Pedestrian and cyclist integration

A 7 m wide deck divided into a 2m wide pedestrian path, a 4m wide cyclist track and a 1m pedestrian strip is proposed for the main bridge. Line marking and coloured pavement distinguish the functions of each track.

While movement modelling is required beyond the extents of the bridge, initial movement modelling using Space Syntax has demonstrated that we can safely and ergonomically allow pedestrians and cyclists to access and cross the Bridge without creating conflict.

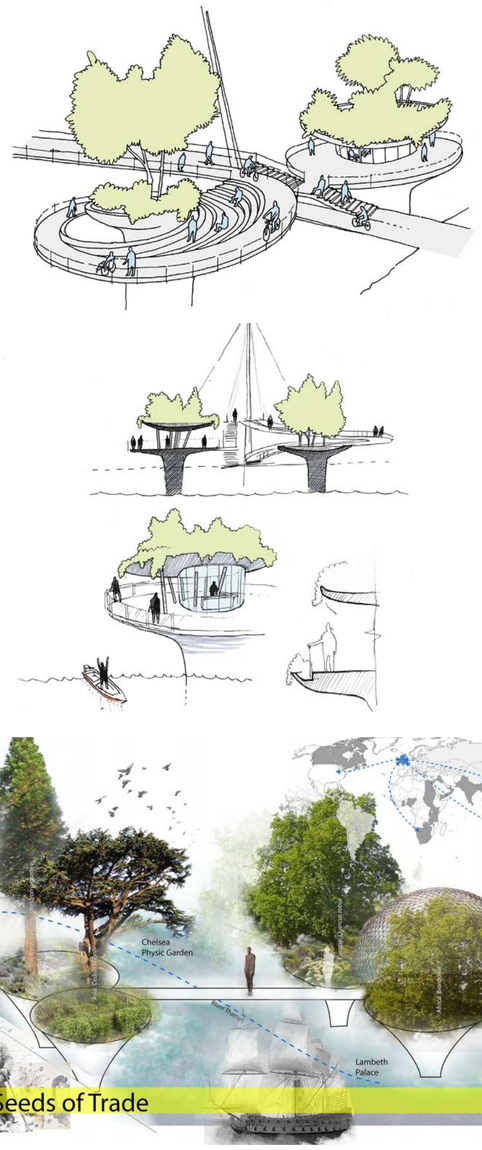
During peak commuting times cyclist and pedestrians can use the bridge efficiently in separated corridors. With safe zones on both the east and west side of the deck, pedestrians can enjoy the views or wandering on the other side of the deck, to avoid the cyclist without crossing the full cyclist lane. At low cycle traffic times, since the delineation is only horizontal marking, the 7m wide bridge can be easily enjoyed by both occasional cyclists and pedestrians.

Place Making across the Bridge and its landing points

The introduction of new TfL Tube stations at Nine Elms and Battersea Power Station as a part of the Northern Line Extension together with the US Embassy, Chinese and Dutch Embassies and over 13,000 residential apartments being built across the Nine Elms has highlighted the need for cycle and pedestrian connectivity to London in this area. Coupled with this is the amount of visitors and unique visits people will be making to the area – whether to see the architecture, explore the new public realm or in time people walking the Thames River Path on the Southbank of the river that will eventually connect Tower Bridge with Battersea Park and beyond.

The on-going development of the area, and the unique views and experiences that each end of the bridge provides, has informed the decision to offer landing points on each bank. The bridge width and landing points at each end provide opportunities to 'step' off the flow of people across the bridge with seating and gathering areas and will create unique viewing locations from which Westminster can be seen looking east and Nine Elms and the Battersea Power Station looking west.

