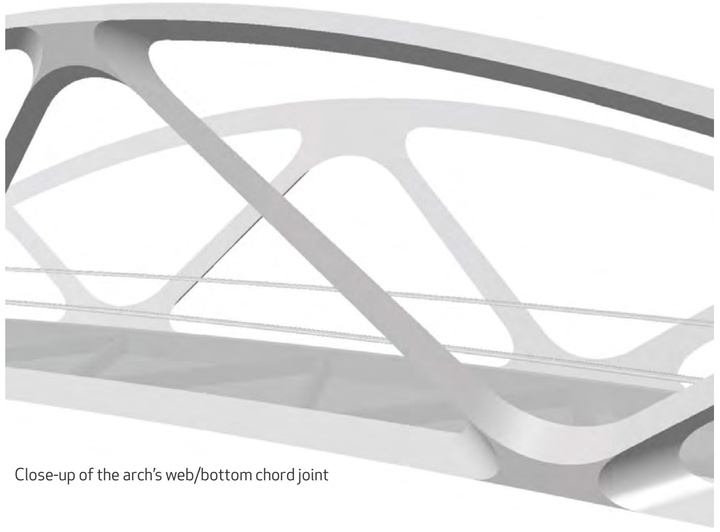
The 'biomorphic' language - inspired by the delicate shapes and geometries that can be found in nature - creates an architecturally sympathetic structure, which takes into consideration the environmentally important role of the Green Corridor. Rather than interfere with the surrounding wildlife the structure becomes an obvious part of the green space.

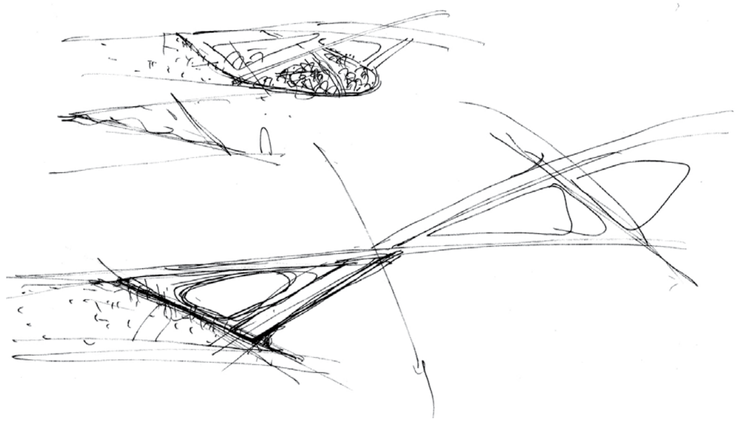
The images and sketches on the following pages illustrate the development of the architectural language.

Structural connection studies

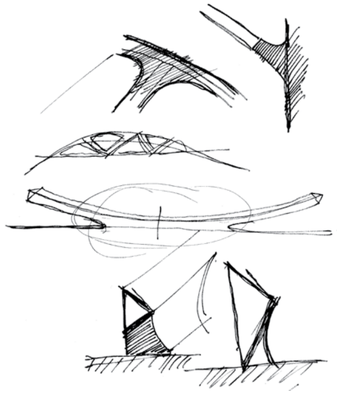


Close-up of the arch's web/bottom chord joint

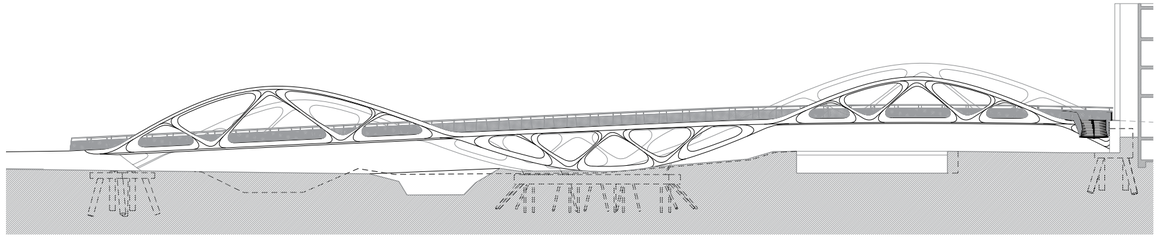
View along the bridge deck towards Springfield Road



Embankment abutment studies



Concept sketches



Proposed elevation

Conceptual sketch of bridge from towpath looking north

Refer to section 4.11 for towpath context

Conceptual sketch looking toward Springfield Road

Conceptual sketch looking toward West Southall

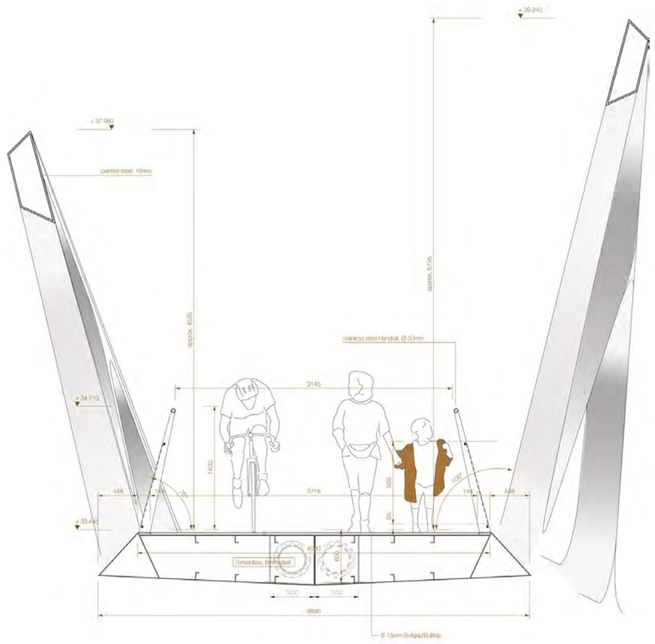
8.3 Access strategy

The bridge is designed to meet the different requirements of all prospective users such as pedestrians, cyclists and wheelchair users.

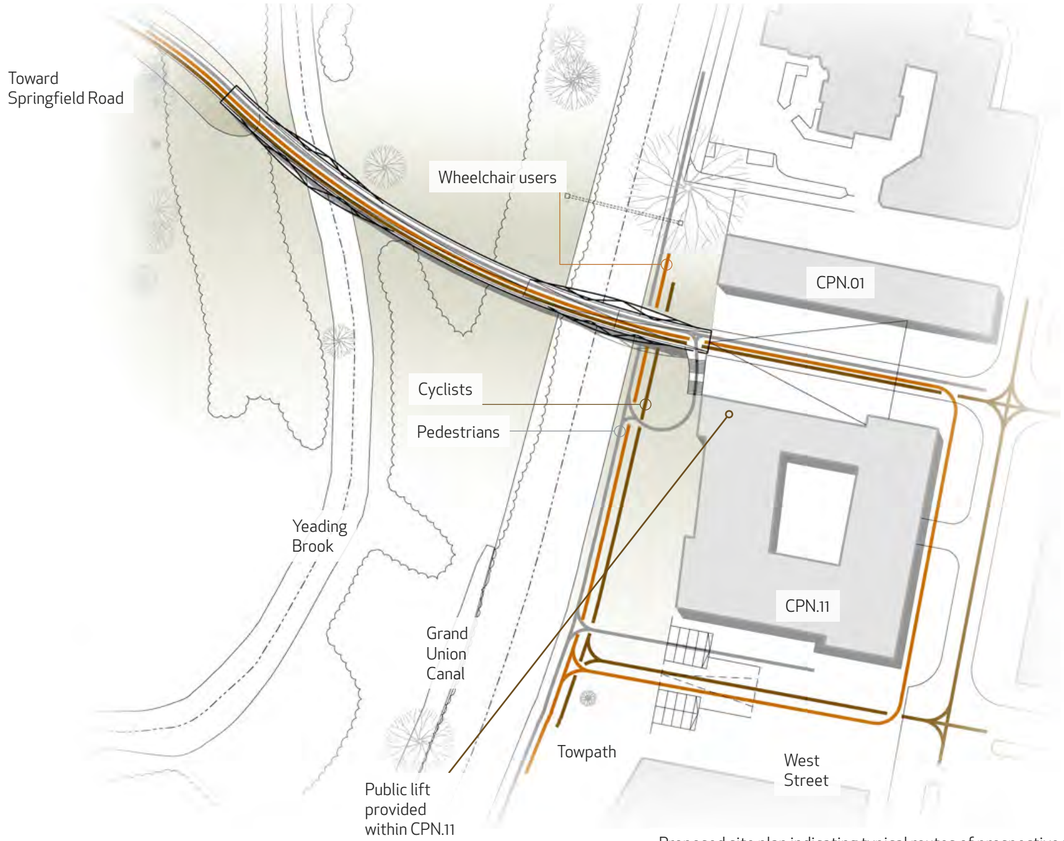
To make the access to the bridge for wheelchair users and cyclists as comfortable as possible the gradients of the ramps to/from the bridge and the slopes on the bridge itself are shallower than 1:21. Therefore no intermediate landings, additional handrails or upstands have to be provided (according to Building Regulations, Part M, 'Ramped Access').

The clear width of approximately 3200mm between the handrails complies with common design standards for shared cycle paths set out by Transport for London (TfL) and Sustrans. However, it is recommended to limit cyclist speed on the bridge to 10mph.

The diagrammatic site plan on the following page illustrates the wider access strategy, considering pedestrians, cyclists and wheelchair users.



Typical cross section



Proposed site plan indicating typical routes of prospective users

8.4 Material and safety by design

Structure

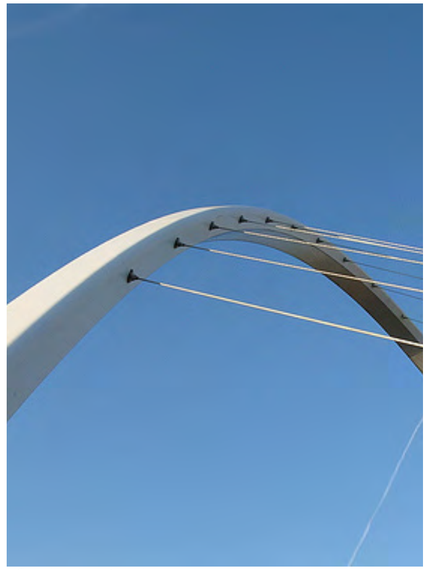
The main structural components - such as the bridge-deck and the arches - are prefabricated steel elements. Once delivered to the site they can easily be assembled and erected. This very cost-effective and time saving method will also reduce the impact of the construction work on the waterways and the flora and fauna in the Green Corridor.

Balustrade

Stainless steel handrails and a steel mesh will form a very transparent but robust, durable and safe balustrade. The height of the balustrade will be 1400mm from finished deck-level to increase cyclist safety. The steel mesh is available in a broad range of different specifications. A product with a reasonable mesh aperture to prevent children from climbing or from being trapped in undersized openings will be chosen.

Deck

The deck finish is a highly slip-resistant and durable synthetic wearing course that has been developed especially for bridges and flyovers. It will withstand the traffic loads and the thermal movements of the structure during summer and winter. The proposed bridge deck finish has been applied on several pedestrian and cycle bridges in mainland Europe and the UK and has demonstrated its good performance in terms of slip-resistance and durability even in bad weather conditions.



Steel arch, painted

Weathering-steel arch

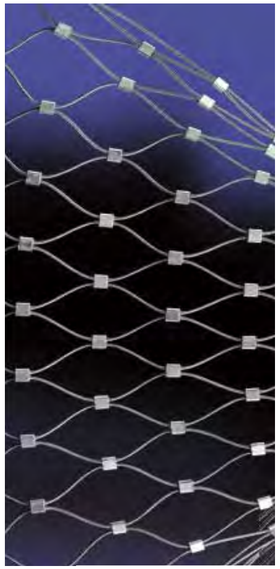
Steel arch, painted

Slip-resistant durable synthetic wearing course

Open stainless steel mesh

Stainless steel handrail

Slip-resistant durable synthetic wearing course



Open stainless steel mesh

8.5 Lighting

The lighting scheme is based on four aspects:

- sufficient light level is essential to allow safe passage at night time
- a moderate, subtle lighting scheme to ensure the impact on the wildlife is kept to a minimum
- low energy luminaries
- highly durable luminaries in order to withstand extreme weather conditions and vibrations and to reduce potential maintenance work

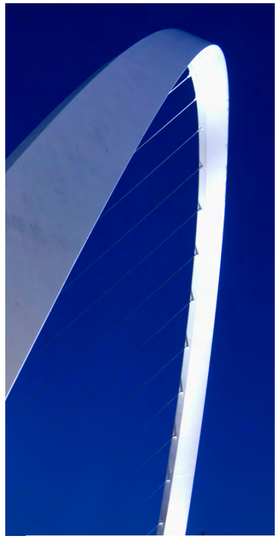
Lighting elements, surface-mounted or integrated into the bridge deck, can either wash the deck or can work as uplights gently illuminating the structure.

Another option are luminaries provided within the handrail (LED or fibre optics). This is a common lighting solution for bridges.

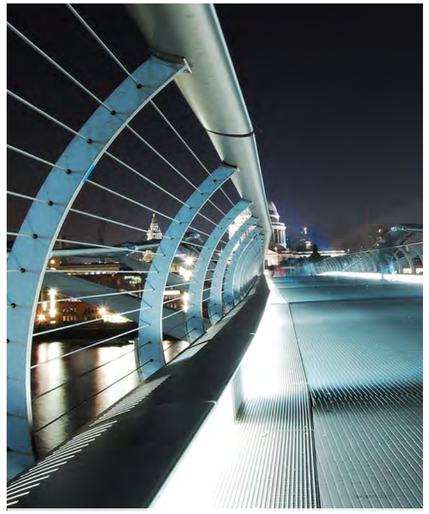
The image shows recessed luminaries provided within the handrails. They will be adjusted towards the bridge deck in order to avoid intense light elements flooding the green space below and next to the bridge. A slightly reflective bridge deck finish will contribute to a sufficient ambient light level at night and will mirror the light back to accentuate the arches.

Lighting provided within the handrail

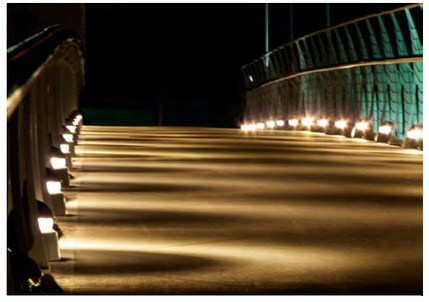
Lighting integrated into the bridge deck upstands



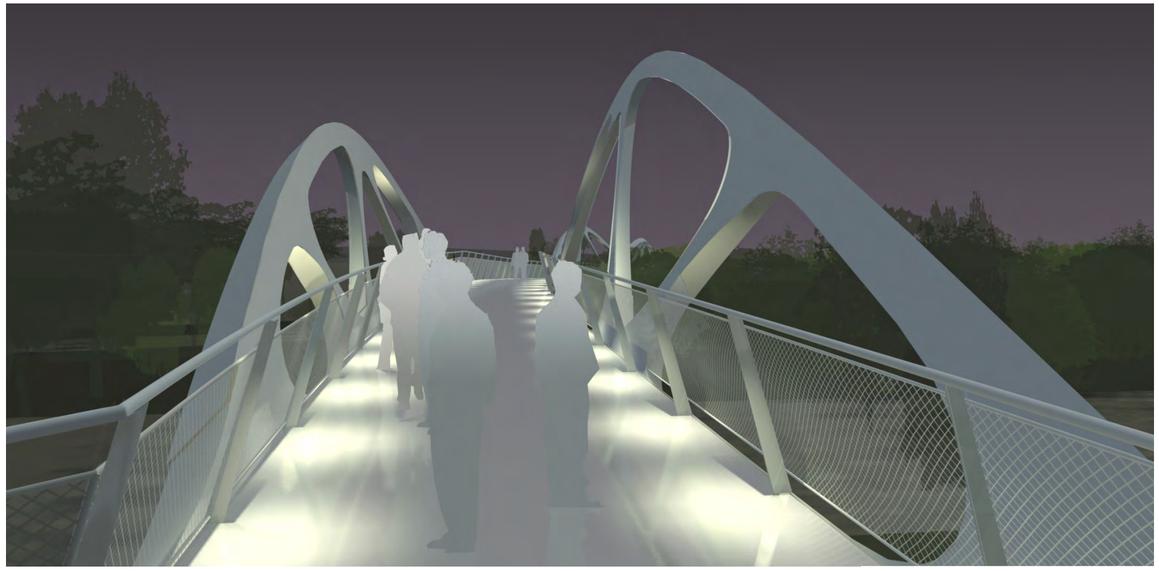
Uplights in the bridge deck subtly washing the arches



Lighting integrated into the bridge deck upstands washing the deck



Lighting integrated into the bridge deck upstands illuminating the structure



Artist's impression of bridge in evening

8.6 Ecology

The bridge crosses the designated Green Corridor along the Grand Union Canal and the Yeading Brook with its unique flora and fauna and valuable role as an ecological area.

The following aspects of the design respond to the particular conditions of the site:

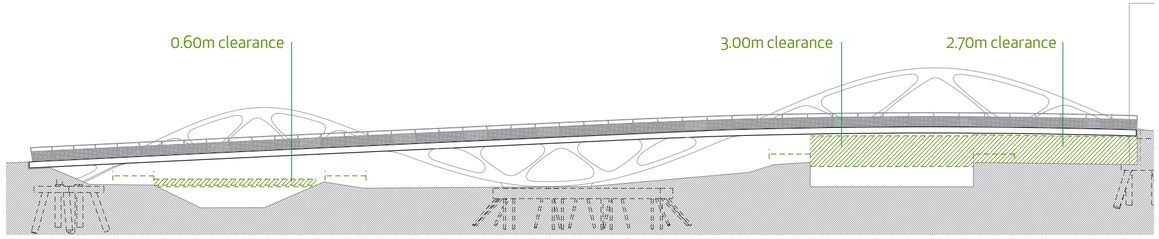
- prefabrication will facilitate a short construction period to keep any detrimental impact on the wildlife and the vegetation to a minimum
- durable design and materials to reduce intensity and frequency of maintenance work
- the central foundation as well as the sliding supports at each end of the bridge will be buried below ground level
- the alignment of the bridge takes in consideration the position of valuable trees and shrubs
- slender structural members, an elegant and fine bridge deck and a very transparent balustrade will help to reduce overshadowing of the green space
- subtle lighting
- the functional flood plains along the Yeading Brook remain unaffected by the structure and the abutments
- no part of the structure will be located within the required clearances above the water levels and the towpath
- the bridge will provide easy access to the towpath and unique elevated viewpoints into the landscape and will therefore contribute to the recreational character of the Green Corridor

Minet Country Park

Minet Country Park

Grand Union Canal

Site plan indicating valuable trees, the functional flood plains and viewpoints



Section through bridge deck

8.7 Structural concept

Description

The bridge is 115 metres long and has two spans. Two slightly inclined truss-arches are connected with a central torsion box.

The truss bracing is tapered towards the middle of each member. The structure is composed of welded steel plates. Double curved surfaces have been avoided and therefore all surface can be bent to shape.

Description of structure typology

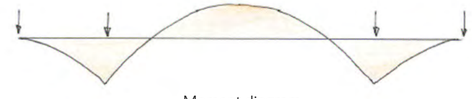
The architectural concept is for the bridge to be seen as a ribbon form made up of a pair of arches which undulate above and below the deck.

The structure is based on a part tied arch which are very efficient structures where the depth of the structure closely follows the form required to resist the bending moments in the spans of the bridge.

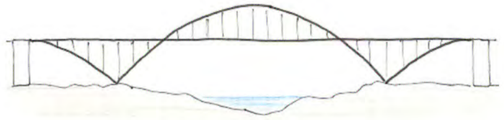
Load path

Most loads are carried in compression by the arches and torsion in the deck. The deck is forms a torsion box and acts as a tie for the arches and stiffens the bridge in torsion.

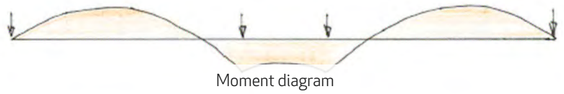
The bridge structure is supported on a central foundation with further sliding support at each end of the bridge.



Moment diagram



Part tied arch-bridge



Moment diagram

Springfield Road Bridge

Structural analysis

The structural analysis has been carried out in accordance with BS5400-2:2006 "Steel, concrete, composite bridges". The bridge has been analysed using a simple space beam finite element model. Several load cases are combined using partial safety factors specified by BS5400.

Dead Loads

The self-weight of the structure is considered in combination with the other loads. There are small superimposed dead loads from the deck surfacing.

