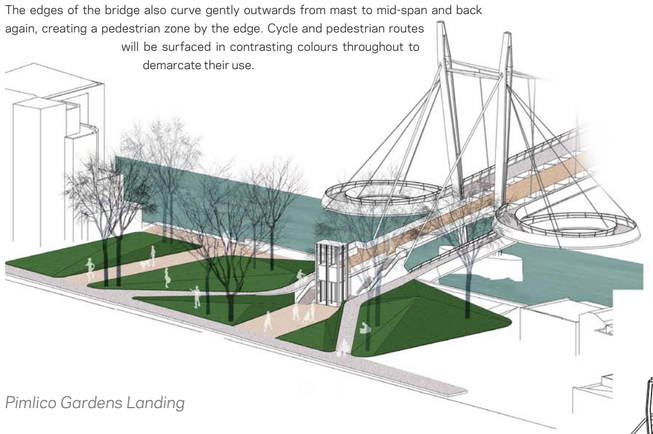
Integrating cycle & pedestrian traffic

The challenge in providing a bridge purely for pedestrians and cyclists lies in understanding their use patterns during the day and hours of darkness.

At peak hours, typically the morning and evening rush hour Monday to Friday, we recognise that most cyclists and pedestrians will want to progress across the river unimpeded. We also acknowledge through research that cyclists prefer not to dismount at any time during their journey. For these reasons our design caters for these peak hour flows with complete segregation between the two modes; the idea of a continuous, separate north and south-bound cycle path was pivotal in our concept for the bridge, with the two cycle flows flanking a central pedestrian walkway, ensuring optimum safe segregation.

But we must also consider that this bridge should allow all users to be able to enjoy the crossing in a more recreational spirit. The zone between the cycle and pedestrian paths becomes a sequence of shared spaces with picnic tables, bicycle parking, and shallow steps to sit, relax and enjoy the view. This 2m wide strip on both sides of the central walkway also contains a series of voids to the river below, at which point the suspension hangers engage with the deck structure. The steps mediate between the gently rising central deck and the outlying cycle paths, this change in level is subtle and requires no balustrade edge protection.

The edges of the bridge also curve gently outwards from mast to mid-span and back again, creating a pedestrian zone by the edge. Cycle and pedestrian routes will be surfaced in contrasting colours throughout to demarcate their use.



Pimlico Gardens Landing

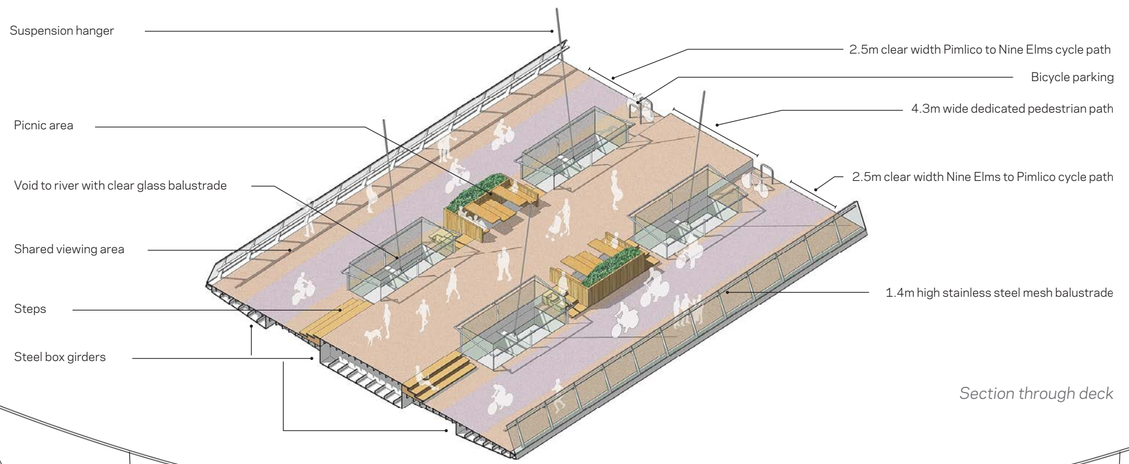
Place making across the bridge and at its landing points

Great design is efficient, affordable, sustainable, inclusive and beautiful. Nowhere is it more important than in our public spaces, parks, streets and squares – where so many people's lives intersect and around which so much commercial activity is centered.

The aspiration for the new bridge is underpinned by the idea of a bridge as a convivial connector, creating opportunities to linger on your journey and enjoy new views and vistas across the Thames. The bridge deck itself is a form of linear park, with distinct zones for relaxation, meeting, eating and viewing.

