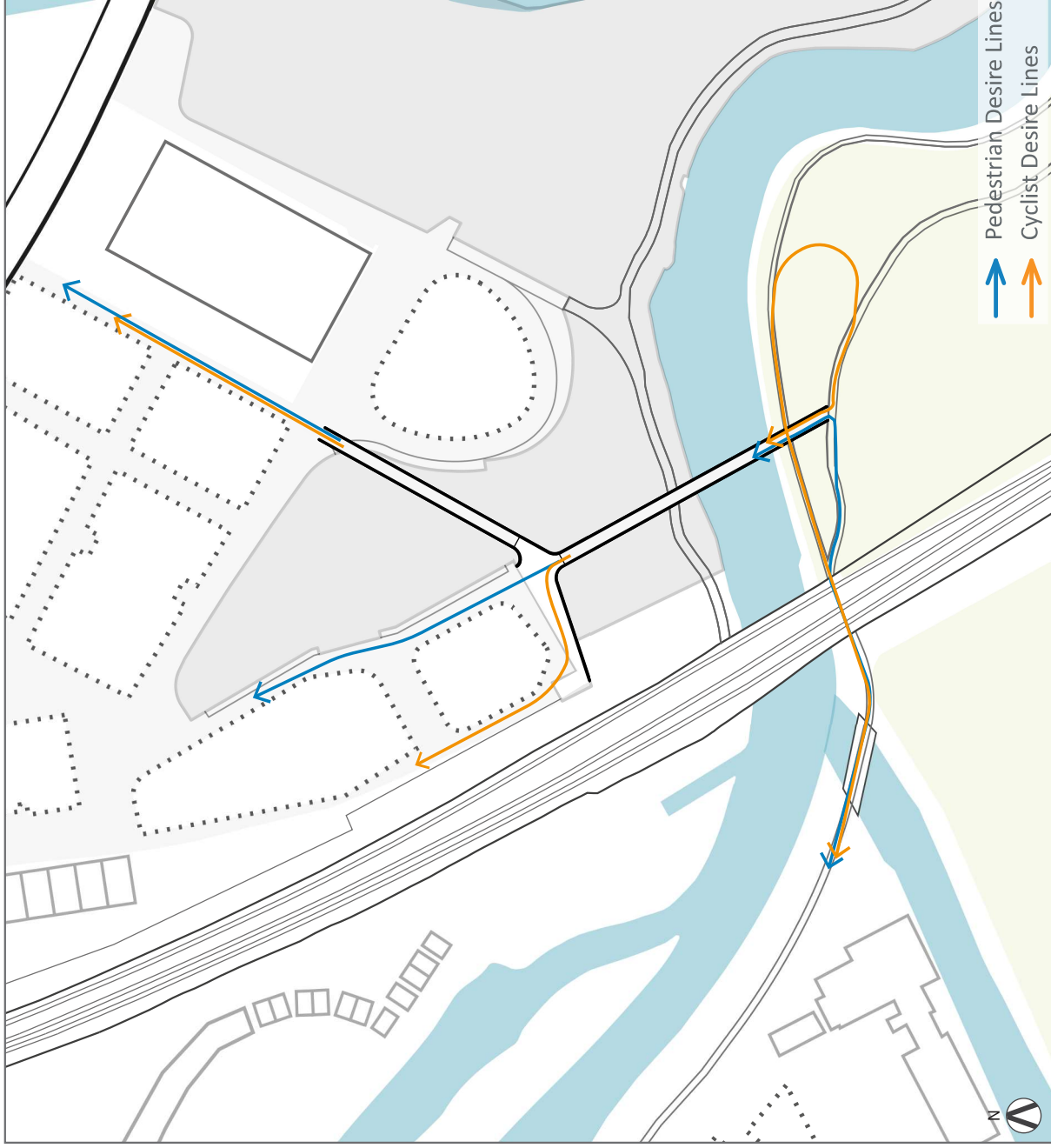
Splitting the approach structure to connect with the upper level of the development on both the east and west sides of the amphitheatre. The eastern approach ramp would cross the theatre area at 1.8m above ground level, and so would not provide a route underneath.