Imposed loads

According to BS-5400-2 the imposed loading decreases with the loaded length.

UDL= 5.0 KN/m^2 for loaded length less than 36m
UDL= 2.9 KN/m^2 for on full length

Wind loads

The wind loads on the bridge were assessed using BS5400-2:2006.

Basic wind speed Vb = 21m/s
Ultimate loading = 1.0 KN/m^2 including Cp = 2.0

Temperature loading

The temperature effects are taken into account according BS5400-2.

max. shaded temperature = 34 C^{o}
min. shaded temperature = -19 C^{o}

Serviceability

The bridge maximum deflection is less than 1/500. Vibration serviceability requirements have been checked according BS5400-3: AnnexB. Lateral natural frequency is more than 1.5 Hz due to the stiffness of the torsion box.

Flooding impact

None of the bridge supports are in the functional flood plain. No impact loading from boats or other vehicles have been considered.

Survey and ground conditions

According to a previous geotechnical testing performed on the western bank, the ground is mostly stiff clay (Ref BH3 A042059 Jan 2008). This type of ground offers generally sufficient bearing capacity and typical piles should be able to accommodate bridge loads. However, it must be noted that in a bed of the river ground conditions can vary and supplementary bore holes are required in due course.

Foundations

The bridge is founded on three supports. The structure is supported on a central foundation which resists horizontal and vertical loads. The piling solution is likely to be made of driven raking mini piles. On the western and eastern banks the bridge will be supported on reinforced concrete abutments supported with a similar piling solution.

Temporary work/Sequence

The bridge can be transported to the site in several sub-sections. The size of these sub-section could be approx. 15m. They would be assembled into three principal sections (East/Central/West) on the banks before being lifted into position. The diagram on this page shows a possible erection sequence.

Concrete

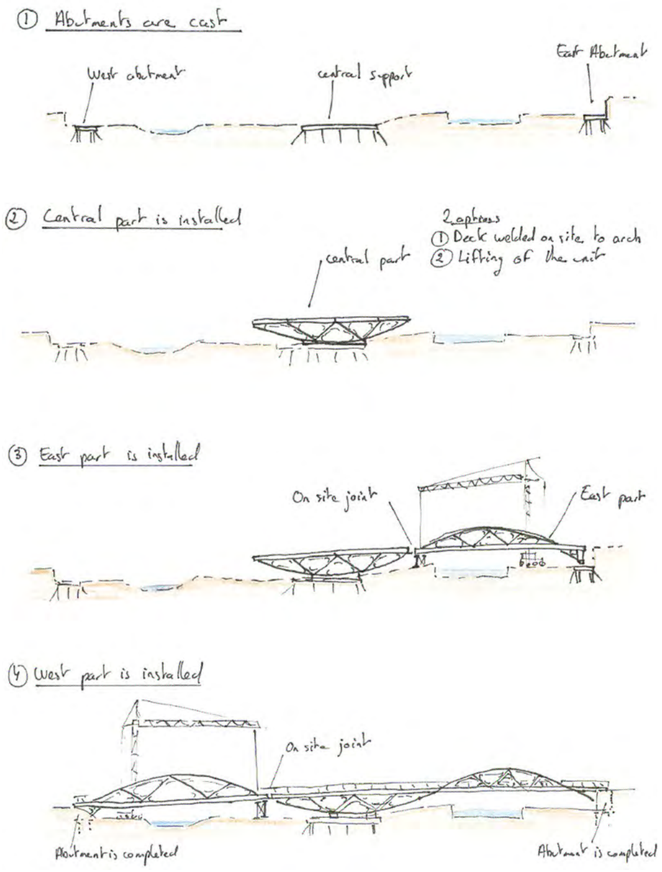
To be designed in accordance with BS8110 & BS8500. The concrete in the ground will be exposure class TBC following the site investigation.

Reinforced steel

To be designed in accordance with BS5400. The grade of steel used to construct the bridge will be S355. The bridge will be painted with a system appropriate for the site. The estimated weight of 164 tons is based on the current level of analysis and modelling of the bridge. Depending on architectural and manufacturing input, the estimated weight may vary in the future as the design progresses.

Movement joints

To allow for the thermal expansion of the bridge, movement joints need to be installed at both ends.



09

Minet Country Park pedestrian and cycle bridge

Minet Country Park pedestrian and cycle bridge - Introduction

Section 09 describes the pedestrian and cycle bridge designed by Hakes Associates to cross the Grand Union Canal and Yeading Brook linking the Minet Country Park and the masterplan's Central Park.

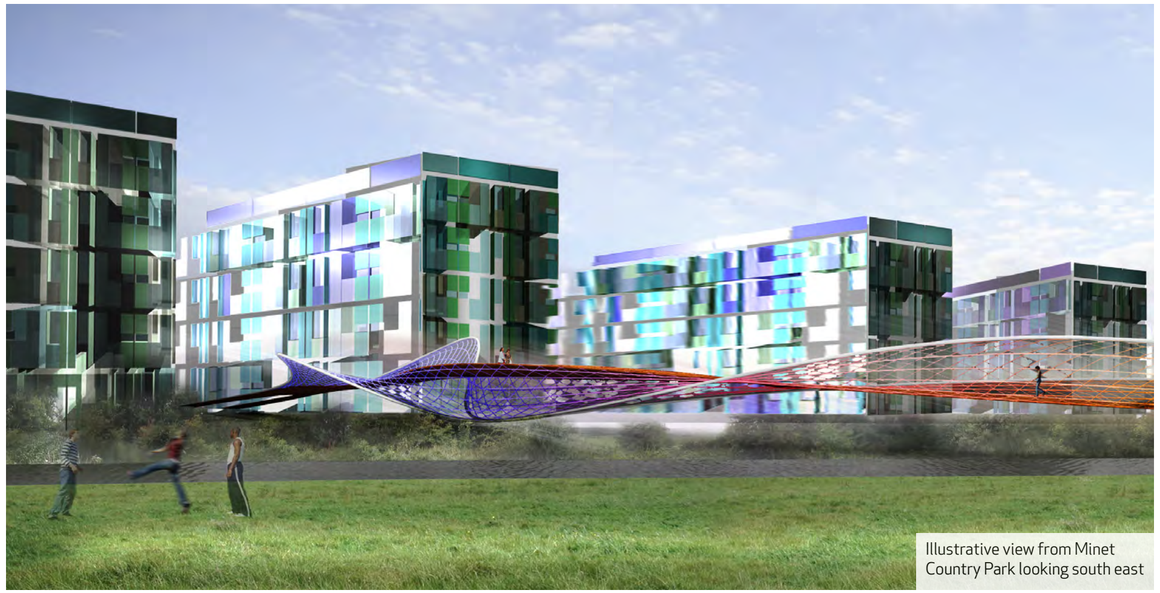
A description of the site's opportunities and challenges; bridge design concept; colour and lighting; and material selection are given in sections 9.1 to 9.4. The bridge's ecological impact, inclusive design approach and the elegant structural design are explained in sections 9.5 to 9.7.

The bridge directly connects the heart of the masterplan with the open spaces of the Minet Country Park. The bridge is aligned with the underpass below the railway to offer pedestrian and cycle linkage between the existing residential and commercial community south of the railway and Minet Country Park.

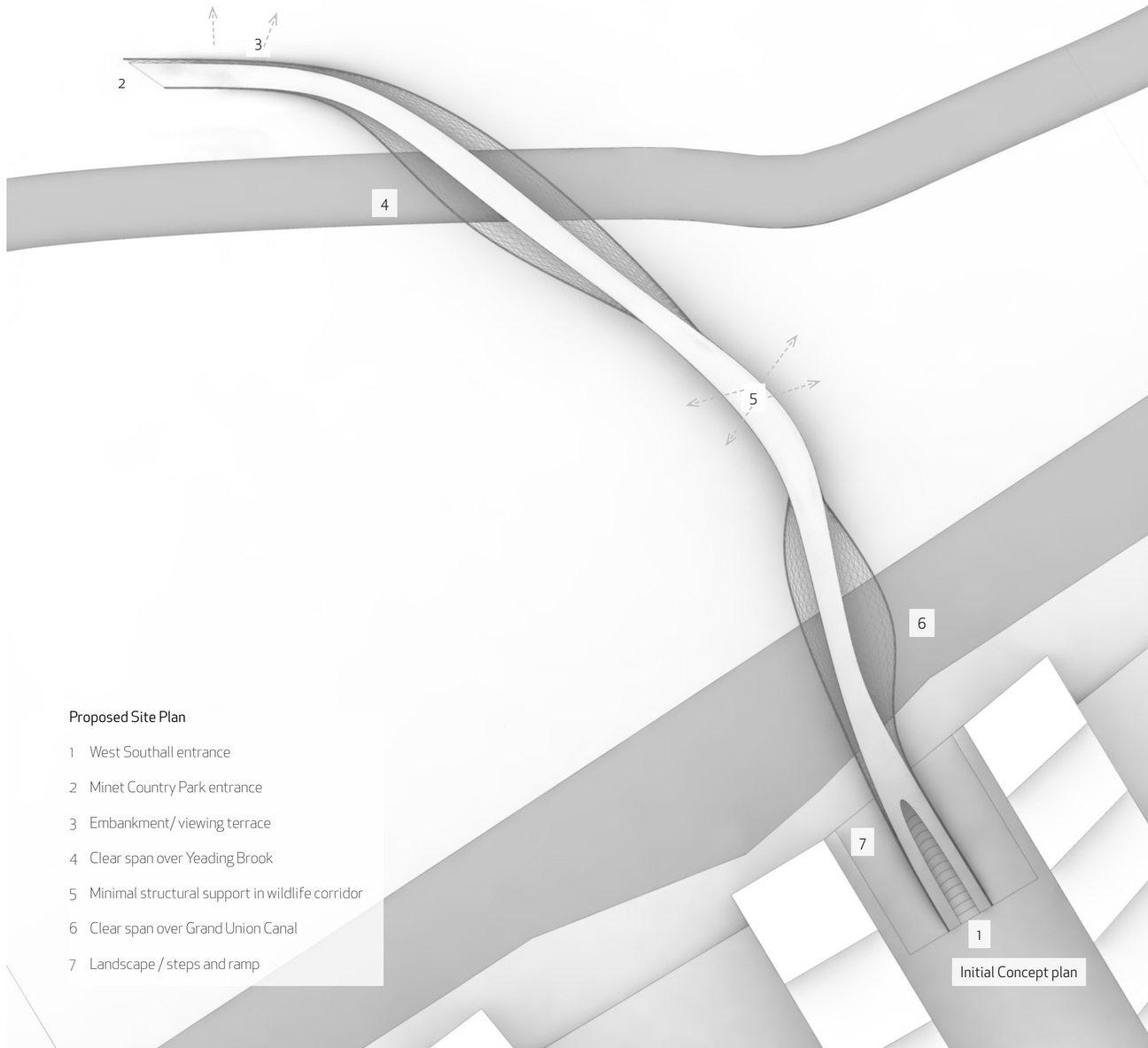
The bridge's sculptural form responds to its open context and its minimal structural footprint, open sides and perforate deck ensure the ecology of the canal, Yeading Brook and Minet Country Park are maintained.

9.1 Site Opportunity and challenges

To minimise the impact of the bridge's structure upon the site a flexible design concept adapts to suit its surroundings and negotiates the various site conditions. The Minet Country Park bridge weaves its way through the existing site retaining the significant trees and shrubs. This route also keeps the ramp to a minimum pitch and length.



Illustrative view from Minet Country Park looking south east



Initial Concept plan

Proposed Site Plan

1 West Southall entrance

2 Minet Country Park entrance

3 Embankment/ viewing terrace

4 Clear span over Yeading Brook

5 Minimal structural support in wildlife corridor

6 Clear span over Grand Union Canal

7 Landscape / steps and ramp

9.2 Design concept

The bridge is designed as a low sweeping surface that leaps over the Grand Union Canal, touches down delicately in the wildlife corridor and then sweeps up and over the Yeading Brook before joining an earth abutment and gently interfacing to the park.

At the macro level the bridge form evokes imagery and geometries found in nature. The bridge is inspired by the following references - the form of water ripples; the space described in the air as a bird takes to wing; and the shape a blade of grass takes twisting in the wind.

The sweeping lines define the edge condition of a series of three interlocking 'hyperbolic paraboloids' which are surfaces made from straight sections yet when assembled create a three dimensional flowing surface. This enables the design to be understood mathematically, described electronically and constructed efficiently.

This form generates an open meshed effect, which provides both the infill sections and the structural surface. The meshing geometry studies are reminiscent of weaving and in particular the geometries within baskets and eel / fish nets. The woven surface is designed to be denser where protection is required and more open where views and landscape are more prominent.

The design is simple, robust and elegant to address this site and its future urban and immediate waterside environment. The bridge is emblematic of the area's regeneration symbolising the distictive and vibrant character of the scheme.

Weaving to create surface and volume

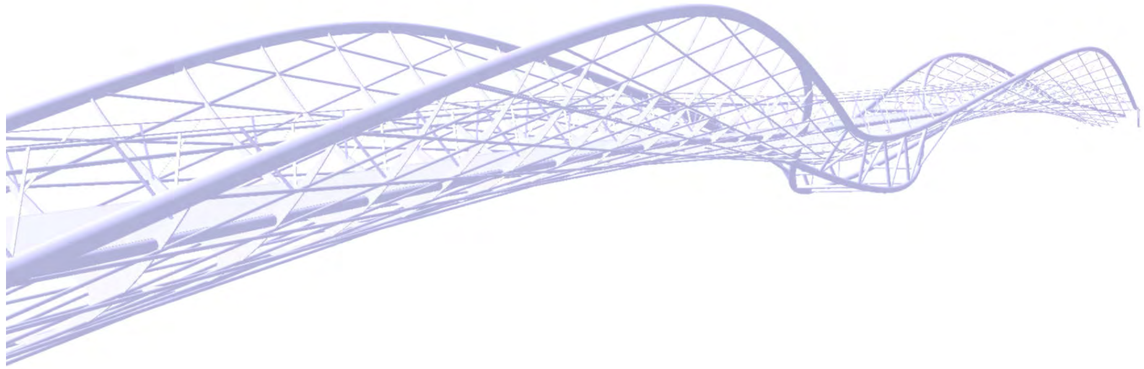
Traditional eel trap

Open truss with rivet detail

Iron bridge

Water, ripples movement

Woven concept



Conceptual sketch of bridge structure

9.3 Colour and lighting

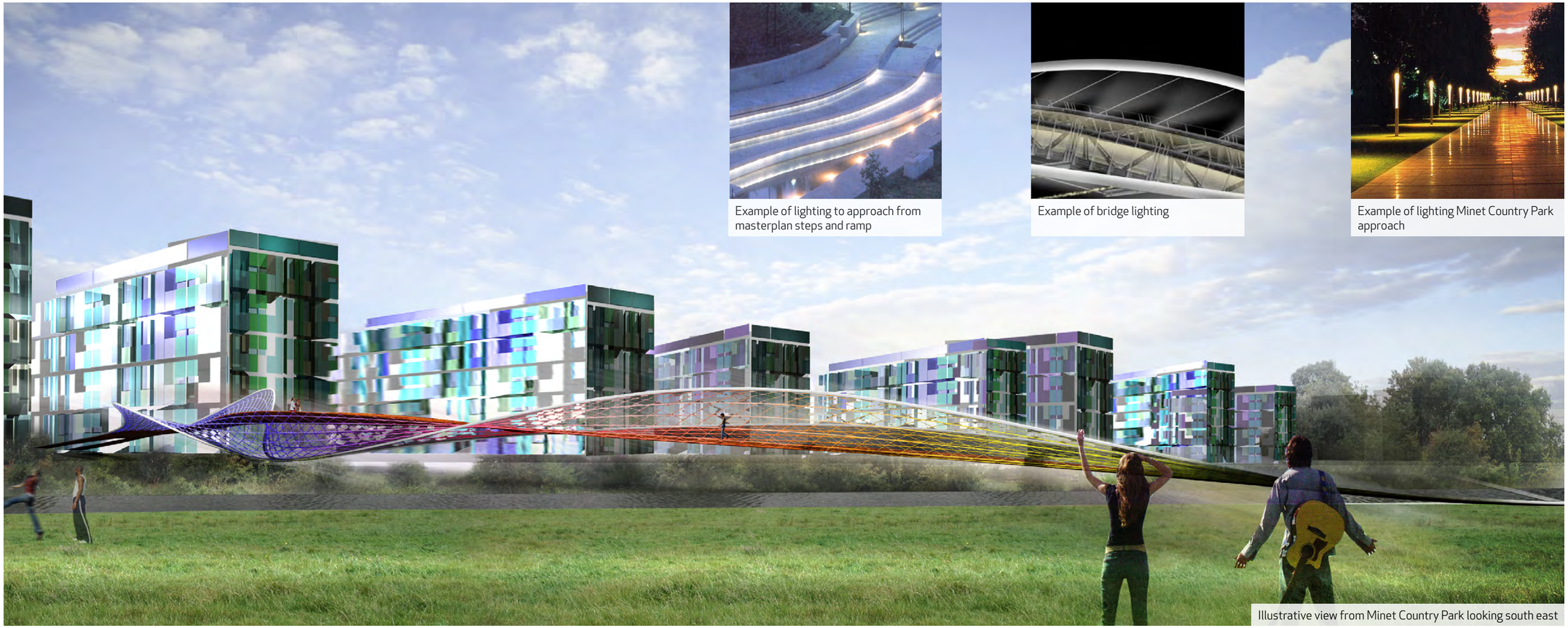
The bridge's steel elements are finished in a light coloured marine grade painted finish. The woven steel structure members are illuminated or painted in a gradation of colours the bridge read as a dynamic polychromatic surface, gradually blending from one colour to another across its length. This colour is internal to the deck and therefore the bridge and structure has a different character when viewed externally. The colour creates a vibrant and lively sculptural urban event within the landscape.

The general night time lighting scheme is a low impact strategy in order not to adversely affect the animal behaviour and habitats within the site. Low energy and high durability LED lighting is provided within the handrails which wash over the deck together with a horizontal component providing good illumination for peoples faces - an essential ingredient in creating a safe and welcoming space. Cable runs and fixing points for future feature / celebration lighting are provided.

Example of lighting to approach from masterplan steps and ramp

Example of bridge lighting

Example of lighting Minet Country Park approach



Illustrative view from Minet Country Park looking south east

9.4 Quality and materials

- Unique sculptural design and form
- Durable, robust structure from standard sections and elements
- Strength of bridge form
- Responsive form - gradual opening of structure away from waterway
- Open structural form prohibits tagging or graffiti
- Low energy design - reclaimed / recycled steel / concrete content
- Natural curving form and geometry
- Clear and legible entry and exit
- Colourful, dynamic space and experience
- Clear , legible route - same access for all users
- Articulated soffit - natural surveillance
- Safety by design - no hidden corners - visual permeability
- Unique , inspiring and site specific

The finish of the surface of the bridge and its components has a profound effect upon the user in terms of their visual and physical interaction with the bridge.

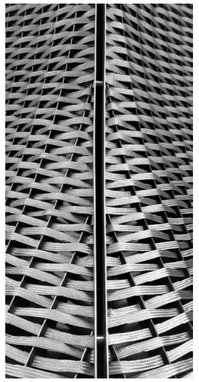
The restricted palette of materials maintains a consistency of visual appearance, reduces conflicts in detailing and simplifies junctions and interfaces. The main structural element for this bridge is steel in standard section sizes formed to standard radia.

The deck is highly durable aluminium planks with non-slip details. The decking is semi permeable and allows more light to reach the waters surface than with any other deck arrangement to extenuate its lightness and also create a soft natural lighting effect beneath the bridge.

