DOUBLE DECKER BRIDGE

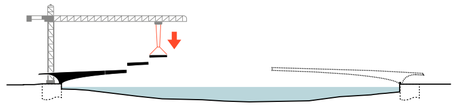
We recommend separating not integrating cycle and pedestrian traffic on the bridge. Our 'double decker' concept is both spectacular and safe; the cyclists ride on the supporting arches, the pedestrians walk on the deck supported above. The pleasure is about simultaneous movement and visibility in one dynamic integrated structure.

Height & access

With a graceful single arch of 220m, the bridge spans the river without any piers in the water. The required 10.96 above ordnance datum is maintained or exceeded for 150m. At each landing the supporting arched cycle ramps meet embankment grade neatly, framing pedestrian lifts and stairs. Our solution means there is no need for cycle lifts. Existing and new trees can be integrated into the composition.

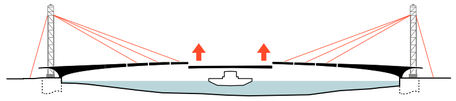
Placemaking & landings

Landmark structure is sculpted into local place. River walk is uninterrupted. River views and sky unimpeded by overhead structure. The landing composition is deliberately site-specific for a hypothetical 'site', to demonstrate how the multi-access needs beneficially create positive space.



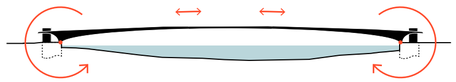
Cantilever

A deck depth at the support of 8m and a span to depth ratio of 1:10 allows a cantilever of 80m. At 35m out into the river the clearance envelope dictates a locally shallow deck depth. Additional temporary cable stays may be needed to construct the required cantilever.



Arch

The central 60m pre-fabricated deck section is floated in by barge, and lifted into position using high tide. The deck will be 2.5m to 3.0m deep in the middle, giving a span to depth ratio of 1:20 to 1:25. Axial force is jacked into the deck to ensure partial arching action.

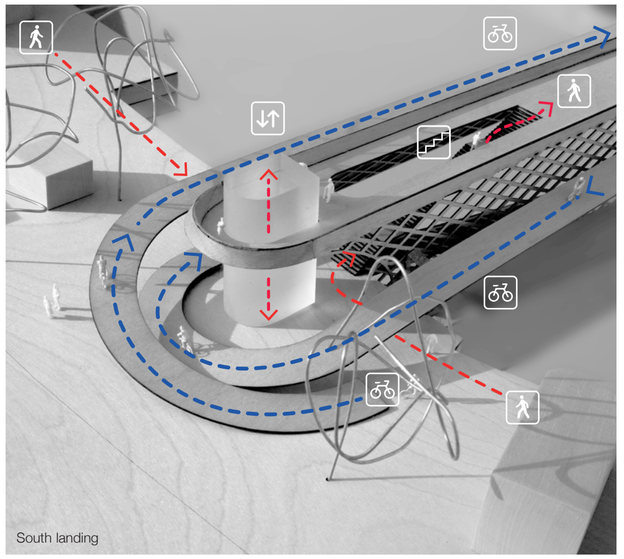


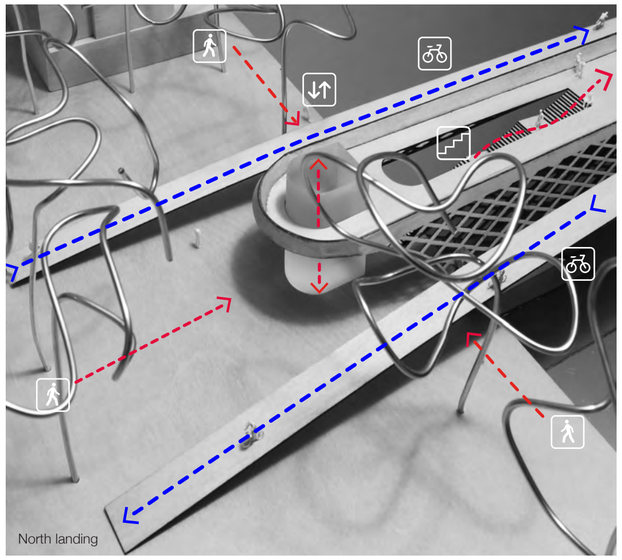
Forces

The beam & arching actions combine to optimise forces to the foundations. In construction the cantilever action is tipping the foundations inwards. The compressive force, jacked into the deck to create the arch action, then pushes the foundations in the opposite direction.