The **strengths** of this proposal are;

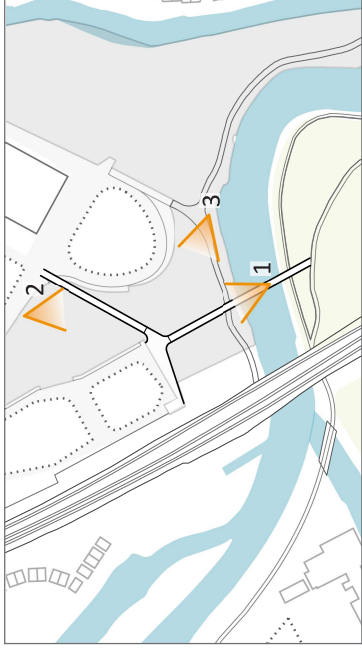
- more straightforward connection with the NE end heading to city centre.
- both routes are dry route at all times.

The **challenges** of this proposal are;

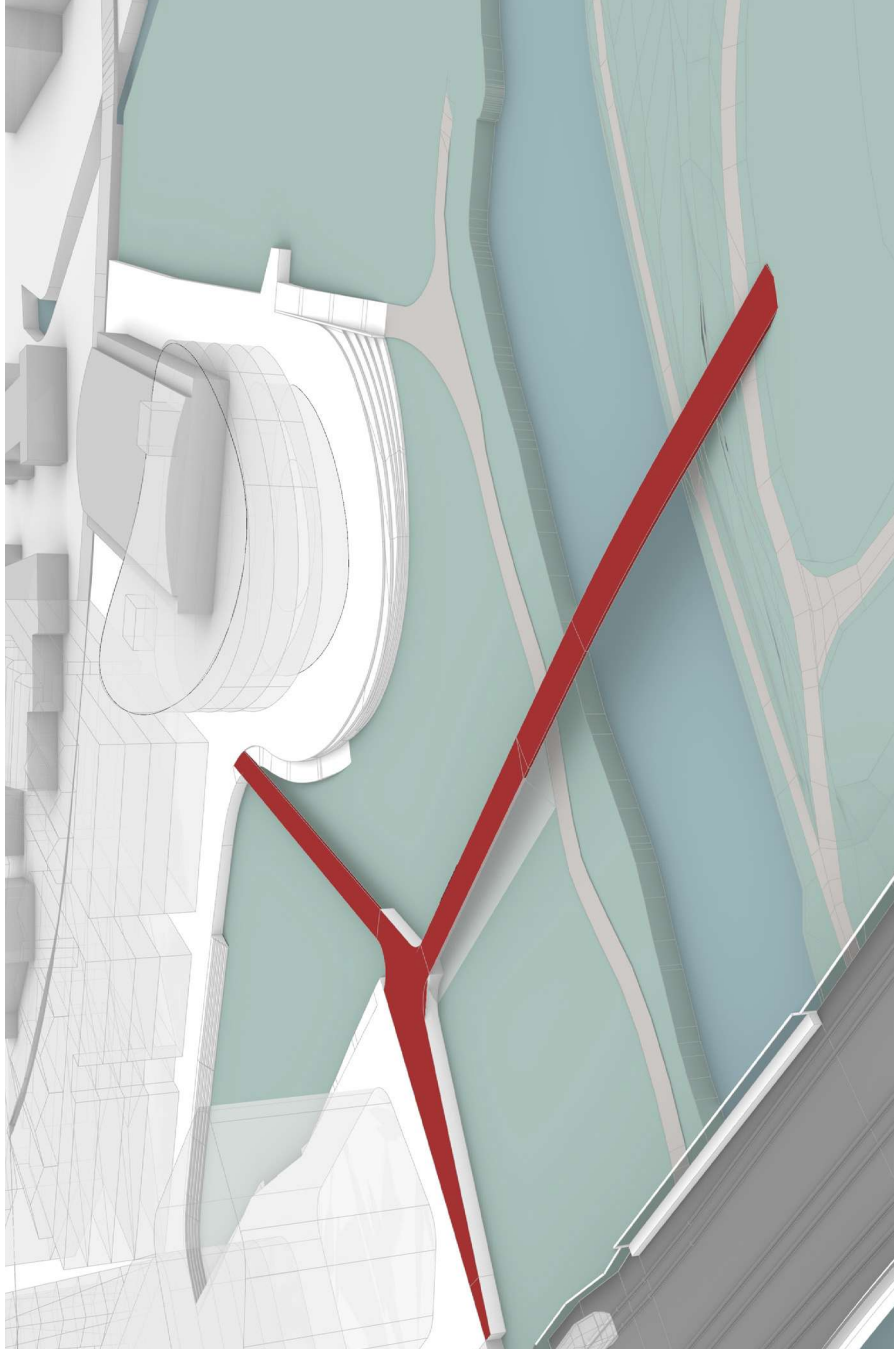
- the approach ramp will dominate the project appearance diminishing the main crossing over the river.
- it also cuts across the new development key views and interfere with the connection with the river.