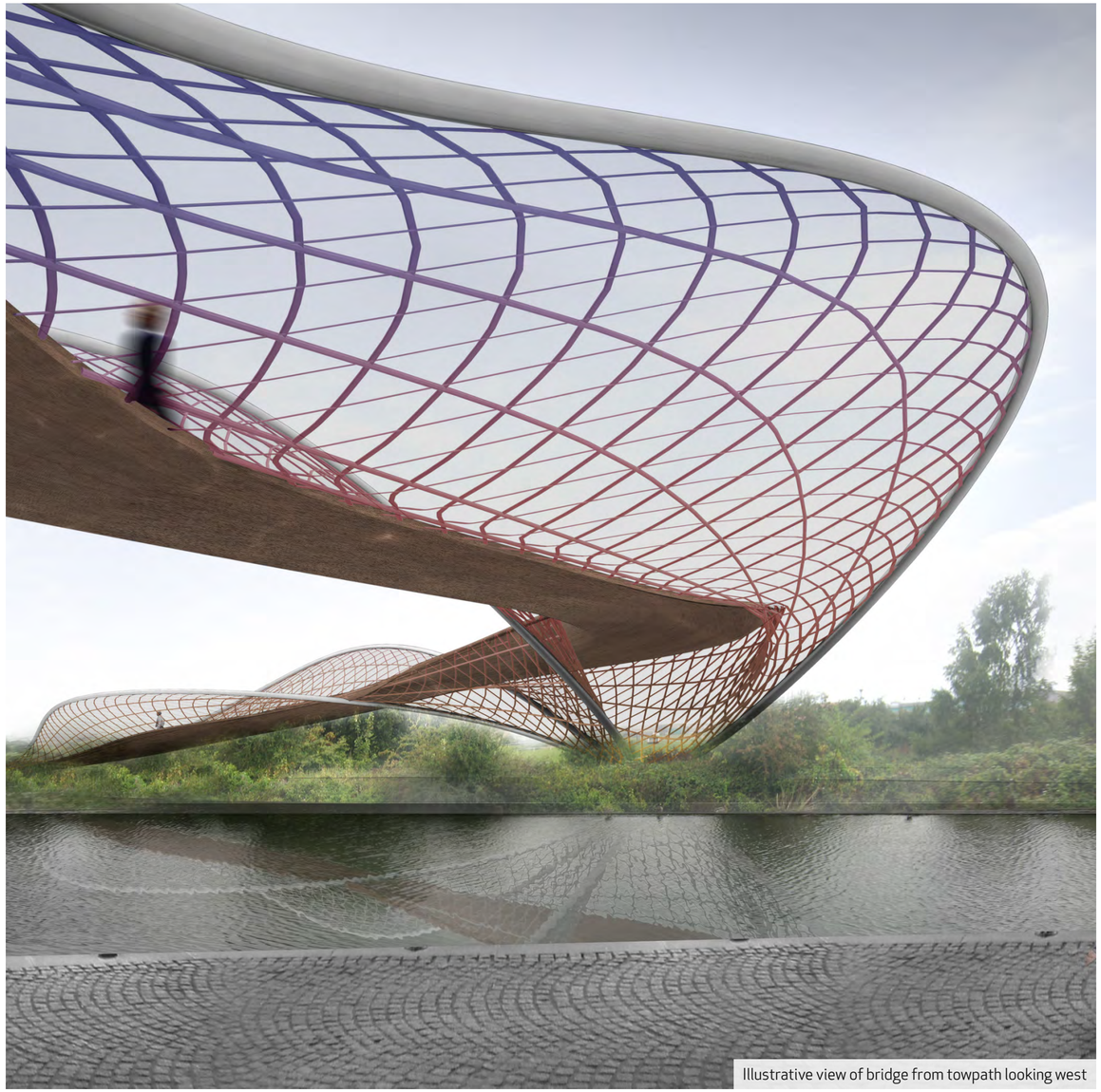
Colour range and depth

Timber - non slip inserts

Reclaimed concrete retaining wall



Woven stainless steel mesh



Illustrative view of bridge from towpath looking west

9.5 Ecology and sustainability

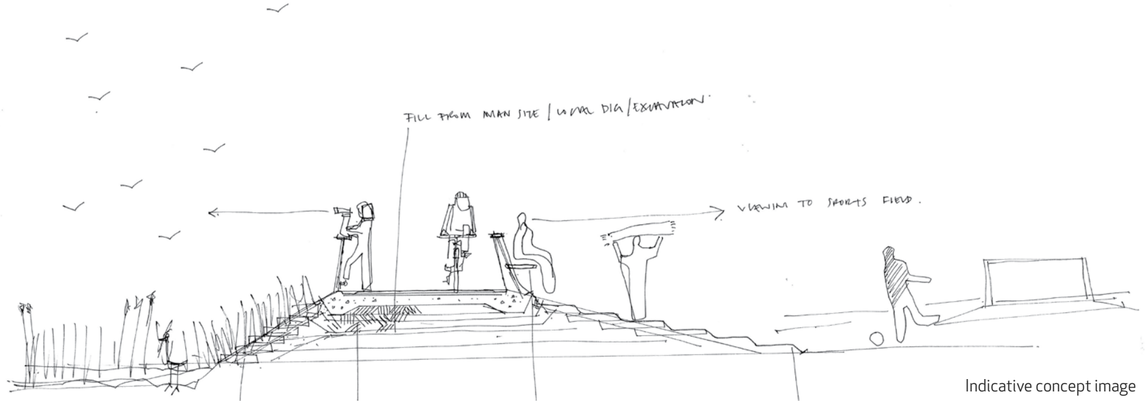
The structure is an open meshed structure to provide the least amount of shading to the ground and minimise a potential negative impact on the ecology. The open structure allows fauna to grow through these openings softening the edges of the structure particularly where it touches the ground.

The use of the hyperbolic paraboloid form, gentle arches and standard steel sections makes for an efficient span and use of material. It would also be proposed to specify a high percentage of recycled material, up to 70% content for the steel elements.

The earth berms / abutment in the park are retained using recycled concrete blocks and slabs from the main site works. This creates more opportunities for flora and fauna to inhabit the small gaps and soften the ramp. The ramps are also designed in a terrace formation to allow for viewing of the football games on the adjacent sport pitches.

Encouraging wildlife - the bridge as a viewing platform

Whilst the lighting is sensitive, the gentle up lighting of the soffit may attract small flying insects during warm evenings and this in turn would attract the local bats to feed in the area. The bridge is the perfect viewing platform to the nature reserve below and could become a useful educational tool for the wide variety of local schools and educational facilities. Handrails are designed as suitable leaning rails for users with binoculars and special consideration is made in the design for children and wheelchair users.



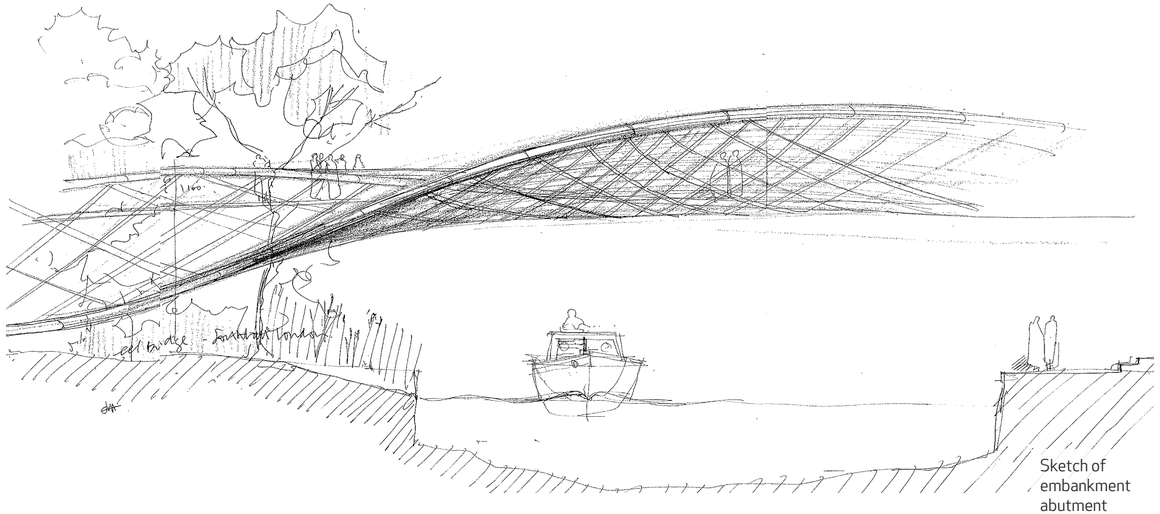
Indicative concept image

Existing view from towpath looking west over the canal

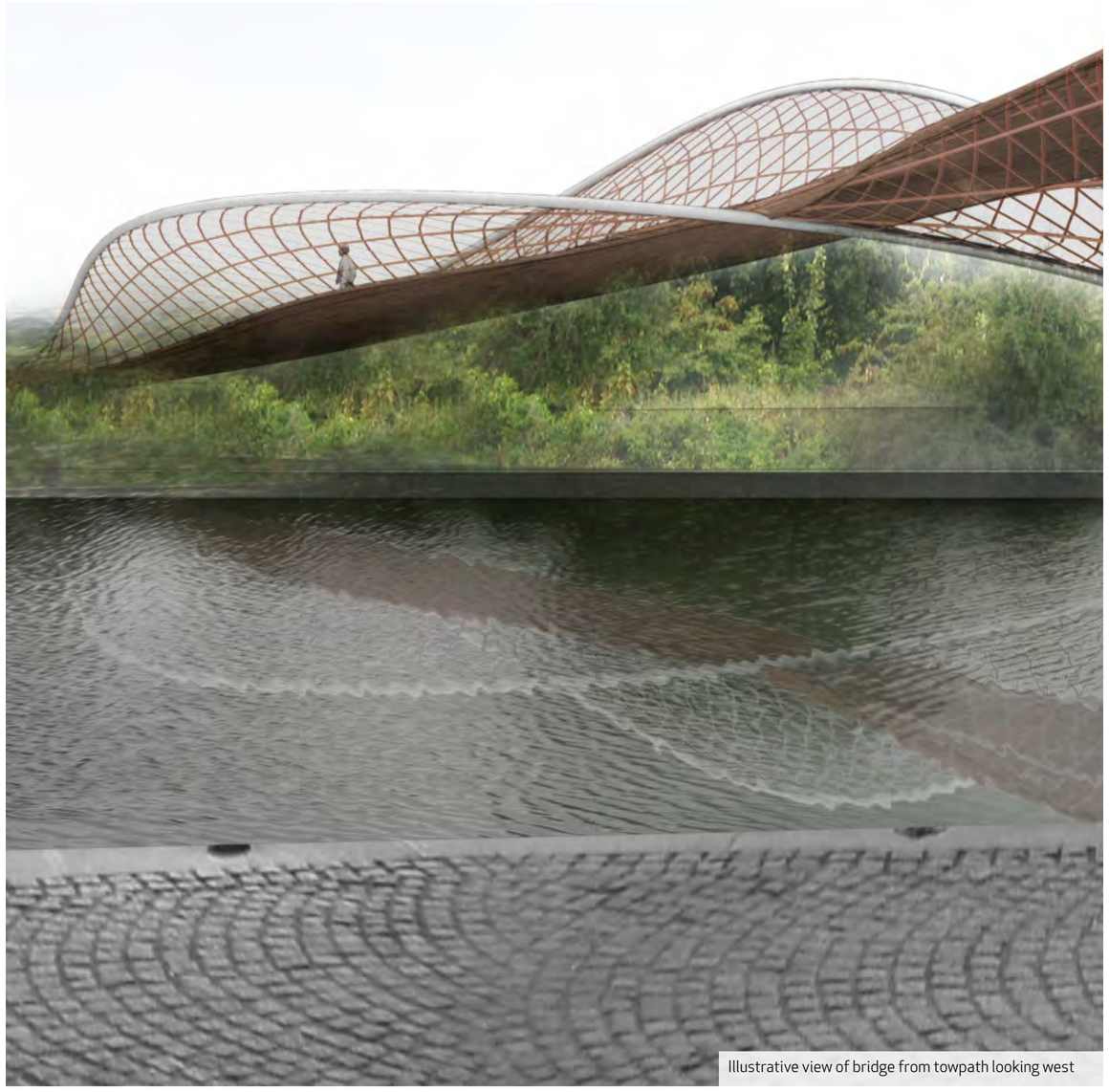
9.6 Inclusivity and accessibility - safety by design

The bridge opens a new safe route, joins existing and new communities and as such is designed to maximise the potential for natural surveillance. This is relevant for all users particularly in order to encourage use of the bridge in the evening or night. Care has been taken to avoid blind spots or corners and it is the desire to allow the users to see the end of the bridge before they start their journey.

The underside of bridges is often a dark and damp area, which can attract antisocial behaviour and vandalism. The use of the light permeable aluminium decking reduces and shadowing to the underbelly and most importantly bringing the staircase down to the river edge further animates this space.



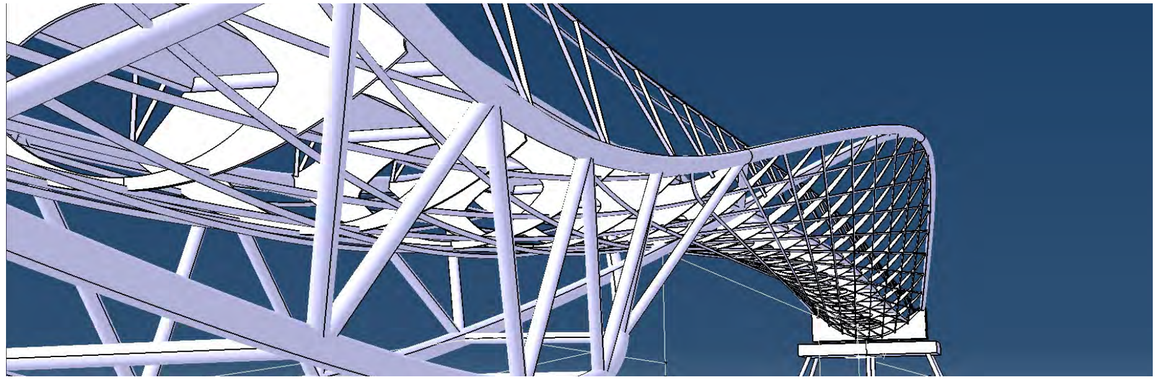
Sketch of embankment abutment

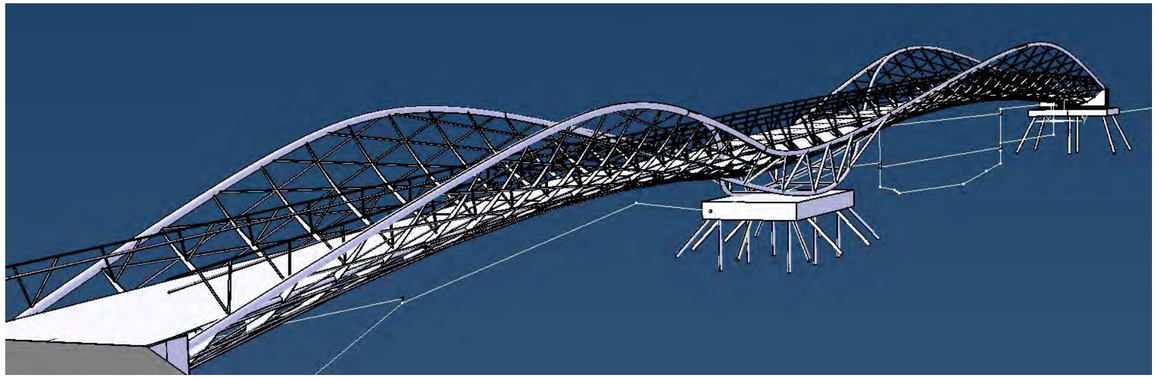


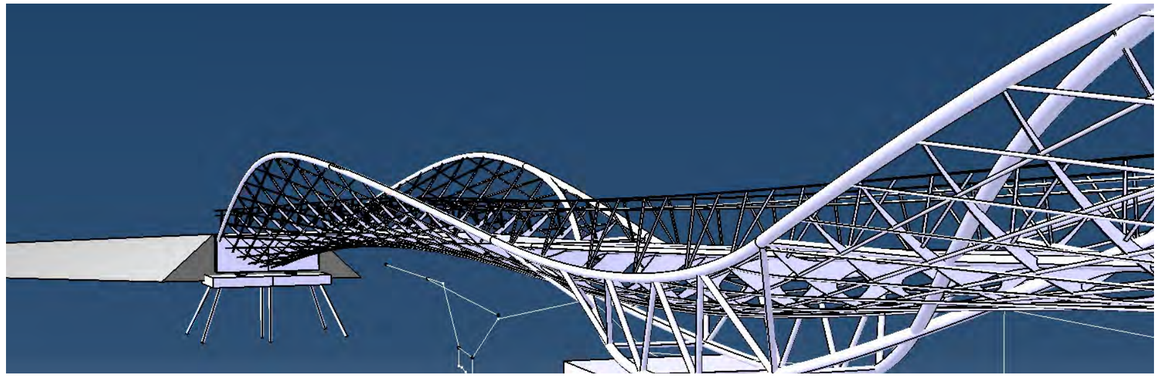
Illustrative view of bridge from towpath looking west

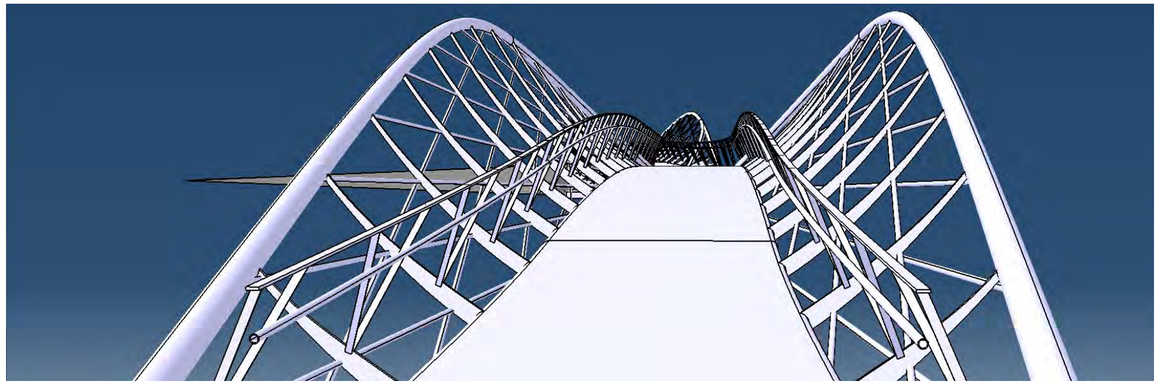
9.7 Structural design

The bridge is approximately 130m long and has two spans. The structural design development has been subject to extensive 3 dimensional computer modelling and analysis as illustrated.