Phased construction & structural form

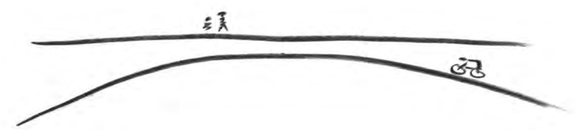
The bridge is a single arch, with an exceptionally shallow 10m rise: 220m span. With these proportions horizontal forces reaching the foundations are large. The bridge, whilst partially an arch, has to work also as a beam, with stiffness in the middle of the span but also significantly at the supports. Construction is made possible through the process illustrated below.

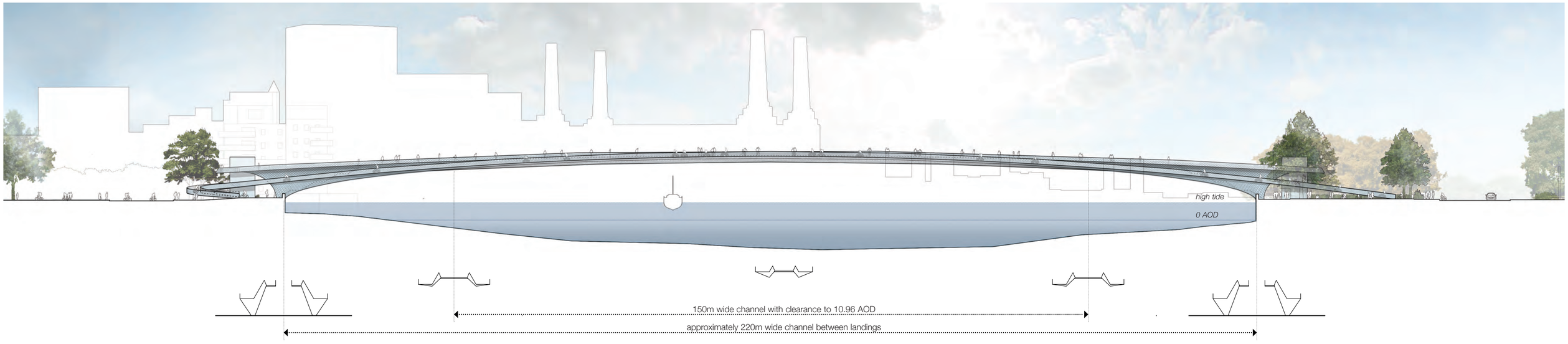


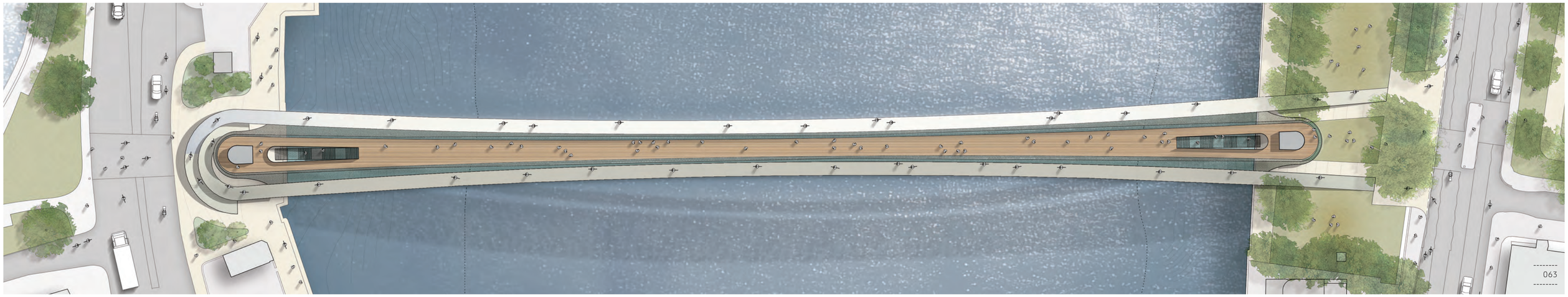


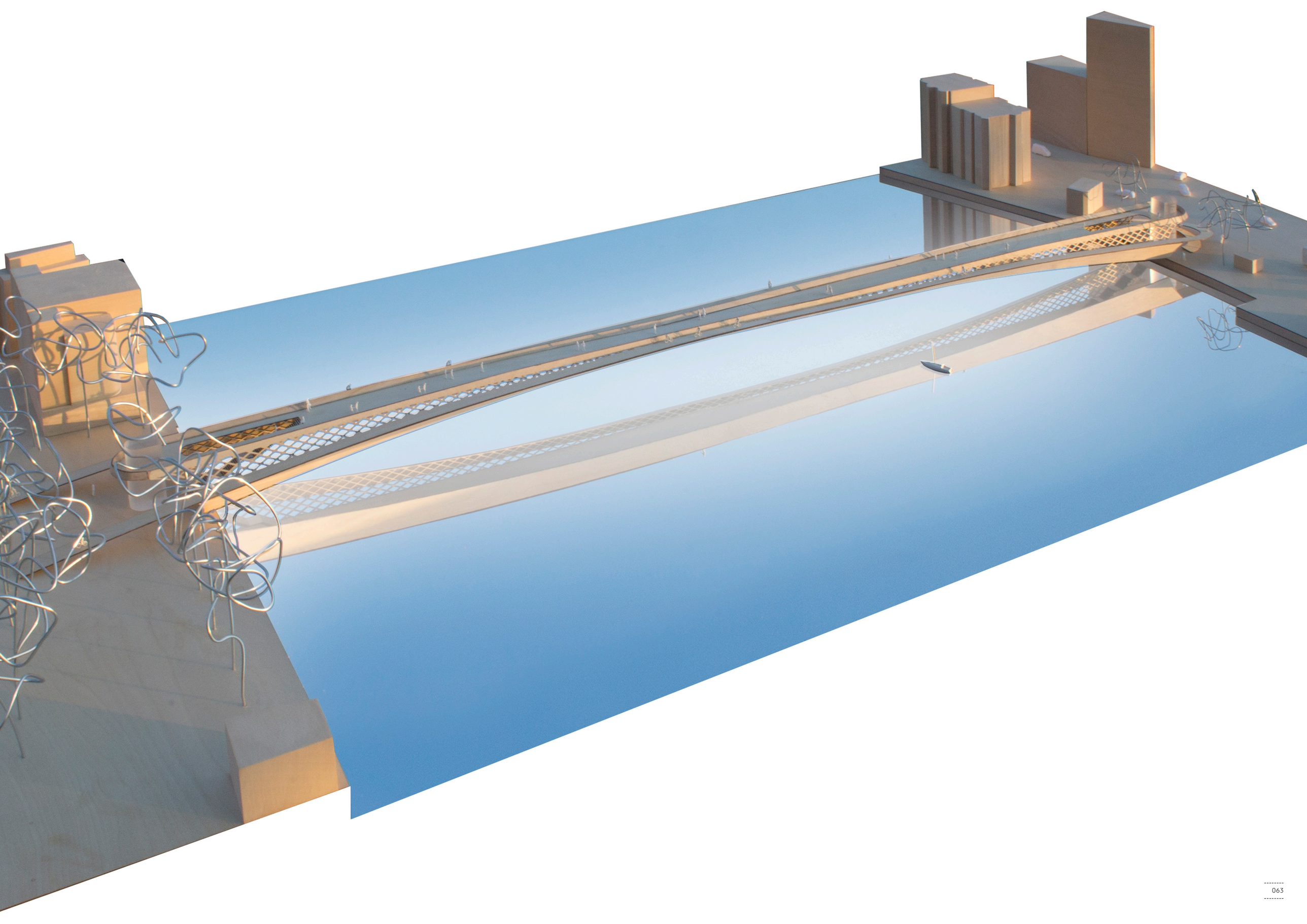
Integrating cycle & pedestrian traffic

The paired structural arches support a 'top deck', allowing fast flowing cyclists to be segregated from slower pedestrians above. The view is enjoyed by all. At each landing, dedicated 3m wide cycle paths are step free and slope to a maximum 1:8 gradient. Pedestrians either take stairs over the water directly to the bank edge or continue along the deck to take a lift. Pedestrians and cyclists are unified by the bridge, but never cross paths. The landings points are carefully designed to create presence with as little impact as possible to the landscape, trees and views.









NINE ELMS TO PIMLICO BRIDGE
UNIQUE COMPETITION NUMBER: 063

DOUBLE DECKER BRIDGE

DESTINATION, DEPARTURE, ARRIVAL

The best bridges are indispensible landmarks, essays in inventive construction, and popular places to mingle and meet. On a great bridge one feels the sense of structure and journey.

SLIMLINE SILHOUETTE