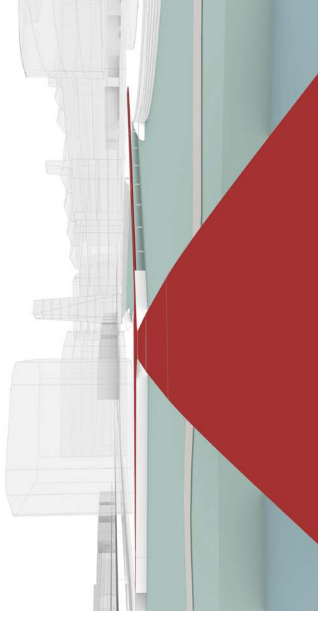
Plan and Cyclist/Pedestrians desire lines over Proposed layout as part of Oxpens development.



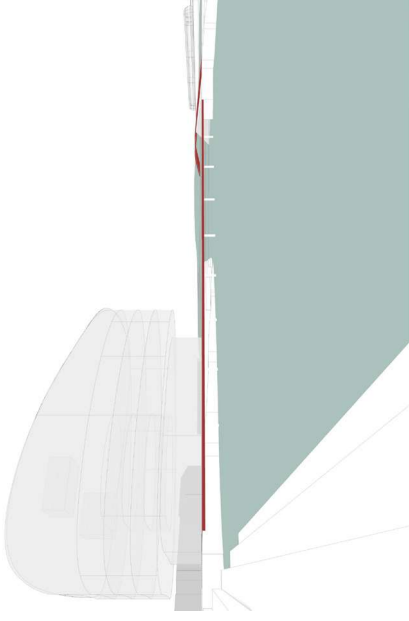
Option Four



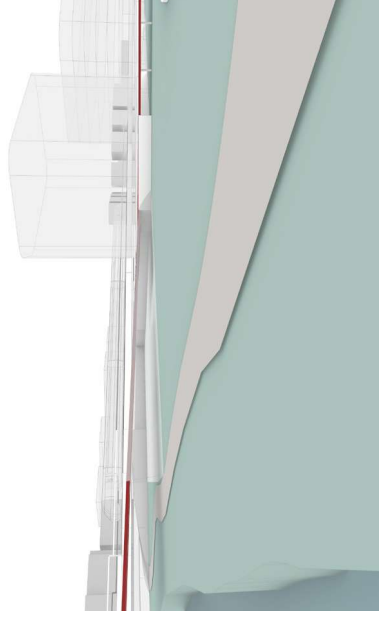
Overview Option Four



View from bridge (1)



View from new development (2)