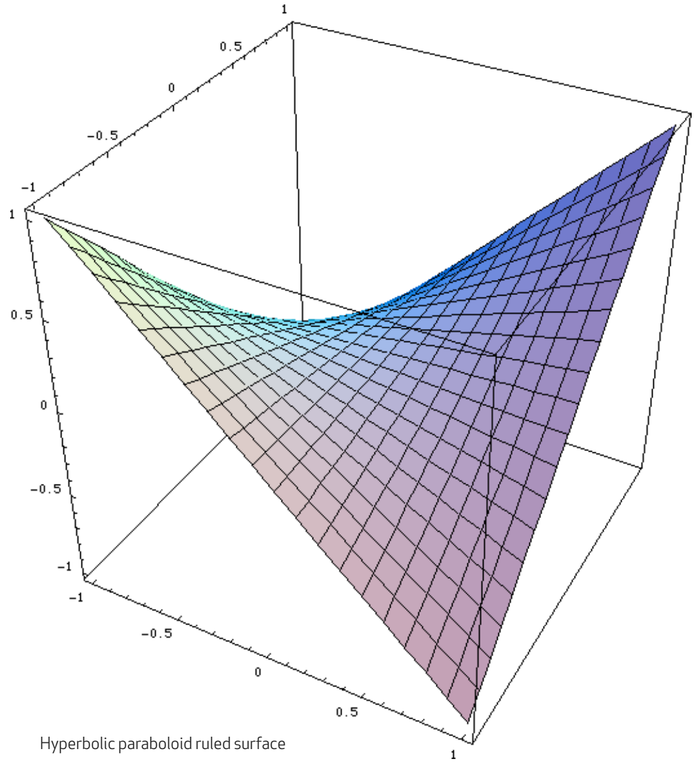




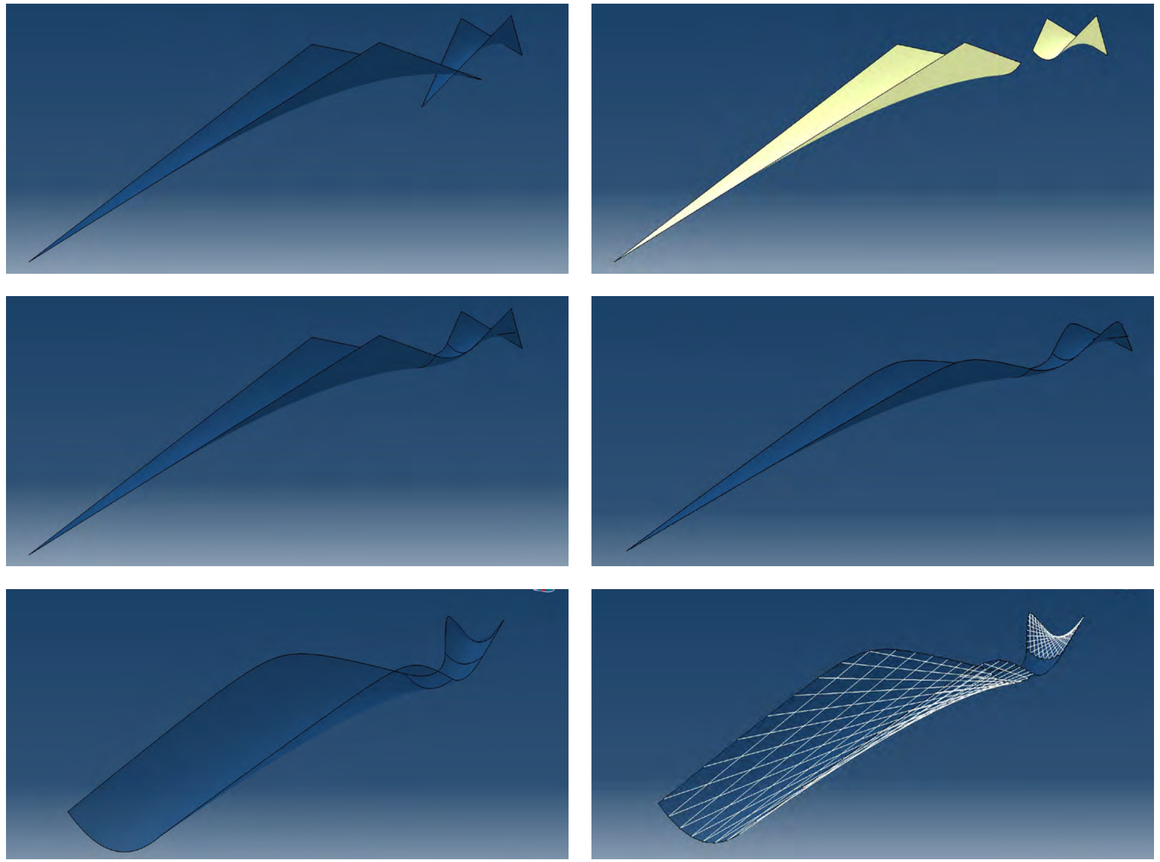
Geometry

The geometry for the Minet Country Park bridge is derived from slicing either side of a hyperbolic paraboloid surface with a planar cut to generate the curve of a pair of simple parabolic arches. Hyperbolic surfaces have long been used in building design due to their inherently efficient structural form, primarily in stand-alone towers and cooling towers dating back as far as the late 1880s. The hyperbolic paraboloid is also a form of a ruled surface in that its curves can be defined by a series of straight, parallel lines. Fabrication and installation are therefore greatly facilitated as all structural members are standard and straight, no bending or curving is necessary.

To adapt to the site conditions, two separate hyperbolic paraboloids will be intersected end-to-end to create a two span bridge structure with a central support. A straight intersection would result with a kink in plan, so the central portion of the bridge over the central support will be a blended surface between the two hyperbolics to generate a smooth, flowing curve.



Hyperbolic paraboloid ruled surface

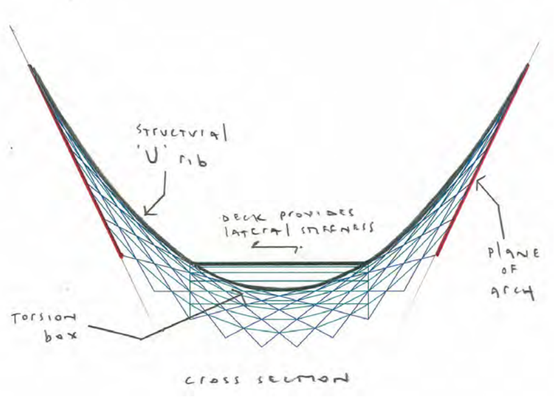


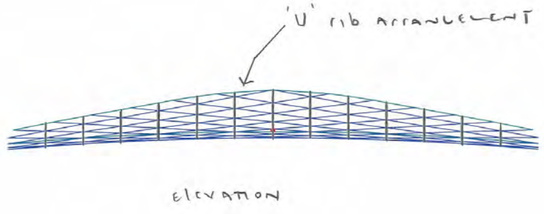
Design iterations to define the two bridge spans

Structure

By taking a straight cut through the hyperbolic surface, the resulting arch will be angled away from the vertical, but it will always remain in plane and therefore not be affected by out of plane internal forces. A circular steel tube section will form the profile of the parabolic arches to the bridge. The deck within the hyperbolic paraboloid will be of a constant width and will therefore curve in elevation to follow the curved geometry. The deck will also be trussed in plane to restrain the bridge laterally.

Looking at the geometry in cross-section illustrates a series of U shapes that vary in height along the length of the arches. The U shapes are another inherent structural form of the geometry; they will be used as structural ribs fabricated from laser cut steel plate to act as hangers to support the deck, to link the arch chord and bottom chord to achieve an arched truss structural system, to control the lateral movement of the arches due to their eccentricity from the vertical plane, and they will have sufficient stiffness to restrain the arch chord from out-of-plane buckling.

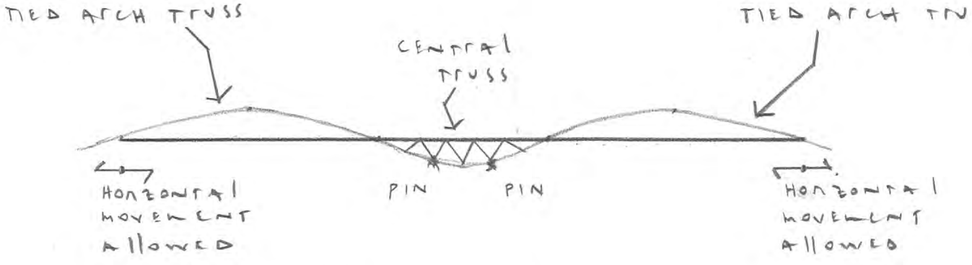




The parabolic arches generated from the hyperbolic planar surface cut are infilled with a basket-weave network of straight circular hollow steel sections that correspond to the ruled surface of the geometry. These steel sections restrain the in-plane buckling of the arch (caused by off-centre loading), transfer the shear back to the support of the arch truss, and form the underside of the deck torsion box.

Deflected arch shape under eccentric loading

The primary bridge structure thus consists of two parabolic tied arched trusses supported on a central inverted truss (blended surface). Horizontal movement is allowed either end for thermal expansion, and the central truss is clamped down to piled foundations to prevent any central rocking movement and to resist torsion.



10

Pump Lane Bridges

Pump Lane bridges - introduction

Section 10 describes the road bridges that cross the Grand Union Canal and Yeading Brook designed by White Young Green providing the scheme's principal vehicular access and egress to the Hayes by-pass (A312). The road bridges lead to Hayes town centre west of the A312 incorporating pavements for pedestrians and cyclists to also use the bridges safely

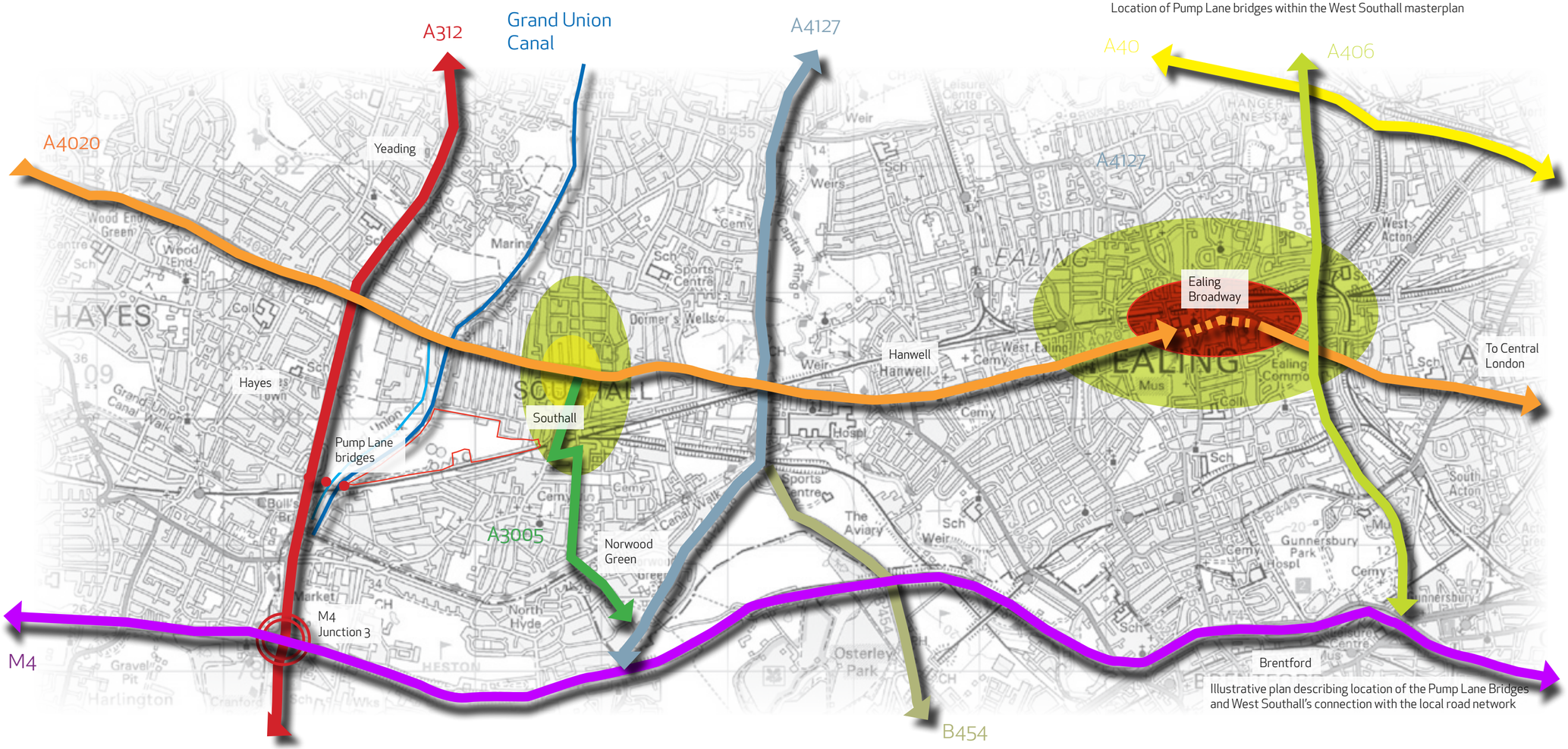
Section 10.1 describes the bridges' context in respect of the role their location and the access and egress they provide for the scheme. Section 10.2 explains the positive ecological measures integrated within the associated landscape and bridge design to mitigate the detrimental impact of the road and shadows cast by the bridges.

The bridges span each watercourse with landscaped embankments between to offset the open space lost to the road between the canal and Yeading Brook and within the Minet Country Park. The bridges' design incorporates a series of design features to encourage wildlife and fauna to colonise the structures and become habitat to offset the detrimental impact of the bridges shadows cast over the watercourses.

10.1 Context

At the western end of the masterplan access to Pump Lane and then Hayes town centre or Hayes by-pass (A312) is provided by a road that crosses the Grand Union canal and Yeading Brook. Pedestrian and cycles will also use the bridge to cross the watercourses at this location.

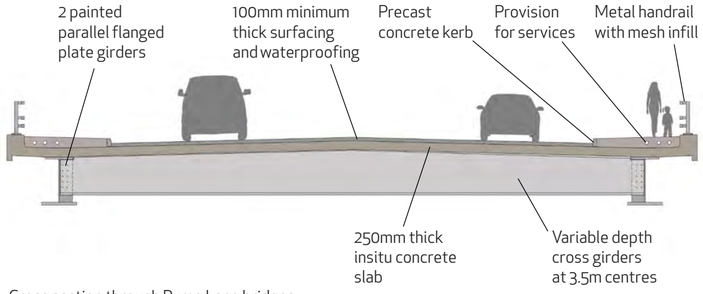
Location of Pump Lane bridges within the West Southall masterplan



Illustrative plan describing location of the Pump Lane Bridges and West Southall's connection with the local road network

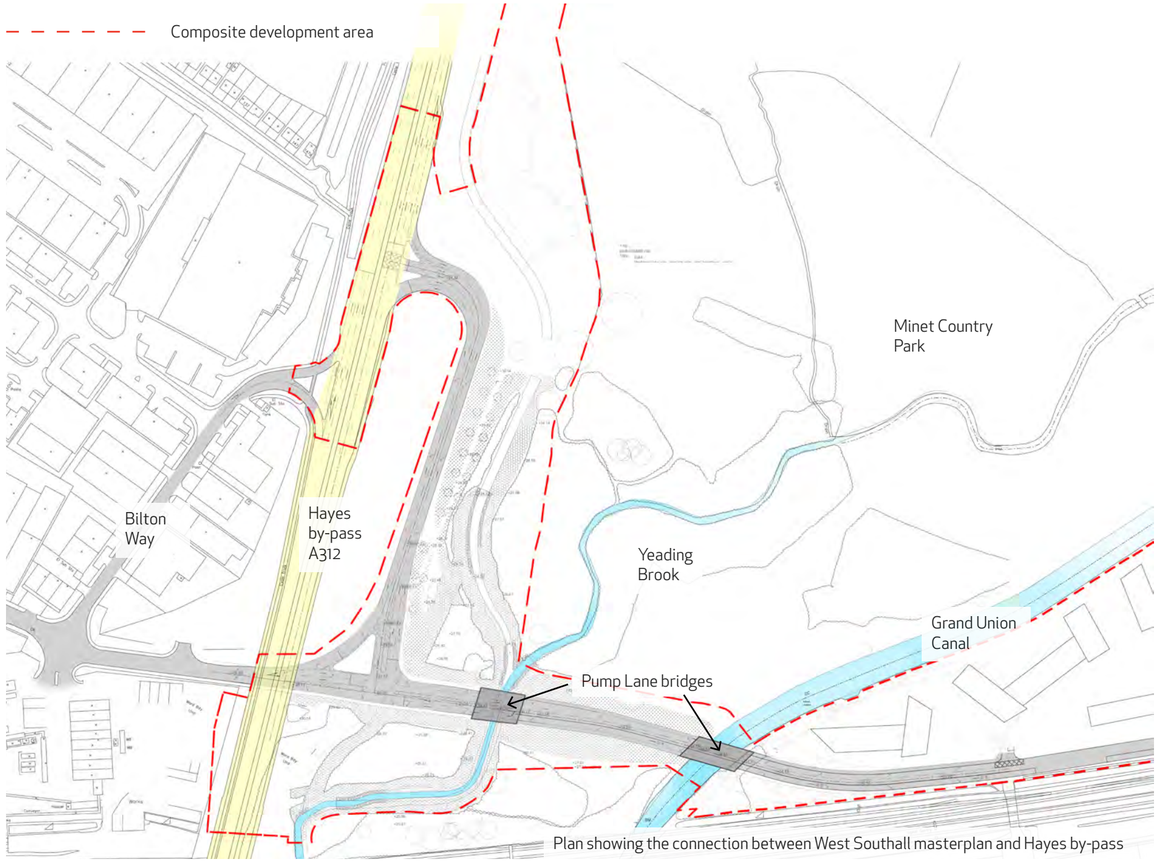
The junction on the Hayes by-pass will facilitate all movements except the right turn onto Pump Lane from the south where vehicles will be required to use the existing route via Bilton Way.

From east to west, the new road gently rises over the Grand Union canal then falling as it passes over the lower Yeading Brook and under the Hayes by-pass. Along the edges of the road pavements offer access for pedestrians and cyclists.

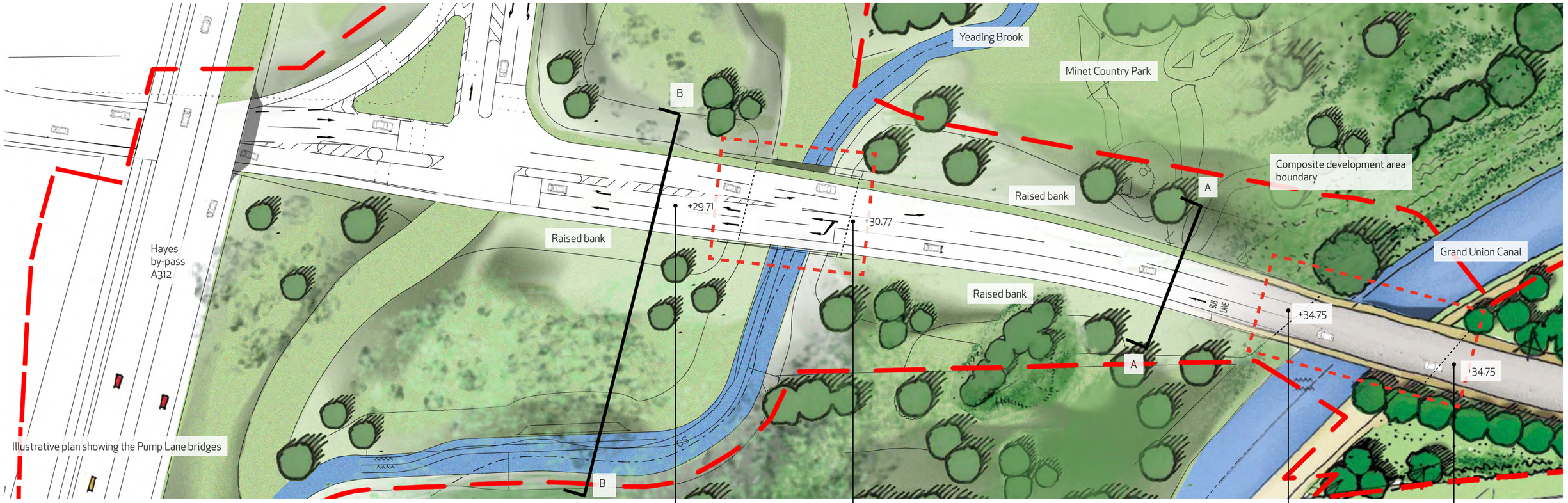


Cross section through Pump Lane bridges

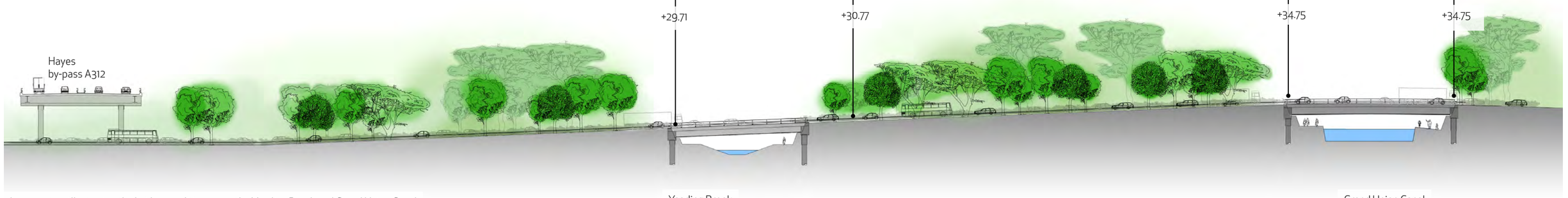
Plan of West Southall identifying scope of plan shown on opposite page



Plan showing the connection between West Southall masterplan and Hayes by-pass



Illustrative plan showing the Pump Lane bridges



Long section illustrating the bridge conditions over the Yeading Brook and Grand Union Canal

Yeading Brook

Grand Union Canal

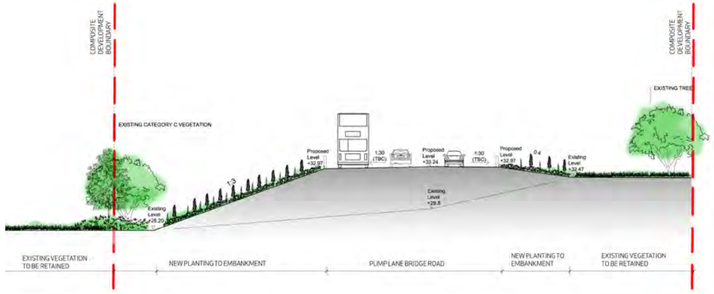
Section BB on page 372

Section AA on page 372

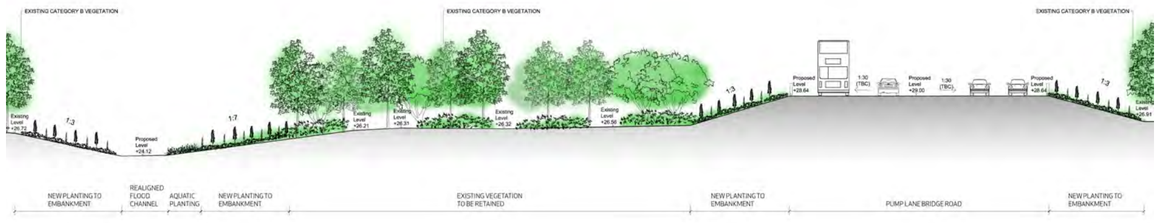
10.2 Ecology

The sensitive ecology of the area has been considered to ensure detrimental impact of the road and bridges is mitigated by positive landscape and design features.