To connect Nine Elms and Pimlico we deliberately avoided any overhead structure; for this site we think London's skyline has enough going on. Why compete with the iconic silhouette of Battersea Power Station? Our bridge is a slim ribbon offering clear sightlines to the river and London's skyline, with NO cable-stays and no pylons interrupting views…

PEDESTRIANS ABOVE, CYCLISTS BELOW

Cyclists and pedestrians move at very different speeds. To coexist safely we recommend separate circulation on the bridge.

Our 'double decker' bridge concept is both spectacular and safe; cyclists ride on paired arches supporting the pedestrian walkway above. The ramped arch structure integrates and accommodates full accessibility with maximum visibility for all. In the centre of the bridge pedestrians and cyclists are briefly in parallel, eye to eye, before the geometry diverges and cyclists descend, while pedestrians continue to walk along the uncluttered horizon.

PERFORATED MONOCOQUE STRUCTURE

For this open stretch of the Thames we have avoided any supports in the river. A graceful single span of 220m is achievable with our innovative, monocoque, folded steel variable depth profile. The required 10.96m clearance above Ordnance Datum is maintained for 150m. The design acknowledges that the river must remain operational during a speedy construction. The prefabricated structure comprises 3 sections, with arch sections brought by river and cantilevered from each bank support, and the centre section jacked up using tide and barge. The perforated steel profiles offer structural efficiency, transparency, and lightness. Little maintenance is required in our design. Lighting can be integrated into the hollow parts of the upstand balustrades. Timber decking and benches provide warmth, scale and tactility.

EASY ACCESS

At each riverbank edge, the springing point of the splayed paired arches offers a sheltering vantage point. Riverside walkers are not obstructed, the bridge stairs rise out over water and up to the pedestrian walkway. The double pedestrian/DDA lift is glass, and set back from the riverside walkway, the shaft also working as bridge tie-down. The bridge arches are used as ramps, directly connecting cyclists from ground to bridge; we do not need a cycle lift in our design.

A SYSTEM FOR GENIUS LOCI

All necessary structural and circulatory elements (lifts, stairs, ramps, and arch footings) are sculpturally integrated into a riverside composition that carefully frames space, place, function and view. Trees can coexist amongst these discreet elements, which are carefully separated for stability and elegance.

We illustrate how this might work with a concept model for site 1. This shows how the landing design can be made site specific according to the riverside space available, and therefore adapt to other sites. The different configuration of landing at north and south ends of the bridge demonstrate how the multi-access needs can beneficially create a positive gateway space at the riverside.