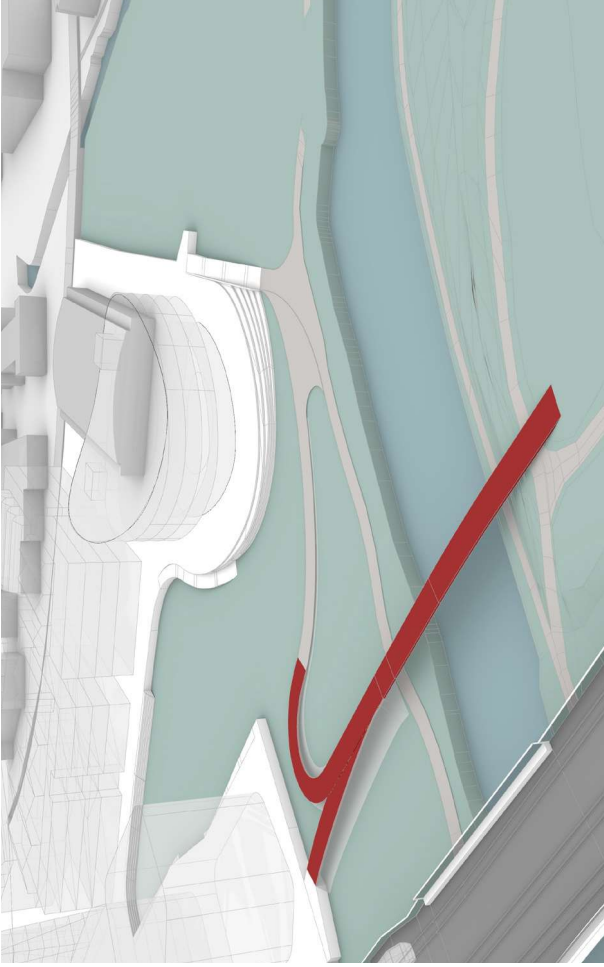


View from towpath (3)