The soft landscape species selection will complement and enhance the existing wildlife habitat including those listed below.



Section AA



Section BB

Acer campestre

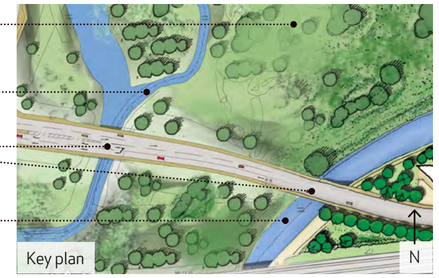
Prunus spp.

Quercus robur

Rosa Canina

Sorbus aucuparia

10.2 Mitigation

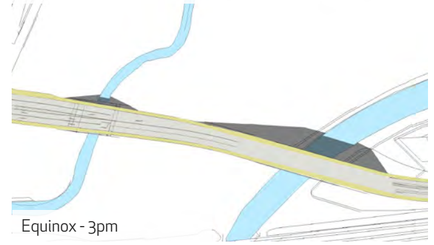


The three principle detrimental impacts of the bridges are to form a barrier for wildlife moving north south, loss of natural habitat and shadows cast over the watercourses. Mitigation is provided during and after construction of the bridges as follows:

- The bridge abutments are set-back 5m from the edges of each watercourse to reduce impact during construction and allow continuous natural edge under each bridge.
- Mammal tunnels are incorporated between the bridges to allow safe passage between fragmented habitats
- Bat roosting boxes are integrated within the each of the bridges.
- Diverted storm drain channels incorporate a wet ledge (at certain times during the year) in addition to mammal ledges and access ramps for safe mammal passage under the bridge. The planting along the edges to the storm drain channels will make the engineered structures appear natural and over time become integrated into the landscape.
- Redundant storm drains will be retained with reed beds planted at the northern end to filter particulate pollution and act as a fixed-film filter. Semi-aquatic vegetation will be allowed to naturally colonise these areas

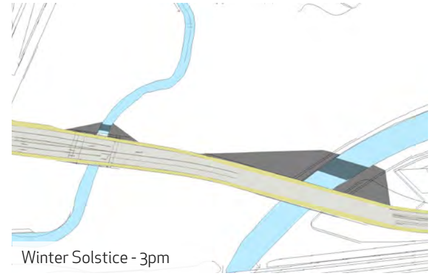
- The bridges inherently cast full shadows given the imperforate nature of the road deck. Studies demonstrate that whilst the area directly under the bridge is predominantly in shadow, the watercourse to the north of the bridges are not in permanent shadow as the sun's position changes throughout the day and year.
- The east west orientation of the bridges allows the shadows' detrimental environmental impact to be lessened as the affected areas' northern orientation offer the greatest skylight (indirect daylight or 'sky component') to compensate the lack of direct sunlight at certain periods.

Extent of shadow cast by bridges



Equinox - 3pm

Summer Solstice - 3pm



Winter Solstice - 3pm

Mammal tunnel underneath road, allowing safe passage for medium sized mammals

Artist impression of approach from Pump Lane

11

Appendix 01

Summary of
Savills' research

11.1 Savills research

RESIDENTIAL MARKET POTENTIAL AT SOUTHALL GAS WORKS

Summary Report to Spring UR – June 2007

This note summarises the findings of three complementary strands of research completed between March and May 2007 to investigate the residential market potential at Southall Gas Works. The research comprises:

- Analysis of the London residential market and the potential for a large mixed use development at Southall to attract excess demand spilling out from established markets, in the context of competing schemes in the local market and other markets;
- Research into the preferences and purchasing power of potential Asian purchasers, focussing on households within the local community, wider British Asian demand within London and investor demand from India.
- Placemaking research, focussing on the mix and layout of residential property, commercial property and other land uses that will create high demand and land value for the proposed development.

1 SOUTHALL'S POTENTIAL WITHIN THE LONDON RESIDENTIAL MARKET

1.1 The London Market

We expect the UK residential market to show continued price growth during the next five years. Although affordability is currently stretched and interest rates may rise further to exacerbate this during 2007, we expect interest rates to fall thereafter, allowing households to rebuild household finances whilst continuing their discretionary spending on housing. We expect average UK house price growth of 6.1% per annum over the next five years, to include a London average of 7.6% per annum.

The UK housing market is underpinned by housing scarcity and London has the most acute scarcity of all the regional markets, albeit that supply levels are rising. Part of this flows from high employment growth levels, including the buoyant finance and business services sector, with additional demand pressures coming from rapid increases in the number of international students in London.

These demand pressures, with affordability pressures fuelled by equity inflow, are leading to housing demand spilling out of established higher priced markets of London into emerging markets. By its nature, the pricing and affordability of this new stock tends to based on the incomes of incomers who have been priced out of more established central neighbourhoods, rather than the incomes of the local population. Much of this demand has been spilling out into gentrifying areas of period housing stock, or into the regenerating areas of Docklands, alongside substantial investment in new infrastructure. This outward flow of demand is also spreading into new areas, typically based around large regeneration projects where the scale of development is sufficient to change perceptions of the area as a residential neighbourhood.

Southall could aspire to be one such project, if the mix and pricing is set correctly. If pricing is comparable with new development in other areas of London with similar accessibility, then demand could be drawn from a mixture of the more affluent local households and wider demand from both British Asians and a broader ethnic mix. This research investigates the depth and variation in these types of demand.

1.2 Asian Neighbourhoods

British Asians resident in London tend to live in certain neighbourhoods, one of which is Southall, where 31% of residents are Sikh, 16% are Hindu and 16% are Muslim. A high proportion of second generation Asians live in these same areas. Based on migration between Southall and other areas, the competing Asian neighbourhoods within London of most relevance to the Southall residential market are:

- Hounslow
- Wembley
- Queensbury
- Stepney
- Ilford.

Of these areas, Southall has the lowest house prices. Higher pricing in the other areas is a relevant benchmark for pricing at Southall, although the second hand market in these areas is not necessarily a limit on pricing of new units at Southall. Slough is another market with linkages to Southall, with proximity to Heathrow a factor, but pricing in Slough is similar to that in the existing Southall market so it is a less interesting benchmark for attraction of higher value demand to Southall.

A theme that emerges from part two of the research is that Southall has tended to be a place where Asian immigrants tend to settle when they first come to London. Once they become wealthier they tend to move on to other neighbourhoods, either the higher value Asian neighbourhood listed above or more affluent suburban locations and commuter towns in the Home Counties. Likewise, young British Asians are choosing to live in a wide range of areas across London that offer vibrant city living with no particular cultural component. There is an opportunity to capture this demand "on the way out from Southall" and, potentially, to pull in demand.

Investors are a significant source of demand for units on new, large residential schemes across London, accounting for between half and two thirds of all central London take up in recent years, particularly in less established emerging markets where developer risk can be reduced by early off plan sales. Assuming that sentiment on future capital growth remains positive, which we expect to be the case, we anticipate that investor demand for residential property will continue.

Currently the number of Indian investors in London residential property are small relative to demand from Middle Eastern and Far East Asian investors, but interest is rising and we anticipate that purchasing volumes will follow, as the number of high net worth individuals in India increases and as restrictions on overseas investment are being relaxed.

1.3 Competition and Pricing Potential

The existing Southall new build residential market is limited in scale, but tends to be at around £350 per square foot. The new build premium that can be achieved on the Southall Gas Works site will depend on the quality of the offering and its differentiation relative to the level of competition in the market.

New housing supply is set to increase across London during the next 10 years, as both the Government and the Mayor seek to ease affordability pressures by increasing supply of both market housing and sub-market affordable housing. However, the limited availability of land in and close to established markets means that 71% of the 10 year supply pipeline is to the East of the City, much being in the London Thames Gateway, including the Olympic zone. Whereas supply is set to increase by around 15% in Central and Western areas over the next five years, it is set to increase by more than 80% in the East.

Much of the forthcoming supply is in markets that sit above Southall in terms of both pricing and accessibility to central London employment markets. On the plus side, accessibility from Eastern London markets is focussed on the City and Canary Wharf, whereas Southall is more accessible to the West End and its unique offering of leisure, retail, royal parks and overall destination than much of the competition. This will appeal to some segments of demand.

The most direct competition to Southall is likely to come from schemes in the North West sub-market that covers Brent and parts of Harrow, including Wembley and Queensbury, where values are likely to be in range of £370 to £440 per square foot (before adding regional house price inflation), predominantly for 1 and 2 bed flats. Development at Wembley is capturing demand at the higher end of this range, providing a benchmark for Southall.

2 POTENTIAL DEMAND FROM ASIAN HOUSEHOLDS

We have investigated the potential residential demand from Asian individuals, including both British Asians and wealthy Indian residents. The purpose is to investigate identifiable differences between this demand and the prevailing demand for new homes in West London neighbourhoods of similar accessibility to employment markets.

2.1 Approach

The research programme was based on a triangulation approach, using a wide range of data sources and lines of enquiry. Gathering of evidence continued until cross referencing of all sources produced a consistent picture of the nature of demand, with recurrence and reinforcement of themes. This was achieved through a mix of desk analysis, face-to-face interviews, telephone interviews and focus group discussion. A total of 56 individuals were consulted during the research. Sources include:

- market data from HM Land Registry and internet listings sites;
- estate agents operating in the local Southall market and areas to which Southall residents tend to move;
- estate agents marketing new homes in areas of high Asian population in West London and Birmingham;
- potential buyers from within the existing local community, including those more affluent households currently living in overcrowded housing, and new households, including young couples, singles and families with young children (predominantly second or third generation Asians in the 25-45 age band);
- Asian occupiers living in West London who may be attracted by the high quality mixed use development that is proposed, being predominantly second generation Asians who have left Southall to find homes elsewhere;
- wealthy business people working in the Southall area, some of whom live in Southall;
- local stakeholders with knowledge of the market, including representatives from Ealing Council and the Heathrow City Partnership; and
- investor demand from within the community and elsewhere, including wealthy individuals resident in India.

Of the individuals interviewed, the majority were Sikh (reflecting the predominantly Sikh profile of the area), though a small number of Hindus and Muslims were also included. This profile reflects the focus of the research on the wealthier Asian community which tends to be concentrated amongst the Punjabi Sikh community that has been established in the area since the 1960s.

2.2 Perceptions of Southall and Preferred Residential Areas

2.2.1 Current Perceptions of Southall

A number of positive features of Southall were identified, predominantly amongst those who retain cultural or emotional ties to the area through family and/or friends who live there or by having previously lived in Southall themselves. These factors largely related to cultural and religious features:

- Strong local community.
- Strong cultural identity (perceived as "lively").
- Many respondents considered Southall to be "home" (even if they no longer lived in Southall itself). This sense of belonging was strong amongst many consultees.
- Good ethnic food and clothing stores, restaurants and other amenities, including places of worship.

Overall, there are generally negative perceptions of Southall as a place to live amongst the target group, with few indicating that this is an area that they would like to live in at the present time. The key shortcomings of the area were identified to be:

- Very dense population (considered by many to be "*overpopulated*")
- An existing stock of generally poor quality housing
- A poor quality local environment, with particular issues raised regarding the area being "*dirty*", with excessive litter and rubbish on the streets
- High levels of traffic congestion, making access to and from the centre of Southall very time consuming.
- Lack of parking
- Perceptions of high levels of crime, and intimidating groups of "*youths hanging around*" , gang culture and drug use
- A lack of traditional high street shops
- A lack of diversity with no real cultural mix – which was considered to be a factor that might "*scare*" people away from the area (both Asian and non-Asian).
- Perceptions of an increasing inflow of immigrants to the area, with large numbers of illegal immigrants a concern for many

However, when questioned regarding views on the area following the transformational change that is proposed for the Gas works site, many individuals who would not currently consider living in the area would reconsider in the presence of a high quality development with a good local environment.

2.2.2 Areas of Home Search

Poor perceptions of the area combined with a desire to move away from the area and up the social and property ladders is linked to a lack of quality properties available in the current market. Young Asian people (especially younger second generation and third generation) are much more westernised in culture, whilst older residents and first generation residents have stronger ties to the cultural and religious offering of Southall.

However, whilst many of the high-earning younger residents wish to move out of the area, most retain ties to the area and do not move far away – tending to move to areas nearby that offer larger and higher quality properties and a better environment, whilst remaining within easy travelling distance of Southall. This also reflects the westernised culture of these individuals, many of whom wish to live in areas with a mix of population. Indeed, many respondents indicated that Southall was "*too Asian*" or had "*too many Asians*" i.e. a multi-cultural environment is an important factor in determining where these individuals want to live.

This is reflected in the areas in which individuals would consider buying a new home. The areas most commonly cited were elsewhere in West London (again indicative of the desire to move out of Southall but in easy travel distance) and wider into the Home Counties. The most commonly identified search areas identified were:

- Berkshire (including Slough, Windsor, Maidenhead and Langley)
- Amersham
- Hayes
- Hounslow
- Norwood Green.

This is consistent with the view of the market provided by local estate agents who have observed a trend of individuals with higher net wealth or higher incomes to move out of Southall itself to nearby locations such as Norwood Green, Hayes and Hounslow to find higher property values and a better local environment, or further afield to places with larger properties, such as Langley and Gerrards Cross.

Several younger respondents also identified what they referred to as an "auntie factor", in that part of their desire to move out of Southall was to get away from restrictions of tight-knit family networks who are often perceived to be watching over their younger relatives i.e. younger people do not want to live too close to their parents and other family members who still live in Southall.

2.2.3 Perceived Benefits of Preferred Search Locations

A number of particular differentiating factors made these locations preferable to Southall:

- More open space / green spaces
- Better educational facilities (i.e. good quality grammar and primary schools)
- Homes with gardens
- "Calmer" or "less busy" areas
- Greater ethnic mix (i.e. not predominantly populated by Asians)

Southall does not currently provide these features to an extent that would attract or retain individuals in the study target group in Southall.

Several investment buyers who would not currently consider buying in Southall identified concerns over the types of tenants that the area currently attracts, and would prefer to buy in a location which is already home to professionals and a range of employers likely to employ professional people. This issue was echoed by several of the professional people interviewed, who identified the lack of local employment opportunities or major employers as a weakness of the area.

2.2.4 Issues Relating to Southall's Reputation as an 'Asian' area

The Asian association and reputation of the area is considered to be both a strength and a weakness. The local festivals, ethnic shopping and eating experience, and religious venues are attractive to Asian people, but agents and individuals alike, indicated that this may be off-putting to buyers who were not Asian.

In addition, the target group like the Asian cultural and shopping experience that Southall offers – but do not necessarily wish to be immersed in this all the time. Hence, the trend of moving out of the area, but within easy reach to take advantage of this offer at their own leisure.

The weakness of this reputation appears less to be related to the fact that the area has a large Asian population, but with the knock-on effects in terms of the large population, busy public areas, and traffic congestion in the town. This said, the lack of cultural diversity in the area is recognised to be a factor that may be off-putting to non-Asians considering moving the area (and indeed, this was a key factor for younger Asians themselves).

2.3 Views on Branding

As part of the research, individuals were asked to comment on a number of branding designs being considered for the development. Participants were provided with flashcards of four different names for the development (and several different designs associated with each). The four names considered were:

- Stara Park
- UB1 West Ealing
- Saffron Park
- Grand Union Park

2.3.1 Stara Park

The name Stara Park was generally unpopular amongst all those consulted. Consistent with earlier findings relating to young Asians being more westernised in what they were seeking in finding a place to live, many did not like the Asian association of this name. More generally, the perception was that the name was "tacky" and did not conjure images of a place that people wanted to live.

There was also some confusion over the name itself, with several individuals asking what the word "stara" meant, and whether it was meant to read "Sitara" (which is the Hindi word for "star").

2.3.2 UB1 West Ealing

Again, this name and design was generally unpopular amongst respondents. The use of a postcode in the name was considered by some to be "old hat" and something of a "fad" that had had its day.

In terms of the design, few specific comments were made, though several respondents indicated that the black background made it difficult to establish at first glance that the name was "UB1" with some thinking it was just "B1".

However, a small number (less than 5) indicated that they liked this name, with the use of Ealing in the title seen as an advantage

A small number of respondents queried whether the site was actually in the UB2 postcode district.

2.3.3 Saffron Park

This name received a mixed response. Some respondents were positive on the name because of its cultural relevance to the area, though this was offset by a larger number of respondents who did not like this association of the name, and in one case a feeling that "it sounded a bit like a restaurant".

It is also worthy of note that one individual pointed out that the colour saffron is particularly associated with Sikhism and Hinduism. Further research revealed that in Hinduism the colour saffron symbolises the Supreme Being and is often displayed atop places of worship. Sikh Gurdwaras also often fly a saffron coloured flag. Whilst Southall is predominantly a Sikh area, it was suggested that the religious association of saffron could be off-putting to individuals from other faiths.

2.3.4 Grand Union Park

This was by far the most popular name amongst the respondents, with almost all identifying this as their preferred choice amongst the four options that were presented. The key features that made this attractive were the fact that it was not noticeably Asian, suggested links with the history of the local area, and the perception that the name had a sense of grandeur associated with it i.e. it sounded like an up and coming area that people would want to live in.
Summary

Focus group discussion revealed some preference amongst local business people to retain the word 'Southall' in the name of the development, though this contrasts with the view of individuals consulted who were typically against its use due to their current perceptions of the area and a desire to move away from this reputation. By far the most popular brand of the four presented was Grand Union Park.

2.4 Potential Residential Demand

2.4.1 Recent Market Trends

The area is not currently one that contains any significant volume of high quality housing, hence the outflow of wealthier individuals and families seeking properties at the higher end of the market. This is also apparent in the fact that Southall does not have any major estate agents – most are local agents with those serving the higher end of the market located elsewhere in Ealing and beyond.

Current housing stock in the area is generally of poor quality, with demand highest for 3-bed terraced houses, which tend to sell for up to £250,000. This reflects owner occupier demand from within the local community, but also local investor demand, with a strong lettings market for this type of property at present. Agents also noted that the trend of people moving out of the area to larger and better quality houses elsewhere was often accompanied by these individuals retaining ownership of their old property in Southall to be rented out.

The upper end of the Southall market is Norwood Green where larger houses sell upwards of £350,000 and in some cases in excess of £500,000, although Land Registry data for 2006 shows that sales above £500,000 are very scarce. Wealthy business people based in Southall tend to move further afield to places like Hayes and Uxbridge. High net worth individuals seeking to buy property in excess of £1m would generally not want to buy in Southall itself, but move to more spacious neighbourhoods in the Home Counties. Consultations revealed that this is likely to remain the case even after the proposed Gas works development comes to fruition i.e. the top end of the market (over £1 million) will always seek to buy large properties in less urban locations.
Most first generation Asians tend to want to stay in the immediate area, whilst many second generation also look to buy locally to get a first step on the property ladder (mostly apartments, either as occupiers or investors). The strong religious and cultural appeal of the area means that there will be a "hardcore" who will not want to move elsewhere because they have close family or religious ties to the area.

2.4.2 Demand for New Homes

The research investigated potential residential demand in a transformed Southall market, i.e., on a high quality development on the Gas works site.

- Apartments – There is clearly demand for apartments both from owner occupiers and investors amongst the target group. However, demand is almost exclusively for 2-bed apartments. There is little evidence of strong demand for one-bed apartments amongst Asian owner occupiers, though several local agents consider that there would be wider 'West London' demand for one-bed properties, with a wide range of ethnicity, reflecting demand at nearby developments such as Reflexion in Hounslow and Grand Union Village at Northolt. The findings suggest that individuals seeking 2-bed apartments would be willing to pay up to £300,000, and in some cases up to £350,000 for a good size apartment in an attractive location.
- 2/3 Bed Houses – Price points for two and three bed houses were indicated to be in the range of £300,000 to £350,000 with key requirements being gardens and allocated parking/driveways.
- Larger family homes (4/5 beds) – the research suggests a segment of demand for properties of this size in the area, with demand generally up to £500,000, with a small segment of the market willing to pay between £500,000 and £750,000 for such a property. Agents indicate that suitably high quality houses could fetch up to £1million based on current levels being achieved in Home Counties locations, but they would require gardens, car parking and a prestigious exclusive setting.
- Demand for family homes will be influenced by their size and quality – with at least 2 bathrooms and en-suite facilities indicated as desirable. Agents also noted some cultural factors that may influence demand from within the Asian community. In particular, open-plan kitchen/dining areas are not considered popular due to issues around containment of cooking smells. The experience of developers building large family homes (6 beds at c.1750 sq.ft.) in predominantly Asian neighbourhoods of the Birmingham market is that two ground floor reception rooms are essential.