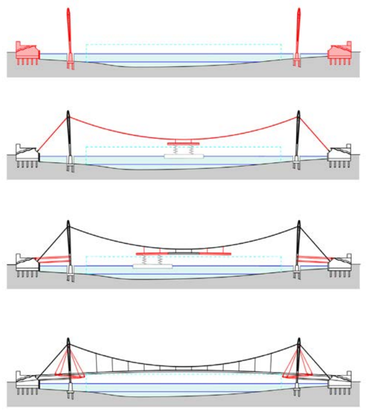
The new bridge will unite two distinctive places in London, sharing the qualities of both parts of the city across the River Thames. Elegantly landing in Pimlico Gardens on the north side of the river, the new garden reflects the simple arrangements of the public squares of Georgian London, whilst drawing on the qualities of the riverside by introducing a more dynamic landscape form. As many of the existing London Plane trees will be retained to maintain the fundamental character of the Gardens.

On the south side of the river, the bridge landing acts as a spring board into the new London of Nine Elms, creating a simple link to build future integration southwards beyond the river's edge and railway to the residents beyond.



Section through deck

Foundations and Substructure construction



STAGE 1
- Foundations and Substructure construction
- Prefabricated steel mast erection using a floating crane
- Mast size and weight compatible with river transportation (clearance, bathymetry)
- No envisaged disturbance to river activities

STAGE 2
- Main cable installation from high wire
- Prefabricated steel deck segment erection from a barge beginning at mid-span
- Deck segment size and weight compatible with river transportation (clearance, bathymetry)
- Minimal river disruption (0.5 day for main cables and each deck segment)

STAGE 3
- Complete remaining deck segment installation (7 segments in total)
- Back span prefabricated steel decks erection from a barge with crane (6 decks in total)
- Deck size and weight compatible with river transportation (clearance, bathymetry)
- Minimal river disruption (0.5 day per deck)

STAGE 4
- Erection of the helical ramps from a barge with crane
- Helix size and weight compatible with river transportation (clearance, bathymetry)
- Minimal river disruption (0.5 day for each helix)
- Finishes & lighting undertaken from the deck

Height

The bridge respects the required PLA navigation clearance of +10.96 AOD over the full 150m width, and the future river wall level of +6.35 AOD. This is aided by suspending the decks from above and using a slender deck section. In turn, this minimises the rise required for all users.

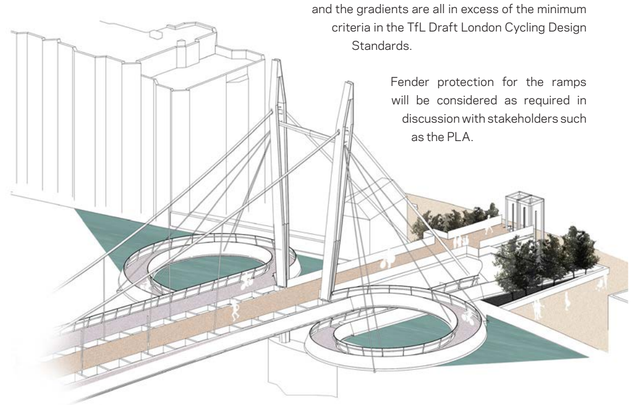
We envisage that the land will be raised locally after increasing the height of the river wall to allow views across the river; this will assist in the landfall of the cycle ramps.

A suspension bridge offers the lowest tower for a cable supported bridge. In our proposal the height of the towers is approximately 39m AOD, so relating more sympathetically with the urban – predominantly residential - context.