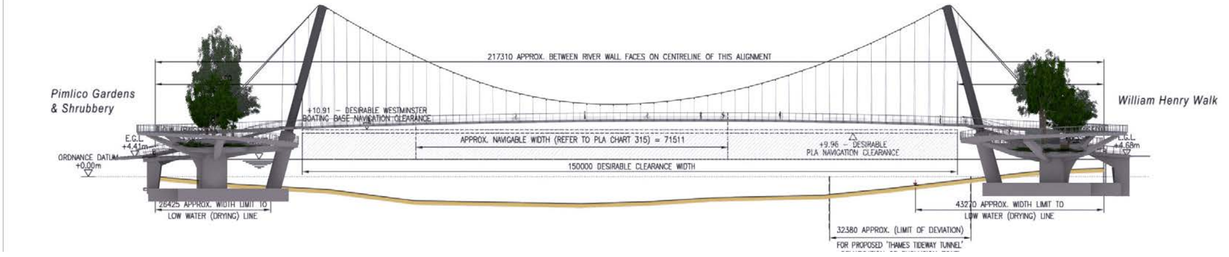
The landing points are not only structurally integral but also experientially essential to the integrity of the bridge by providing an isthmus of vegetation on each riverbank. These planted plinths reflect the cultural and horticultural nature of their landing points – the north bank being planted with Oak and natural Thames River Valley plantings and the south bank being planted with the New World plant discoveries that first came to the UK up the River Thames on board ships from the Americas, Asia and other parts of the world. The nature of these plantings can be explored with stakeholders the bridge design develops.



Height across the River and the inherent access issues

To provide PLA's navigation clearance and tie in the landings with existing ground level on either river bank, spiral ramps and pedestrian platform are proposed.

Pedestrians are provided with 1:7 steps to access the bridge on a 4m wide platform while cyclists and the disabled access the bridge via a ramp with a gradient of 1:20. This creates a generous and efficient approach to the bridge while meeting the navigation clearance requirements. The flexibility of this proposal means that is can be used at any locations and refined once the final location has been decided.



Bridge Construction

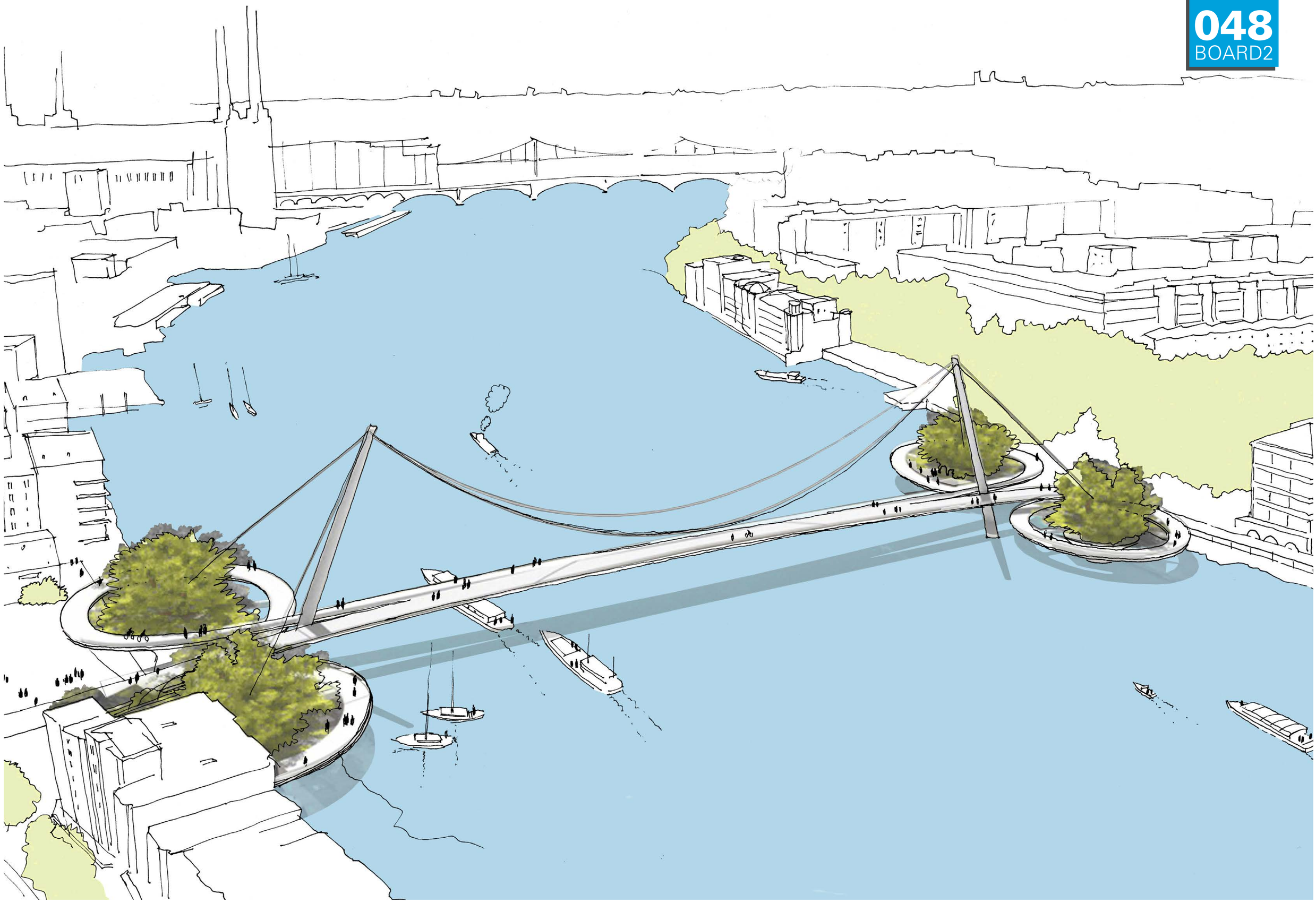
The biggest advantage of a single suspended span is the minimal impact during construction on the main span. The foundations, concrete shafts for the cyclist and pedestrian platforms and towers are located outside the navigational channel, close to the quays and mostly within the tidal area.