Overall, the research suggests that Asian demand will be highest for 2-bed apartments with some limited demand for 1-beds amongst local people, and possibly from investors. It also indicates that Asian buyers will be looking for product features, amenities and public realm that would appeal equally to purchasers in the wider West London market. We can conclude that there is potential for the residential offering to appeal to both Asian demand and wider West London demand, widening marketability of the scheme, in which case there is likely to be demand for a wider product mix that includes 1 bed apartments, as has been the case for developments in Hounslow and Northolt.

The research also reveals a small, but significant level of demand for larger family homes priced at up to £1million. For even larger and more expensive homes, the research suggests that the transformed gas works site would not be considered suitable as individuals looking to spend in excess of £1 million on a property would almost exclusively look to purchase elsewhere in a less urban location.

Many of those consulted emphasised that the quality of the build would be a critical factor in determining demand. Many shared a view that new homes were often noisy and with generally smaller floor area and room sizes than would be desired by the target group at the higher end of the market. This said, further probing revealed that many individuals are willing to pay a premium for new homes (subject to caveats around the quality of build and fit-out).

With a small number of exceptions, the research showed that individuals would be prepared to pay prices at the new development that are comparable to those currently being achieved at new developments in Wembley and in markets such as Slough and Langley (where many younger people from Southall have migrated to):

- Up to £300,000 for a 2-bed apartment (compared to £290,000 at Wembley (though these tend to have a smaller floor area)
- Up to £350,000 for 2/3 bed houses (compared to prices in the range of £270,000 - £300,000 in favoured locations outside London, such as Slough and Langley)
- Large 4/5 bed houses up to and breaking through the £500,000 price threshold, with a small segment of demand paying up to £750,000 and the possibility of prices as high as £1million with the right setting and specification.

This is subject to the transformational change in Southall through the creation of a high quality development with green spaces and leisure and other facilities to meet the needs of wealthy residents who would not wish to live in Southall as it is at the moment.

2.4.3 Investor Demand

Consultations with individual investors, potential investment buyers and agents indicates a demand for all types of property at the new development, including demand for 1-bed apartments would rely on attracting demand from the wider London market, as noted above.

There is potential for investor demand from within the local community, particularly people with small businesses or property investors who would see it as an opportunity.

Property agents serving the higher-end of the market across West London also suggest that there is likely to be strong overseas demand for new homes in West London and consider that the Gas works development would be popular amongst their portfolio of investment buyers (one agent indicated that 40% of current clients were foreign investors, with the lack of supply of new homes across west London resulting in a shortage of supply to meet this demand at present).

With regard to potential investors amongst high net worth individuals based in Mumbai, most of the current demand appears to be for a flat to be used a second home close to central areas or as accommodation for children at a London university. Current perceptions of Southall are not consistent with these objectives. Residential investment did not appear to be part of the investment culture for these individuals, but as perceptions of the investment potential from buy to let properties in London builds, we expect demand to be more wide ranging, as it is for demand from the Far East and Middle East. However, current perceptions of the poor quality tenant profile of Southall will need to be changed.

2.4.4 Demand for Business Premises

Whilst not a primary goal of this research, a number of specific points regarding business and commercial uses on the propoped development were identified. These views were provided by local business people, and others who work in or run businesses in Southall but now live elsewhere (having generated wealth and moved out of the area following the trend previously identified).

There was broad consensus that the development needs to include an Ealing Broadway style retail offer to differentiate it from the current local, ethnic offer on Southall Broadway. Whilst commercial agents and local business leaders believe that there will be strong demand for retail premises from local Asian retailers at the higher end of the market, there is a wider desire amongst potential purchasers for a more westernised retail offer. Specific stores/brands considered desirable included:

- Debenhams
- Marks and Spencer
- John Lewis.

There was less consensus on the need for a large supermarket in the area with a fairly even mix of those that did not want a large store to detract from the local offering and those that would welcome a large supermarket development. The compromise identified by some was for a smaller supermarket offering along the lines of Tesco Metro.

Consultations also revealed potential demand for small industrial units on the development, with particular opportunities to build on existing strengths of the area in food processing (with particular strengths in Asian foods) and media and the arts.

Consultations with potential buyers (that included one Bollywood film producer and a leading producer of bangra music) indicated some potential for specific facilities to encourage the growth of the media and creative industries, building on the strong Asian association of the area and the existing strengths of West London in the creative industries. This view was confirmed during a focus group with local business people, who also indicated a demand for a hotel and business conferencing facilities (currently not available locally, with those seeking these facilities currently using venues in Wembley and Heathrow).

2.4.5 Factors Needed to Attract People to Southall

Whilst the research indicates demand for high spec, high quality housing on the site, the poor perceptions of the area mean that such demand is dependent on achieving a transformation of the area. Without such a change the levels of demand outlined above cannot be expected to be achieved. Key factors that more affluent buyers require in terms of the wider development are:

- High quality interiors, with fitted kitchens, en-suites and large rooms
- Off-street and allocated parking
- Security
- Gym, sports and other leisure facilities
- Cafés – Southall currently only has one café and business people (and individuals) would like to see more of these as places to meet associates and friends
- Quality open spaces and green spaces/parks. This factor is considered critical with a strong desire for easy access to safe and accessible green spaces and play areas important for most buyers.
- The issue of schooling is also critical. Part of the reason that Asian families with children move out of the area is associated with the poor quality of schooling in Southall, with some moving out to ensure access to better schools elsewhere. Many respondents indicated the need to provide a high-quality school with the development if it was to be successful in retaining wealthy families in the area.
- A retail offer with traditional (western) high street stores would be a key attraction to many, to complement the existing Asian stores that dominate Southall Broadway at present. Local people currently tend to access this offer in other nearby locations such as Ealing town, Hounslow and Hayes.
- The presence of large volumes of social housing on the site would be off-putting to many buyers at the higher end of the market

- It is notable that these factors are typically 'Western', again consistent with the finding that demand amongst the Asian community at the higher end of the market is not fundamentally different to that experienced anywhere else.

3 PLACEMAKING

Our 'placemaking' research builds on the residential demand research outlined above. It looks at what it will take to create a high value residential area with the sort of characteristics needed to realise the full potential of the Southall Gas Works site. The research focused on the mix and layout of the non-residential elements that will be needed to achieve this step-change. The output of our study is a detailed schedule of property size and mix information which will feed into the master planning process. The overarching aim of this strand of the research is to identify what would need to be created on the site, in terms of all non-residential elements, in combination with the masterplan design, to produce a truly sustainable place. This is one that will optimise land value, both by enhancing the value of the residential offering and by maximising the viability of the non-residential offering. This combination should also enhance the rate of take-up of both the residential and non-residential offering.

The outcome of this research is a detailed floorspace analysis, broken down by property type, planning use class, and the potential location of each use on the site.

3.1 Approach

The placemaking research is based on examining real, existing, socially and economically successful places in terms of their non-residential property mix. The basis of this research is to discover what could be developed in order to, ultimately, enhance residential values and lift them above those which are currently achieved in the local area.

This analysis of real places forms the basis of the detailed non-residential property breakdown, and is shaped by what already exists, or is missing, in the local area. We seek to identify what could be provided on the site to meet the needs of both the potential new population and those currently unmet in the existing population. We do this by measuring the potential of the new development and also by measuring, and addressing, some of the existing deficiencies of non-residential property provision that exist within the local area.

What is possible for the development has also been determined with reference to the findings drawn out from the more detailed residential research and consultations outlined above. Examination of the potential revealed by the demand research led us to decide that a place could be created that is substantially different to what exists in Southall at present. We believe that an overall environment similar to existing, more affluent, parts of West London could be created on the site.

The focus of the research is on the niche, fine-grain non-residential mix that could be developed on the site, rather than standard "big box" development.

In the first part of our placemaking research, we identified three possible scenarios for the Southall Gas Works site. In line with the religious and ethnic profile of Southall, three comparator locations were selected, namely, South Ealing, Golders Green, and South Kenton representing three different scenarios for the development. These can be described as "catching up with the neighbours" (South Ealing), "new prosperity" (Golders Green), "keeping affluent families" (South Kenton). Further to the residential demand research being completed, the "catching up with the neighbours" scenario appears most appropriate although there may also be some scope to create "new prosperity" around the religious attractions near to the site in line with the model presented, in a different context, by Golders Green. This is in line with the results from the research consultations which pointed to some level of demand for larger family homes. The South Ealing comparator site appeared to be the most appropriate in representing the sort of aspirations of the potential market that showed up in the demand research.

3.2 Property breakdown

Using South Ealing as a base study, we have identified 447 non-residential property requirements that could be developed on the Southall Gas Works site. These are broken down into the following uses: business; community; hospitality; leisure; and retail. Each of these are detailed in table 1 on the following page. This breakdown represents a niche mix of non-residential property types, and not large big-box development. There are important design implications in this fact inasmuch as we would envisage that small, niche units will have to be integrated into the fabric of streets and into buildings of different uses rather than stand-alone small, or big, buildings. Commercial uses need to be pepper potted through the site rather than concentrated in a bespoke business park or retail mall.

The various property uses have also been assigned a suitable location based on their associated business use. These include: Main Street, Off Main Street, Off Main Street/canal frontage, Neighbourhood Centre and Arches. These assigned locations are also partially dependent on whether the business use would be suited to meeting the needs of the resident population, serve the existing population to the north of the site, and/or a drawer of people into the site.

The property breakdown detailed in the following table, and its associated floorspace calculated as part of our analysis, should be seen as being indicative rather than prescriptive of the property types that could be developed on the site.

The locations detailed are based, partially, on the draft masterplan as it currently stands. Main Street would be concentrated to the main road that runs through the site at the northern end of the site, as part of phases 1 and 2 as detailed in the current phased drawings (White Young Green draft phasing drawing SK.01). We would also suggest that this development area would also include developing non-residential property along the opposite side of this "Main Street" that falls into the proposed phases 4 and 7 in the current drawings (White Young Green draft phasing drawing SK.01). Our research envisages that this area of the site would provide the majority of the retail and hospitality offering envisaged for the development.

There are also a number of non-residential property types that, while suited to location in this central area, are not suitable to be located directly on the Main Street. As a result, we have identified an area known as "off Main Street" which will constitute a position on the streets/roads that run directly off the Main Street within phases 1 and 2 as detailed in the current phase drawings (White Young Green drawing SK.01).

There is also the opportunity to create a small concentration of hospitality uses (restaurants, café's, bars, etc) in the area adjacent to the canal at the end of the Main Street to "cash in" on this waterfront advantage as well as this areas green views across the canal. We have termed this area "off Main Street/canal frontage".

It may also be a consideration to create a small neighbourhood centre in the south west area of the site to serve the local need of the resident population in this area. This may constitute a small greengrocers/newsagents/post office and café/tearoom rather than anything more substantial.

We have identified a new area, not already accounted for under the existing draft masterplan, which we have termed "Arches". We envisage that this area will act as a buffer between the rail line and residential development found in the south west area of the site as part of phases 3 and 6 as detailed in the current phased drawings (White Young Green SK.01). Property provision in this area will consist of relatively low value business premises such as warehouses, workshops and light manufacturing uses not suited to other areas of the development. We nevertheless see these as lending life, vibrancy and some essential services to the development and also providing a valuable daytime market for restaurants, cafes and other facilities on the site.

Table 1 - Property breakdown

	Our recommendation	Location
Business premises		
Builders yard/materials depot	20	Arches
Fronted office	30	
	10	Main street
	10	Off Main Street
Fronted office & car park	3	Off Main Street
Kitchen, storage & micro office	5	Off Main Street
Light manufacturing unit	12	Arches
Micro offices	8	Off Main Street
Office & builders yard/materials depot	3	Arches
Offices & workshop/storage	30	Arches
Small offices	40	Main Street
Studio	28	Off Main Street
Studio & small office	20	Off Main Street
Transport depot/garage	1	Arches
Warehouse	15	Arches
Warehouse & small office	1	Arches
Workshop	12	Arches
Workshop & storage	30	Arches
Community		
Classrooms	4	Off Main (1*)
Halls/ meeting place	1	Main street
Fire station	1	Off Main Street
Funeral parlour	2	Off Main Street
Quasi residential use (i.e. residential care home)	3	Off Main Street
Town hall offices	2	
	1	Main Street (1*)
	1	Off Main Street
Primary school	1	Off Main Street
Crèche/pre/school	6	Off Main Street (2*)
Library/shop/gallery/museum	1	Main street
Surgery/treatment/consulting room	40	
	10	Main street
	35	Off Main Street
Hospitality		
Cafe/tearoom	10	
	8	Main Street
	1	Off Main Street/canal frontage
	1	Neighbourhood centre
Club house	4	Off Main Street
Hotel	4	
	3	Main Street
	1	Off Main Street
Night club	1	Off Main Street
Pub/bar	10	
	5	Main Street
	5	Off Main Street/canal frontage
Restaurant	10	Main Street
Leisure		
Sports facility/court/gym	2	Off Main Street
Retail		
Boutiques/clothes shops	5	Main Street
Banking hall/ fronted office	3	Main Street
Car showroom	1	Arches
Petrol Station	1	Arches
Drinks/groceries/grocer/deli	6	
	6	Main Street
	2	Neighbourhood centre
Post office	2	
	1	Main Street
	1	Neighbourhood centre
Showroom & workshop/storage	1	Arches
Shop (incl A5 units)	42	Main Street
Shop with storage	6	Arches
Shop with workshop	5	Arches
Stall/barrow/kiosk	2	Main Street
Total	447	

Notes
1 This provision could be part of larger civic building*
2 Some of these properties could be provided in an area to the edge of the site so it is accessible to the broader catchment*

The envisaged arches/buffer zone that could be created as part of phases 3 and 6 as detailed in the current drawings (White Young Green SK.01) and could accommodate non-residential property uses not suited to other areas of the site (warehouses; workshops; light manufacturing uses) as the activities of their potential occupiers are less complementary to residential uses. Provision of this nature would not only create a 'buffer' between the residential development on this part of the site and the rail line, but at the same time maximise the potential value of this area of the site. Providing these premises on site would both capitalise on the identified demand that exists for space of this nature - as highlighted in the research consultations and create an urban buzz and commercial activity to support other service providers. It was noted that there was potential demand for small industrial units building on the existing strengths of the area in food processing. We do not believe that it would be valuable to provide large units of this nature on site, as the traffic that may be generated from its use may have a detrimental impact on the rest of the site particularly the residential element. Developing specific property uses in this part of the site will not only generate value in of itself, but will also provide increased support to the retail and hospitality uses on the site.

As we have focused on niche property types, and not the standard 'big box' buildings normally associated with new developments, we have not proposed any requirement for large-plated office development. This proposition is also based on the findings from the research consultations that there may be an opportunity to encourage growth of the media and creative industries. Industries better suited to small, flexible business premises - be they either offices and/or studios.

One of the differentiating factors that make other residential locations in West London currently preferable to Southall, is the access to better educational facilities (primary and secondary schools). In line with this deficiency, and community provision seen in South Ealing, we have proposed the need for some provision of this nature on site. The level of this provision will be dependent on the residential mix envisaged for the site, as pure flatted development will limit the need for schools on site to service the needs of residents. But, providing a small school and/or preschool/crèche in the northern area of the site as part of proposed phases 1 and 2, or even in the area closest to the Main Street as part of proposed phase 4 (White Young Green SK.01), would mean the school would still be accessible to the existing population to the north, drawing people into the development. This will provide further valuable footfall to the retail and hospitality offering both on and off the 'Main Street'.

3.3 Floorspace provision and associated employee generation

Based on the businesses that exist in South Ealing, we have been able to build an indicative profile of employment numbers that may be generated from the development of the type of non-residential property uses proposed. From this indicative employment profile we have been able to build a detailed profile of floorspace provision that can be broken down by planning use class, using Ove Arup's employment density work. Ove Arup's analysis does not cover all the property types identified for the Gas Works site, but we have used approximate floorspace figures developed from previous client work to fill the gaps.

We have further broken down this floorspace provision, and associated employment numbers, for each of the various locations i.e. Main Street, off Main Street, by the property types identified. This provides a more detailed and comprehensive picture of the mix, quantum, and nature of what could be developed on the Gas Works site. A detailed breakdown by property types, associated floorspace and employment allocation for each of the areas identified can be found in the Appendix.

This analysis does not include floorspace provision for the primary school, preschool/crèche, or fire station proposed in the property breakdown detailed in table 1, although the associated jobs that these uses could generate has been included in the analysis. In the case of the school and preschool, floorspace would be calculated on child yield on the development, rather than number of employees, which as a result will be dependent on the final residential mix for the site. For example, a pure flatted scheme will yield low numbers of children reducing the floorspace provision for this particular use. The fire station has been excluded as its size will be dependent on the specific requirements of the fire service if its provision on site is deemed necessary. We would also note that the level of floorspace provision for hotel/conferencing facilities on site is significantly lower than that currently allocated as part of the latest masterplan. We suspect that if part of the vision for the development is to provide a significant hotel offering on the site the floorspace provision calculated as part of our analysis would need to be increased accordingly.

The indicative breakdown of property types detailed in the previous section would constitute a total developable floorspace of just over 1.13m sq.ft, with an associated employment generation of just over 3,000 jobs (see table 3).
The largest provision would be allocated to B1 uses, which accounts for 39% of total non-residential floorspace. Floorspace allocated to retail uses (A use class) accounts for 15% of the total, the majority (63%) of which would fall into A1 use. A similar proportion (15%) of floorspace would fall into Sui Generis use. A further 10% would fall into D use classes, the majority of which would be classed as D1. The remaining 7% of non-residential floorspace would be allocated to C1 and C2 uses.

The total floorspace provision calculated as part of our research is ~40% lower than the 1.9 million sq.ft of non-residential provision envisaged as part of the latest draft masterplan for the site. We would note however that only 36% of this is actually made up of built non-residential property. The remaining floorspace allocation is made up of parking provision. As a result our indicative calculation exceeds that proposed as part of the latest draft Gross Area Overview dated 2nd April 2007 (excluding the residential use and car parking) by 63%.

Table 2 – Comparison of draft masterplan Gross Area overview (as of 2nd April 2007), Residential Mix Matrix (as of 4th June 2007) and Savills Research floorspace calculation

	Draft Gross Area Overview sq.ft	Savills floorspace calculation sq.ft
Residential	3,280,000	-
Retail	270,755	-
Office	102,257	-
Hotel	213,803	-
Health Centre	78,480	-
Education	27,017	-
East Parking	178,250	-
West Parking	1,046,665	-
Total	**5,197,227**	
Non residential use total	**1,917,227**	**1,130,493**
Non residential total (excl parking)	**692,312**	**1,130,493**

**Note: The residential floorspace is based on verbal information from Make. The non-residential Gross Area Overview is based on Make's draft masterplan dated 2nd April 2007*

Our floorspace analysis envisages a far greater variety of provision than that which is currently included in the draft masterplan (as of 2nd April 2007) . We propose that some of the additional floorspace that forms part of our analysis could be taken from that which is already allocated to the east and west parking, which is currently designed to act as a buffer to the rail line to the south of the site. As already discussed this buffer could be made up of business premises not suited to other areas of the site, which would create an urban buzz and commercial activity to support other service providers on site.

Table 3 – Total floorspace provision and employee generation by planning use class

Use Class	Floorspace (sq.ft)	Associated employee numbers
A1	108,899	419
A2/A1	22,074	107
A3	22,325	159
A4	20,000	53
B1	443,912	1,113
B1/B8	82,301	396
B8	68,880	128
C1	48,000	131
C2	36,000	56
D1	89,334	338
D2	42,146	40
Sui Generis	166,623	115
Total	**1,130,493**	**3,053**

**Note: Use classes D1 and Sui Generis do not include a floorspace allocation for the primary school / D1), crèche/preschool (D1), or fire station (Sui Generis) that fall under these classes. Although, the associated employee generation for these uses has been calculated and included in the indicative total employment generation that could be created from the development of the site. The size of the education establishments will be dependent on the child yield for the development as a whole, rather than number of employees. It may be the case that there will be no need to provide a fire station on the site, if it is provided its size will be dependent on the requirements of the Fire Brigade rather than on the number of employees.*

The following two tables summarises the floorspace and jobs allocation by use class for the various development areas that we have identified.