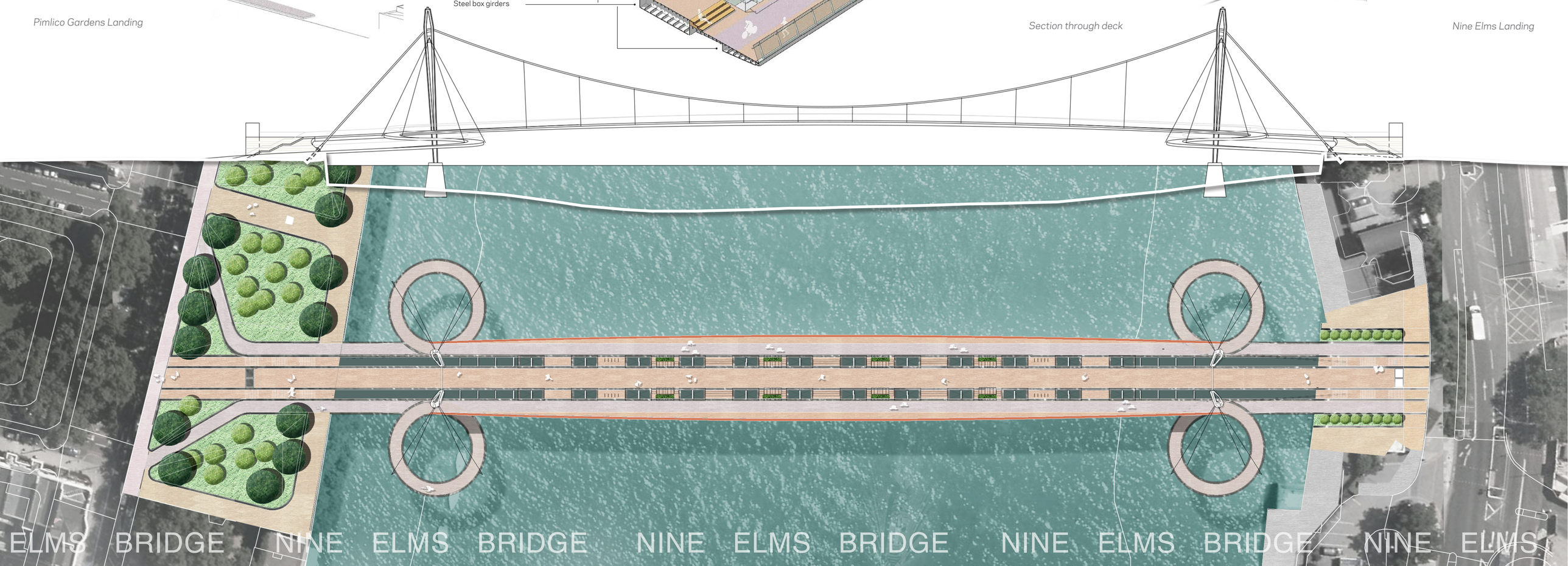
The pedestrian route varies in inclination from being level to 1:21 and is therefore step-free. Two lifts continue the step-free access to ground level at each bank but the generous stairs integrated to the landings are designed to invite the pedestrian in favour of using the lifts.

The cycle routes vary in inclination from being level to 1:21 over the main span, but increase to 1:18 at the helix. The radius of the ramps, clearances between ramps and the gradients are all in excess of the minimum criteria in the TfL Draft London Cycling Design Standards.

Fender protection for the ramps will be considered as required in discussion with stakeholders such as the PLA.



Nine Elms Landing



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Design Statement

The opportunity to offer pedestrians and cyclists a river crossing free of vehicular traffic is unique in central London; this suspension bridge seeks to offer all users the best possible experience.

The deck design reflects how pedestrians and cyclists will use the bridge through the day: clearly segregated flows for more urgent use during peak hours, but provision of transition points between the flows for more leisurely pursuits. The design provides areas for sitting, eating, working and viewing, with bike parking provided. Between these zones are voids to the river that also mark the suspension hanger positions.

The central pedestrian deck rises gradually to mid-span above the adjacent cycle decks to afford increasingly better views and emphasise the subtle separation of users, while visually breaking down the bridge massing.

Research indicates that for cyclists there is an overwhelming case to allow a seamless transition from road to bridge without the need to dismount; this was one of the main drivers of our proposal, and one of the principal design challenges. Without integrating such a free flow arrangement for cyclists, this river crossing will not achieve the forecast future cycling demand levels and thus the transport objectives.

The constraints of the landing areas would mean a complex and obtrusive ramp system on each bank so our design proposes that the ramps, which conform to the TfL Design London Cycle Standards, are situated above the river between the embankments and the navigation channel. By separating north and south-bound cycle flows we are able to incorporate a pair of lightweight helical ramps at each end – one ascending, the other descending. These helices are supported from the main towers.

The cycle ramps are minimised over the landings, allowing a gentler transition to the cycle network and reducing the visual bulk within the public realm. In Pimlico Gardens, the lawns will be gently banked up to the ramps and most of the mature plane trees retained. At Nine Elms the ramps, stairs and lifts are more compact, with a more formal landscaping screening the abutment.

The river walk would be locally diverted accordingly, bringing this pedestrian flow towards the Grosvenor Road and Nine Elms Lane crossing points.

The structural form chosen provides great structural and functional legibility, with a deck that achieves a lightness that defies its span. It conforms to all clearance requirements while addressing the different character of the opposing public realms. Its elegant silhouette responds well to its context, and reflects the delightful character of the suspension bridges of the western end of the river. It can be built largely from pre-fabricated components, is conventional to construct without compromising river navigation, and is straightforward to maintain and operate.

This new bridge will make a worthy addition to London’s river architecture and provide an exciting yet practical journey for its users.