Access will be provided from the quays, with minimal disruption, for construction of the bridge up to the main span. Conventional temporary jetty platforms, cofferdams etc. will be used. Construction of the main span requires the installation of the main cable, anchored at the counterweight, running around the tower saddle and suspended over the main span, all in a single operation. This element is extremely light compared with other construction forms and requires minimal disruption to river traffic while both main cables are installed.

The deck is constructed using prefabricated concrete segments, cast in two stages. A precast concrete shell is suspended from the hangers in stages, and a single in-situ pour using these precast elements provide a highly durable, integral deck. This construction method has a proven track record of reducing the impact on river traffic and has been previously used on several suspension and stress ribbon bridges.

Seeds of Trade - a vision linking the horticultural significance of this part of The Thames to the World using horticulture & trade as the basis for the relationship.

Gateway planting of trees to the South Bank for The Americas and Asia representing the US & Chinese Embassy alike and the Oak Tree to link to the old world of London.



The development of this area has been boosted by new Tube stations at Nine Elms and Battersea Power Station, and the construction of over 13,000 residential apartments. The need for cycle and pedestrian connectivity to London is paramount.

The proposed bridge comprises a main suspended span 160m long, supported by two symmetrical pylons inclined slightly towards the centre of the bridge. Two side spans of approximately 35m are located outside the navigational clearance. A slender concrete slab 7m wide and 0.5 m deep forms the deck and is supported on each side by two main cables approximately 180mm in diameter and connected with hangers at 3m intervals. The side spans act as counterweights to the main span and comprise a 6m diameter concrete shaft opening up at level 7.00 to create a 12m diameter platform. The concrete shaft supports a spiral ramp, circular in plan, with an approximate diameter of 30m producing a total ramp length of 130m. This overcomes the difficulty connecting existing ground levels at both the north and south banks while achieving PLA's required navigation clearance.

The side spans comprise concrete and planting which can be supplemented with landscaping elements on top of the central platform. While only one ramp is required on each side, a second 6m diameter concrete shaft is provided with a similar 12-15 m diameter intermediate landing platform. These can be extended and varied in shape with ribs and a concrete slab so ample stairs can be provided in two stretches, with slopes higher than 1:20, meeting the spiral ramp at the central pylon. These additional two platforms provide two functions, their weight, combined with the weight of the ramps, are the perfect counterbalance to the main span cables. They have minimal impact on the river bed, as only the 6m diameter shafts and the main pylon column emerge from the river. The ramps and platforms not only provide access to the bridge but extend the quay space into the river.

The two main cables are parabolic in shape and are located on each side of the deck. They vary in height from 2.5m at mid-span to 28m at the tower head anchors. Transversally, the towers comprise a single column elliptical in shape with constant dimensions of 2.5m longitudinally and 1.5m transversally. The main cables are equilibrated by two back stays that open in plan at 30 m on each side of the bridge's centre line. These are anchored behind the 6m diameter shafts supporting the pedestrian access platform and the spiral cycle ramp. The structural form and the self-weight of the concrete deck reduce the effects of the vibrations due to pedestrians without compromising the slender main cable. All of this provides a highly durable and efficient structural system.

The proposed solution is extremely flexible in layout. The extension and position of the spiral ramps and stairs can be interchanged and varied to easily accommodate existing ground levels and pedestrian and cyclist flow from the banks once the bridge location is finalised.