It is the 'Arches" that would account for the largest proportion of non-residential floorspace totalling close to 690,000 sq.ft, 61% of the total calculated for the site. The majority (51%) of this would be allocated to B1 uses.

Apart from the small provision allocated as part of an envisaged Neighbourhood Centre (1%), the remaining provision (39%) would be located in the core area of the site in proposed phases 1 and 2 as detailed in the current phase drawings (White Young Green SK.01), as part of the Main Street, Off Main Street, and Off Main Street/canal frontage. Thirty-three percent of this would be allocated to retail uses (Use Class A), the majority of this concentrated in A1 uses on the Main Street. B1 uses also account for a significant proportion of floorspace (21%) in this area of the site, 63% of which would be located on the Main Street.

Table 4 – Summary of locational floorspace provision by use class (sq.ft)

Use class	Main Street	Off Main Street	Off Main Street/canal frontage	Neighbourhood centre	Arches	Total
A1	69,500	10,000	-	5,299	23,870	108,899
A2/A1	12,258	9,816	-	-	-	22,074
A3	20,437	-	944	944	-	22,325
A4	10,000	-	10,000	-	-	20,000
B1	56,455	33,724	-	-	353,733	443,912
B1/B8	-	-	-	-	82,301	82,301
B8	-	-	-	-	68,880	68,880
C1	36,000	12,000	-	-	-	48,000
C2	-	36,000	-	-	-	36,000
D1	17,814	51,720	-	-	-	69,334
D2	3,230	38,916	-	-	-	42,146
Sui Generis	-	7,138	-	-	159,485	166,623
Total	**225,924**	**199,314**	**10,944**	**6,243**	**688,069**	**1,130,493**

Table 5 – Summary of locational employee generation by use class

Use class	Main Street	Off Main Street	Off Main Street/canal frontage	Neighbourhood centre	Arches	Total
A1	332	5		28	57	418
A2/A1	59	48				107
A3	146		7	7		159
A4	27		27			53
B1	275	361			576	1,113
B1/B8					399	399
B8					126	126
C1	98	33				131
C2		56				56
D1	82	276				358
D2	2	38				40
Sui Generis		47			68	115
Total	1,001	763	33	31	1,225	3,053

3.4 Additional considerations

3.4.1 Management

The property types detailed above represent what the Southall Gas Works site could become in order to reach its full potential and become a part of mainstream west London. But this may be dependent on some form of on-going and active management, particularly of the retail offering on the Main Street.

It was noted from discussions with local agents and local business leaders that there would be strong demand for retail premises from local Asian retailers. While this points to potentially good take-up of this space on the development, it would not meet the desires of potential purchasers for a more westernised offering. This is borne out from the views expressed in the research consultations in that while the Asian association and reputation of the area is attractive to Asian people, they do not necessarily want to be immersed in it all the time. We would also deem it important to provide something different to what already exists in Southall in order to draw people into the development and enhance footfall. In order to enhance residential values and take-up it may be appropriate to withstand the initial demand from local retailers and market to desired occupiers that fit with the "vision" for the scheme.

3.4.2 Flexibility of use

As already noted, what has been presented here in terms of property types and floorspace provision, should be seen as being indicative rather than prescriptive, and rather what is important is the need to design in "flexibility" into various property types.

There will of course be some property types where providing flexibility of use would not be suitable, for example in the case of a number of community uses. In other instances, particularly for those properties on the Main Street, this flexibility would be easier to achieve and allow properties to meet the changing needs of occupiers that would be expected over the life of a development/area.

3.4.3 Permeability

A further consideration would be the permeability of the site to the existing community to the north of the site. As already mentioned some of the property uses identified could be provided to meet the needs of the resident population on the site, as well as those of the existing population to the north. Access into the site therefore becomes key in supporting these uses as well as drawing people into the development to support services on the Main Street and elsewhere on the site

Savills Research
June 2007

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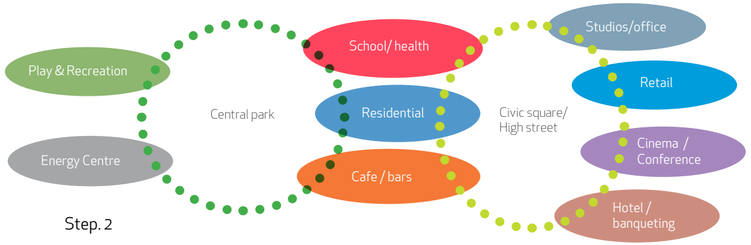
Appendix 02

Design Evolution

12.1 Design evolution

Design development has been an iterative process following a logical sequence of strategic moves to refine the design principles established from analysis of the site and its context.



Step. 2

Step 1 - Analysis and response

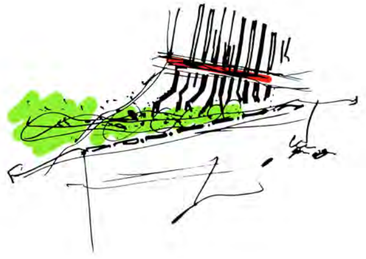
Analysis of the site and its context determined a response to successfully integrate the development by a) extending the linear urban grain from the north; b) allowing the character of the Minet Country Park to flow across Yeading Brook and the canal; and c) forming a linear environmental buffer to the railway.

Step 2 – Determining the brief

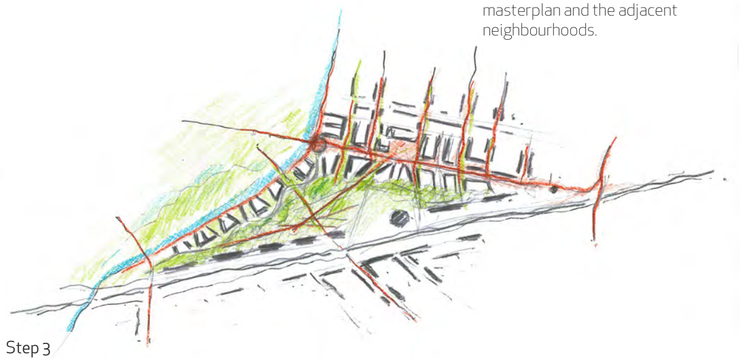
Developing a balanced mixture of uses connected by public space is critical to ensure successful regeneration of the site – the uses benefit each other to be economically and socially sustainable, accommodate change and respond to the prevailing economic climate.

Step 3 – layout and massing

The relationship of the open space informed the layout and massing proposal for the site as buildings facing either Minet Country Park, new central park or civic square rise from lower levels where they form streets. The layout is one where the new central park and civic square are enclosed by built edges and streets form view corridors between the masterplan and the adjacent neighbourhoods.



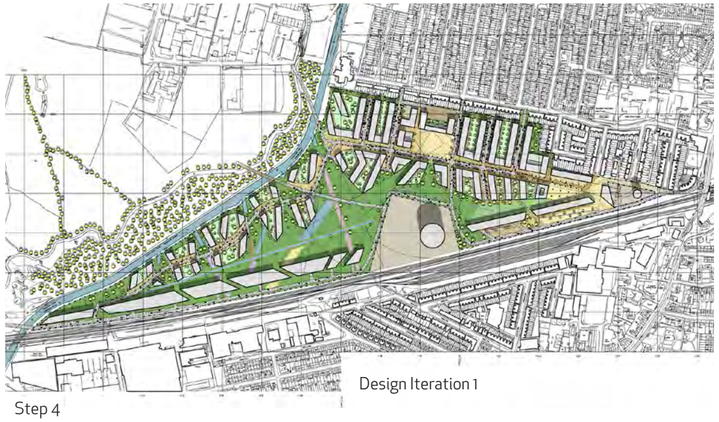
Step 1



Step 3

Step 4 – Design iteration 1

Design iteration 1 formalised development of the previous 3 steps to allow the design to be financially appraised and presented to CABE's design review panel. The appraisal identified that greater density was required to increase development value to recover high site remediation cost whilst CABE's design review panel suggested the public realm may be strengthened by reducing the area of park in favour of development on its western edge.



Design Iteration 1

Step 4

Step 5 – Design iteration 2

Increasing development around the new central park offered greater clarity to the masterplan diagram and significantly improved the scheme's viability. The design was also assessed to ensure optimum vehicular and inclusive access in respect of pedestrians, cyclists, servicing and public transport. The sustainability protocol developed a holistic approach to reducing the development's energy consumption through the design of a complete and compact piece of townscape that will reduce travel and promote longevity; setting targets to reduce the development's overall energy consumption; and generation of heat and power on site.

Design Iteration 2

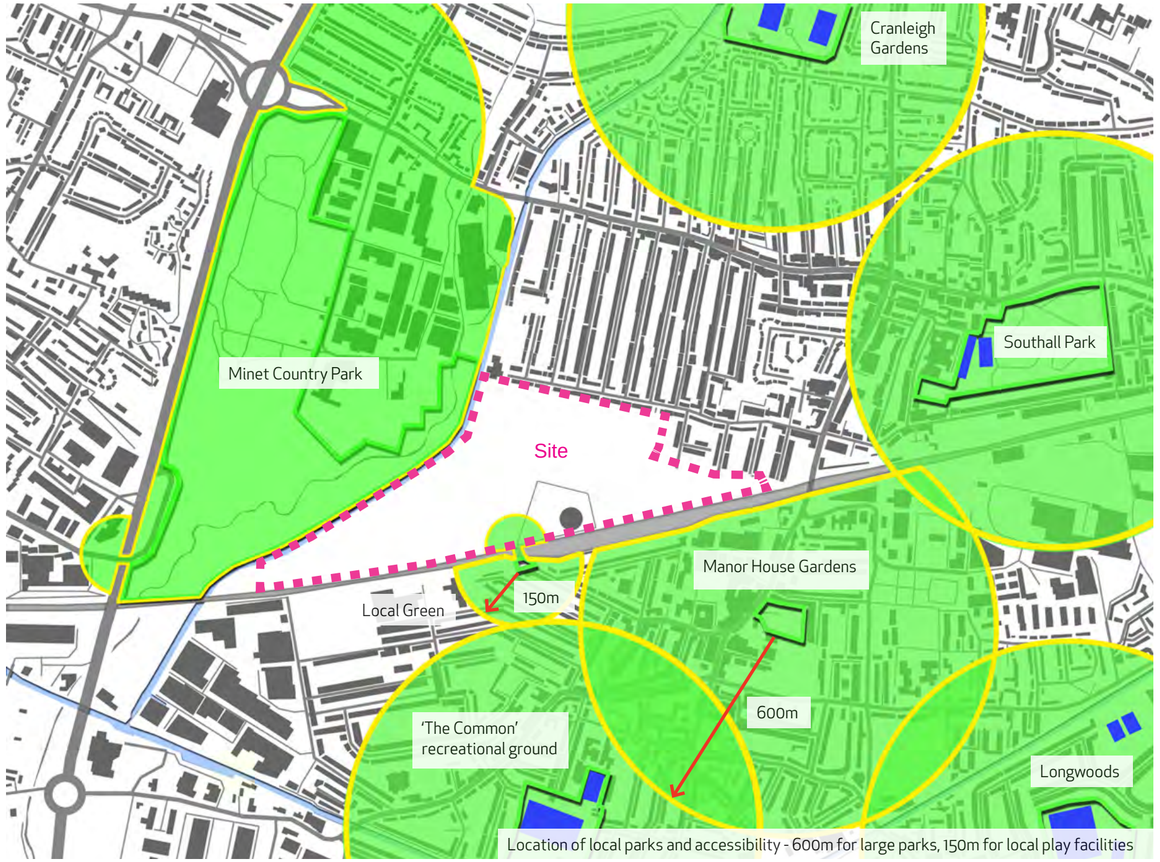
Step 5

13

Appendix 03

Existing Public Realm assessment

13.1 Local parks



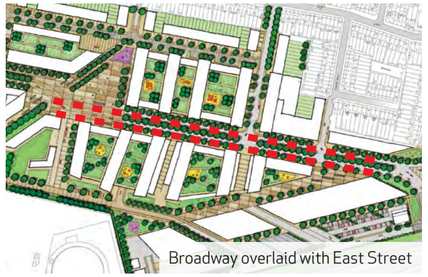
Location of local parks and accessibility - 600m for large parks, 150m for local play facilities

13.2 Public realm scale comparisons

The Broadway, Southall

Description: Size 17m wide
The proposed East Street is wider than the Broadway. Southall Broadway is a busy and congested road. Known for its Asian shopping and restaurants as it offers a mixture of clothing, fast food areas and shopping plazas. The streetscape is not of a particularly high quality and has few crossing points which are heavily used.

Broadway



Broadway overlaid with East Street

Acton Town Square, Acton

Description: Size 70m x 60m (Triangular)
This Urban Plaza fronting High Street Acton is triangular in shape and fronted by the church and retail outlets on each side. The plaza allows for pedestrian access through to Market Place. It is a hard paved area with seating and shade trees and is used as a short cut and access to retail facilities.

Acton Town Square

Acton Town Square overlaid with canal plan

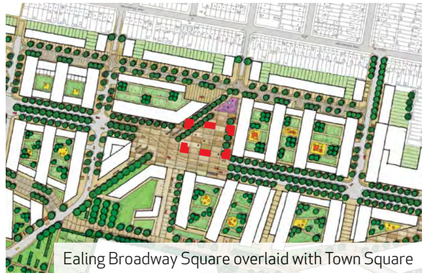
Ealing Broadway Square, Ealing

Description: Size 30m x 50m

The proposed Urban Square is approximately twice the size of this square.

This central square is encompassed on all four sides by retail outlets with access from three of the four corners of the site. The plaza is a major walkway for people taking a short cut through the shopping centre which surrounds the square.

Ealing Broadway Square



Ealing Broadway Square overlaid with Town Square

Southall Park, Southall

Description: Size 250m x 340m

Southall Park is approximately 1.5 times larger than the Central Park

This park is heavily used and highly maintained. Located off a busy road, it provides areas to sit, walk, meet and dwell. It also has a play area, conservation area, formal gardens, tennis courts and designated football and cricket areas.

Southall Park

Southall Park overlaid with Central Park

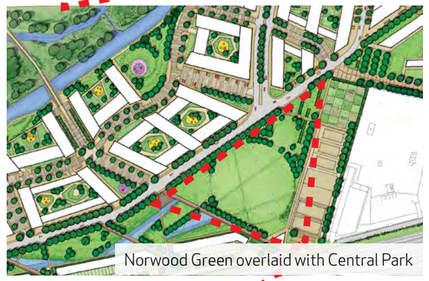
Norwood Green, Southall

Description: Size 160m x 190m (Triangular)

Norwood Green is approximately the same size as the green open space in the Central Park.

This park is located between 3 roads. It has a well used playground lined with mature trees. The green is also used for fairgrounds and as a recreation space. It is well maintained and a significant green space in the Southall area.

Norwood Green



Norwood Green overlaid with Central Park

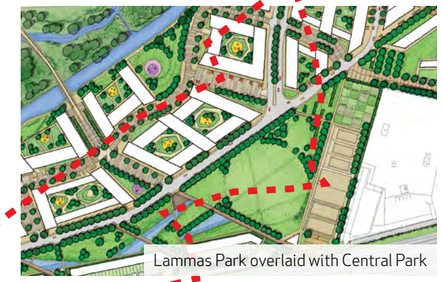
Lammas Park, Ealing

Description: Size 650m x 150m

Lammas Park is approximately 2 times larger than the Central Park.

This park has large areas of grass able to be used for informal active recreation. It is more a recreation park than a main pedestrian route. The park also features a playground, a playgroup centre and tennis courts.

Lammas Park



Lammas Park overlaid with Central Park

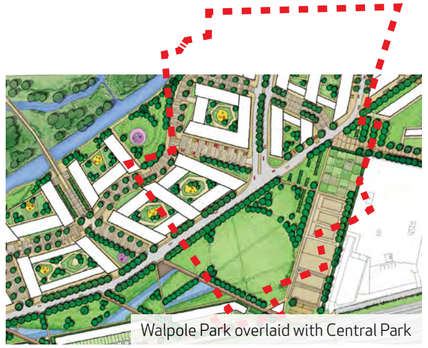
Walpole Park, Ealing

Description: Size 450m x 270m

Walpole Park is approximately 2 times larger than the Central Park.

This park is used for short cut access from the residential areas to the town centre. The park is dominated by the main pedestrian path lined with an avenue of trees. The park also features tennis courts, playground, lake and formal gardens.

Walpole Park



Walpole Park overlaid with Central Park

Heston Park, Southall

Description: Size 250m x 170m

Heston park is approximately the same size as the proposed Central Park.

This park has two designated football pitches, a mulitsports area, a playground and a pavilion shelter. It is used as a shortcut route and is enclosed by residential areas, Heston swimming pool and library.

Heston Park

Heston Park overlaid with Central Park

Urban Square, Wester Road Southall

Description: Size 50m x 40m (Triangular)

The proposed square is approximately twice this size.

This square is used as a meeting place with seating and tree planting set around a central sculpture. Located adjacent to a road and busy junction, it is not of a high quality and lacks privacy and a noise/ pedestrian buffer. It is however, one of the only hard landscape squares in the vicinity.

Urban Square

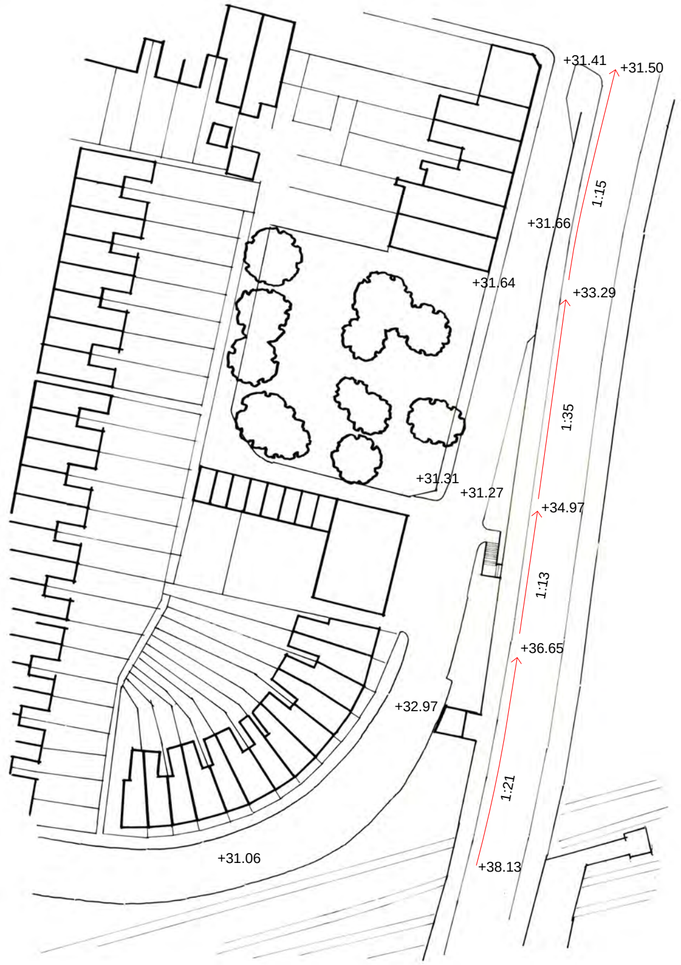
Urban Square overlaid with Eastern Gateway