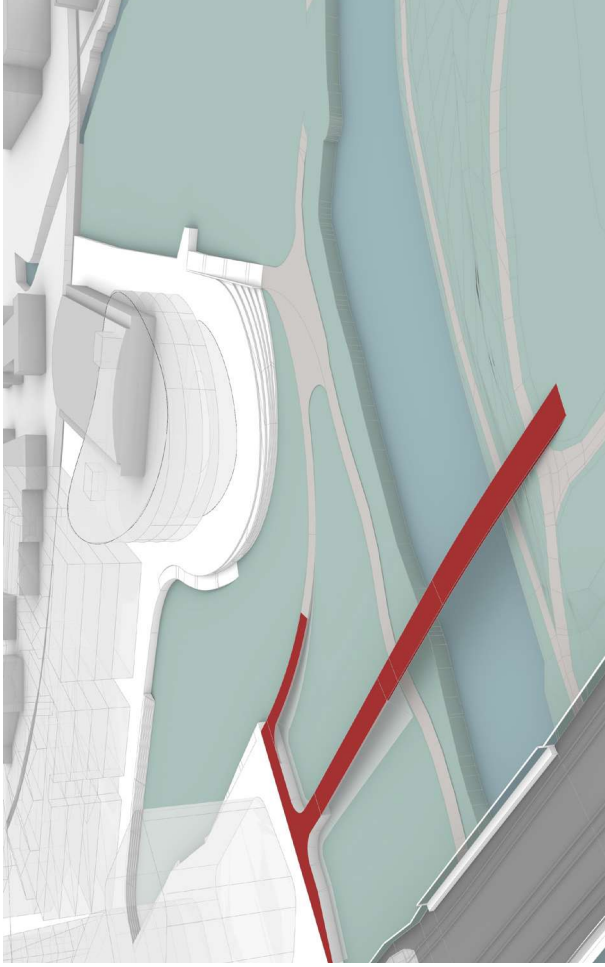
Connectivity Diagrams

8. Alignment Options | Summary

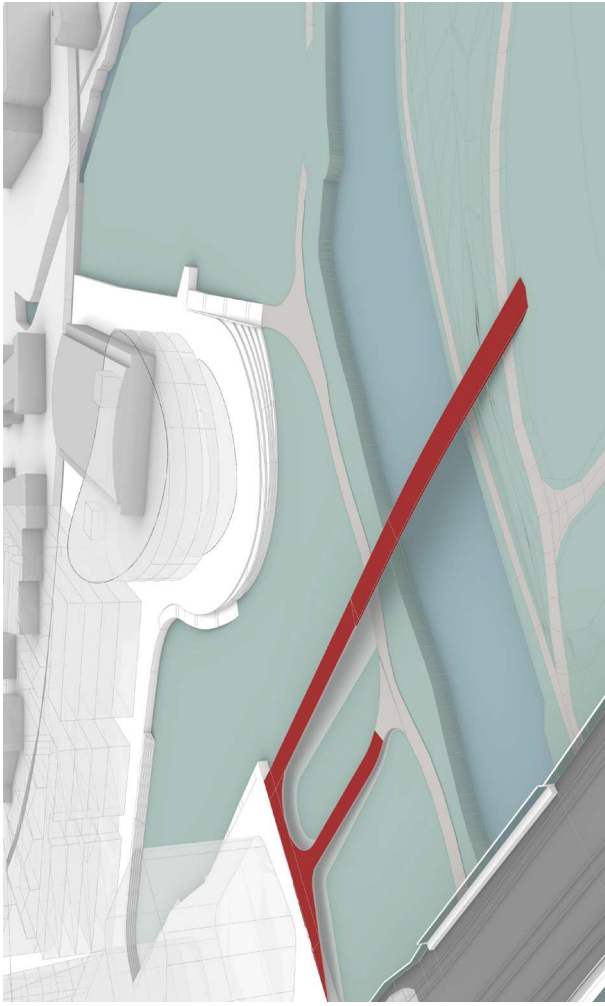
Option Two (B)



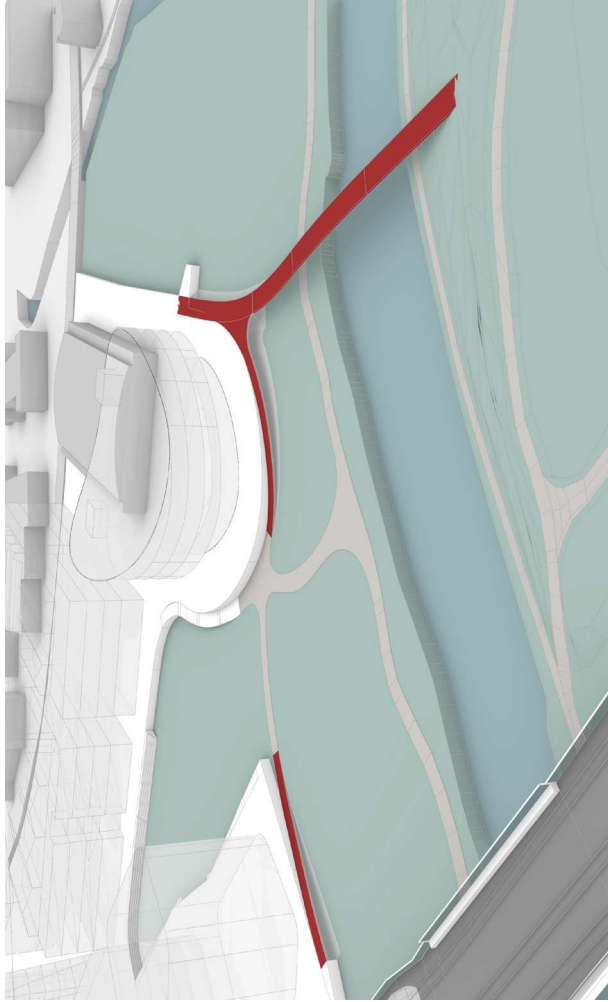
Option Two (A)



Option One



Option Three



Option Four