14

Appendix 04

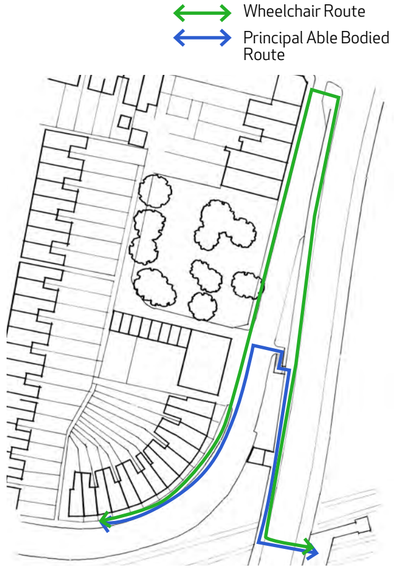
Eastern Gateway
Design Iterations

South Road / Eastern Access Existing Situation



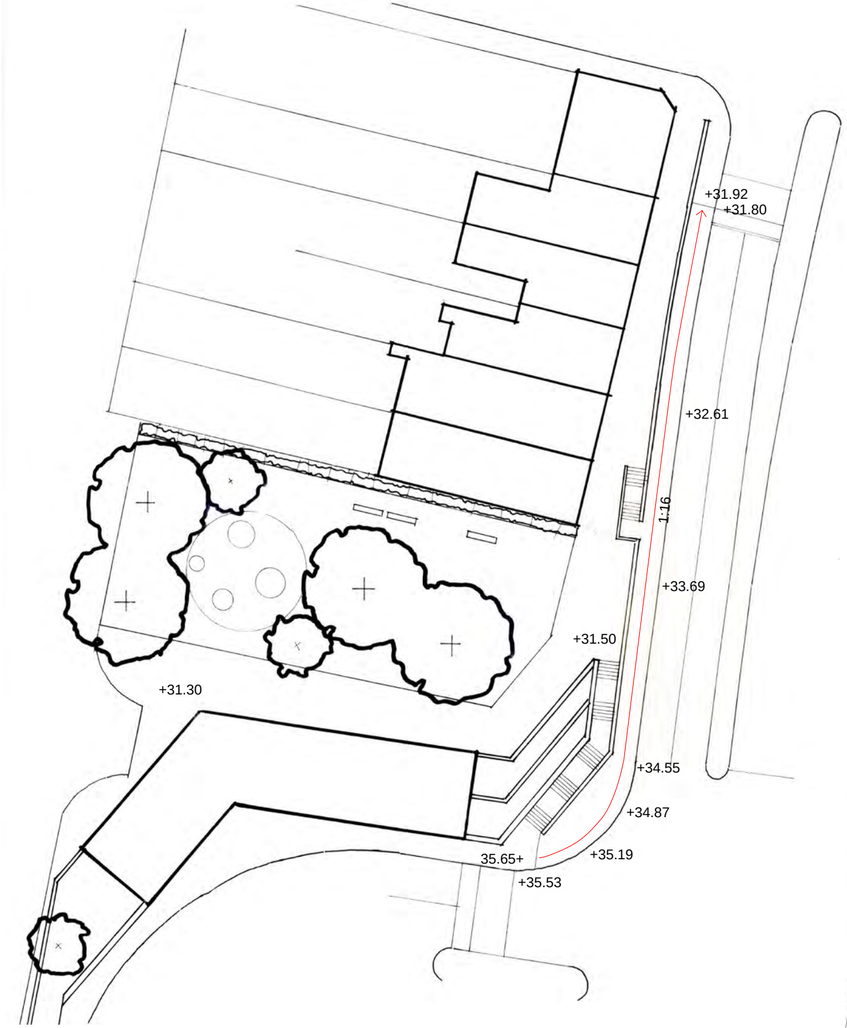
EXISTING SITUATION

- Existing gradient varies
- Fenced Play area 400m^2



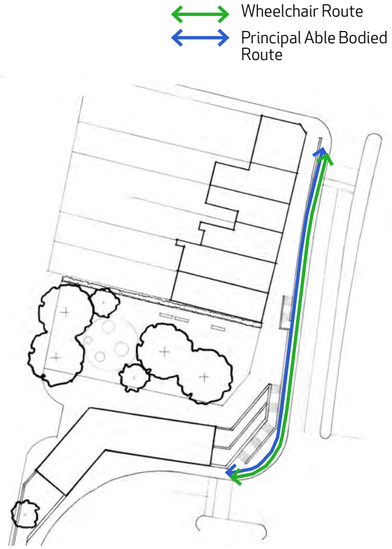
0 8 16 24 32 40m

South Road / Eastern Access Scheme Proposal



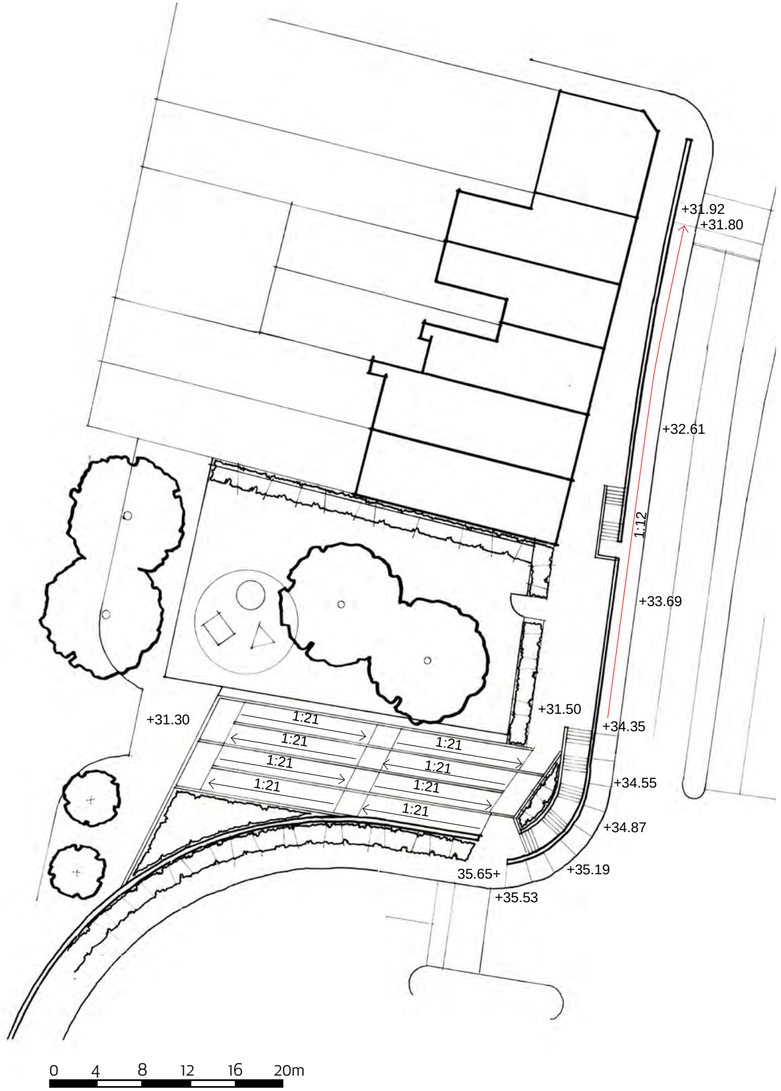
SCHEME PROPOSAL

- 4.15 metre level change from footpath adjacent to pedestrain crossing to level playing area
- One 62m long 1:16 ramp (not DDA compliant)
- Footpath width minimum 2.0m
- Play area 600m^2
- Handrail required along roadside edge of pedestrian footpath



0 4 8 12 16 20m

South Road / Eastern Access Design Study 1

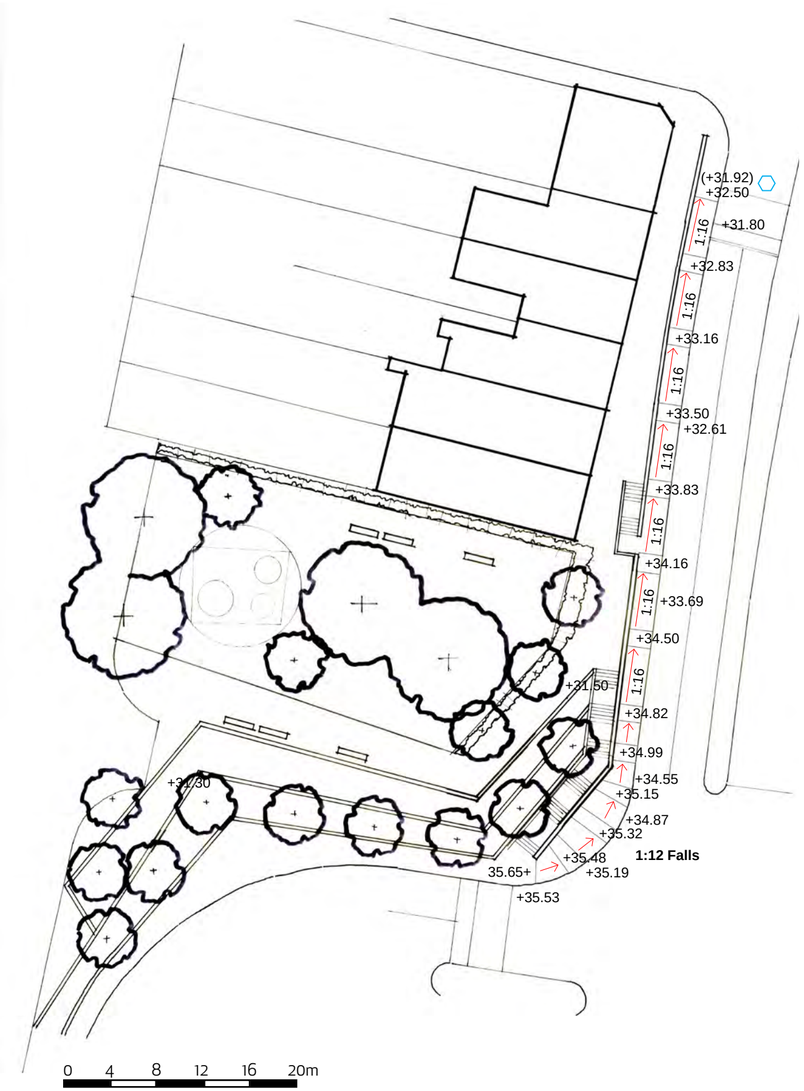


DESIGN STUDY 1

DDA COMPLIANT WHEELCHAIR ACCESS RAMP

- 4.15 metre level change from footpath adjacent to pedestrain crossing to level playing area
- Wheel chair access ramp (DDA compliant)
- Length of access ramp 117 metres
- Length wheelchair route - 172 metres
- Length of able bodied route (including 9 steps - 62 metres
- Footpath width minimum 2.0m
- Play area 500m^2
- Handrail required along roadside edge of pedestrian footpath

South Road / Eastern Access Design Study 2



DESIGN STUDY 2

DDA COMPLIANT RAMP. DOES NOT ACHIEVE REQUIRED LEVEL CHANGE

- 4.15 metre level change from footpath adjacent to pedestrain crossing to level playing area
- Combination of 5m long 1:16 ramps (DDA compliant) and 2m long 1:12 ramps (DDA compliant)
- 1.5m long landing areas (DDA compliant)
- Ramped footpath unable to meet existing levels at foot of slope (difference of 580mm)
- Length of wheelchair and able bodied route - 62 metres
- Footpath width minimum 2.0m
- Play area 600m^2
- Handrail required along roadside edge of pedestrian footpath

South Road / Eastern Access Design Study 3

DESIGNE STUDY 3

NON DDA COMPLIANT RAMPS

- 4.15 metre level change from footpath adjacent to pedestrain crossing to level playing area
- Combination of a 47m long 1:18 ramp and a 1:12 ramp (not DDA compliant)
- 1.5m long landing area (DDA compliant)
- Length of wheelchair and able bodied route - 62 metres
- Footpath width minimum 2.0m
- Play area 600m^2
- Handrail required along roadside edge of pedestrian footpath

Wheelchair Route

Principal Able Bodied Route

South Road / Eastern Access Design Study 4

DESIGN STUDY 4

NON DDA COMPLIANT RAMPS

- Five 8.0m long 1:14.5 ramps (not DDA compliant) and one 14.0m long 1:14 ramp (not DDA compliant)
- 1.5m long landing areas (DDA compliant)
- Length of wheelchair and able bodied route - 62 metres
- Footpath width minimum 2.0m
- 4.15 metre level change from footpath adjacent to pedestrain crossing to level playing area
- Play area 600m^2
- Handrail required along roadside edge of pedestrian footpath

Wheelchair Route

Principal Able Bodied Route

0 10 20 30 40 50m

SCHEME PROPOSAL

ABLE BODIED AND WHEELCHAIR ACCESS

- 3.4 metre level change between towpath and bridge landing
- Able bodied persons can access the bridge using a flight of stairs directly south of the bridge landing
- A lift located in the building immediately south of the bridge landing will allow wheel chair users access between the canal side and bridge landing

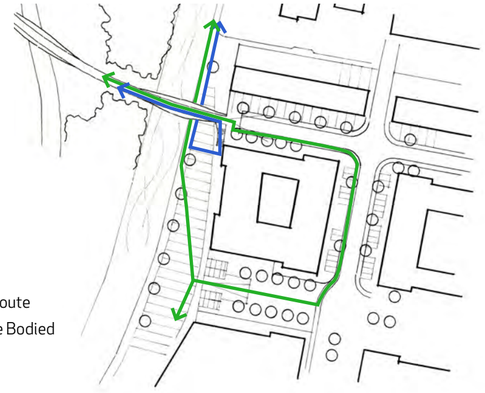
Wheelchair Route
Principle Able Bodied Route
Lift

0 10 20 30 40 50m

DESIGN STUDY 1

ABLE BODIED AND WHEELCHAIR ACCESS - DDA COMPLIANT

- 3.4 metre level change between towpath and bridge landing
- Able bodied persons can access the bridge using a flight of stairs directly south of the bridge landing
- Wheelchair users can access the bridge from the towpath by using a DDA compliant ramp that brings the user up to a suitable level. The user can then navigate around the building block to the bridge landing



Wheelchair Route
Principle Able Bodied Route

Springfield Road Bridge Design Study 2

0 10 20 30 40 50m

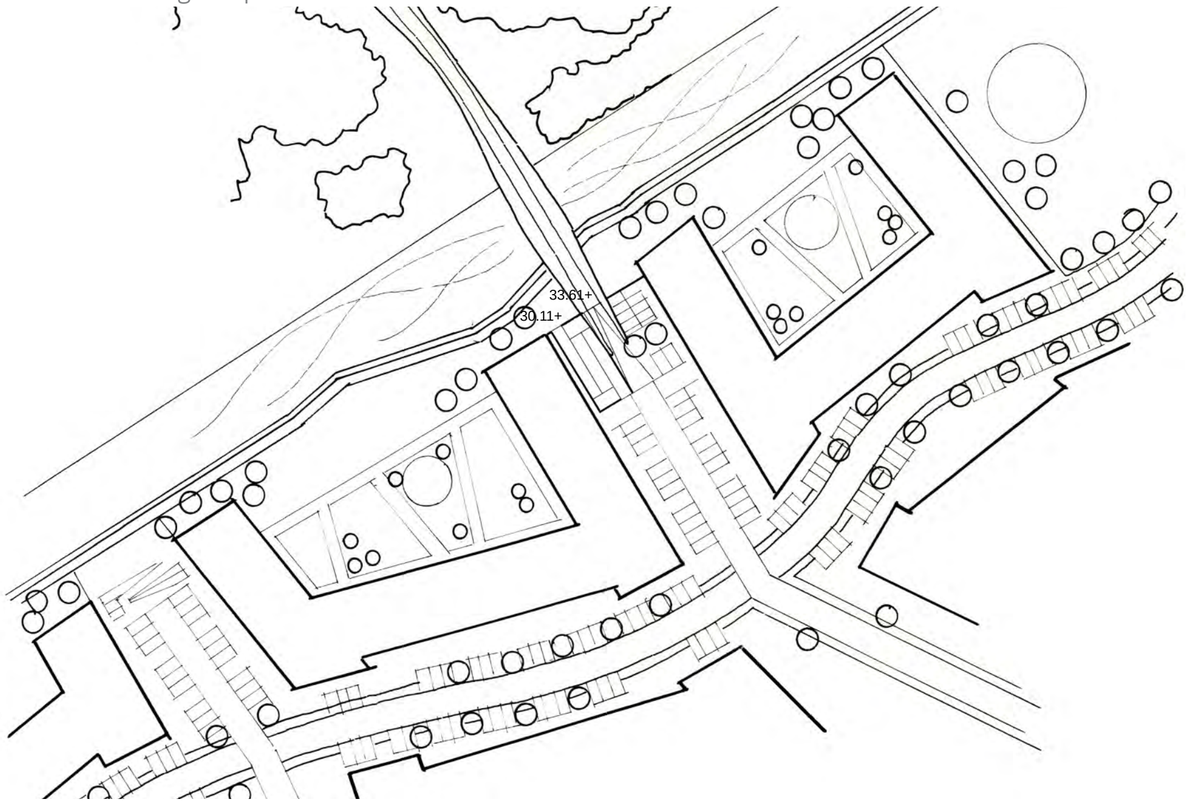
DESIGN STUDY 2

ABLE BODIED DDA COMPLIANT WHEELCHAIR ACCESS RAMP

- 3.4 metre level change between towpath and bridge landing
- Able bodied persons can access the bridge using a flight of stairs directly south of the bridge landing
- Wheel chair access ramp (DDA compliant)
- Length of access ramp to bridge landing 92 meters

Wheelchair Route
Principle Able Bodied Route

Minet Park Bridge Proposal

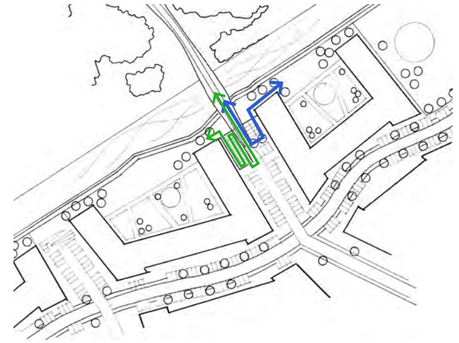


0 10 20 30 40 50m

SCHEME PROPOSAL

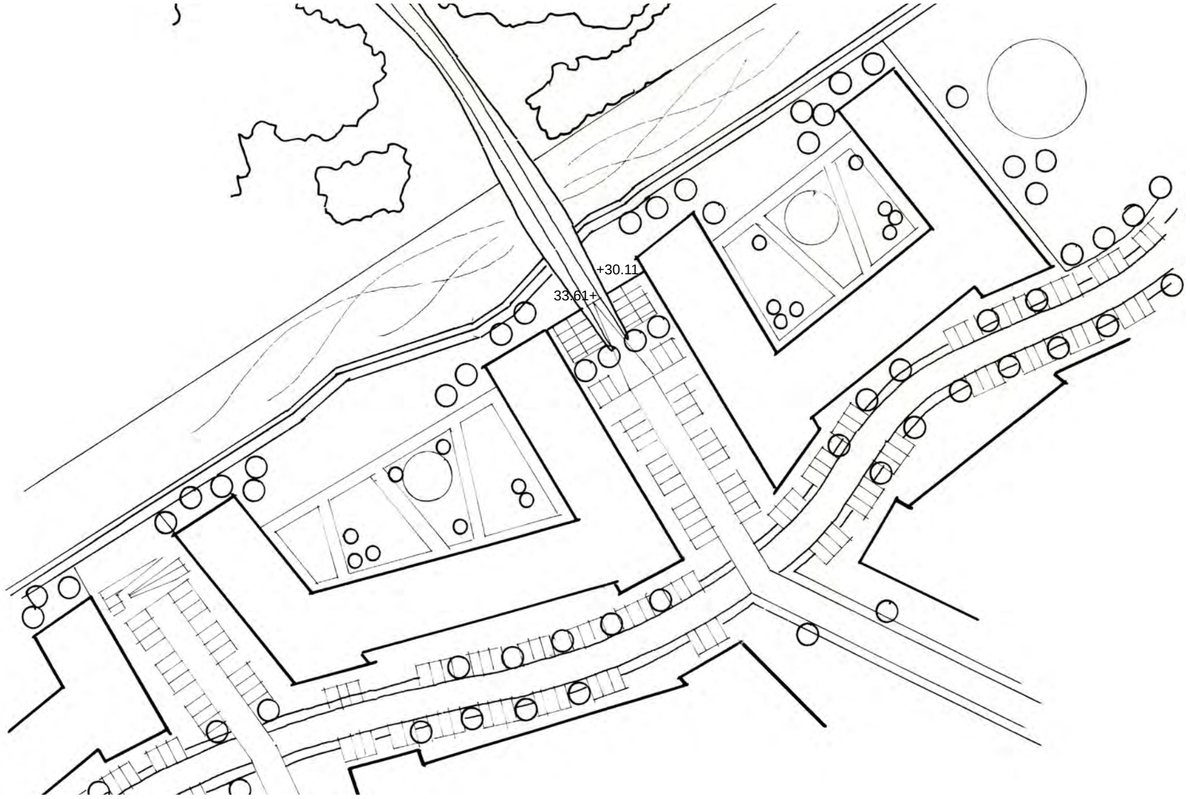
ABLE BODIED AND WHEELCHAIR ACCESS - DDA COMPLIANT

- 3.5 metre level change between towpath and bridge landing
- Able bodied persons can access the bridge using a set of stairs on the eastern side of the bridge landing
- Wheelchair users can access the bridge from the towpath by using a a series of 1:20 DDA compliant ramps on the western side of the bridge landing.
- Length of access ramp to Bridge landing 89m



Wheelchair Route
Principal Able Bodied Route

Minet Park Bridge Design Study



0 10 20 30 40 50m

DESIGN STUDY

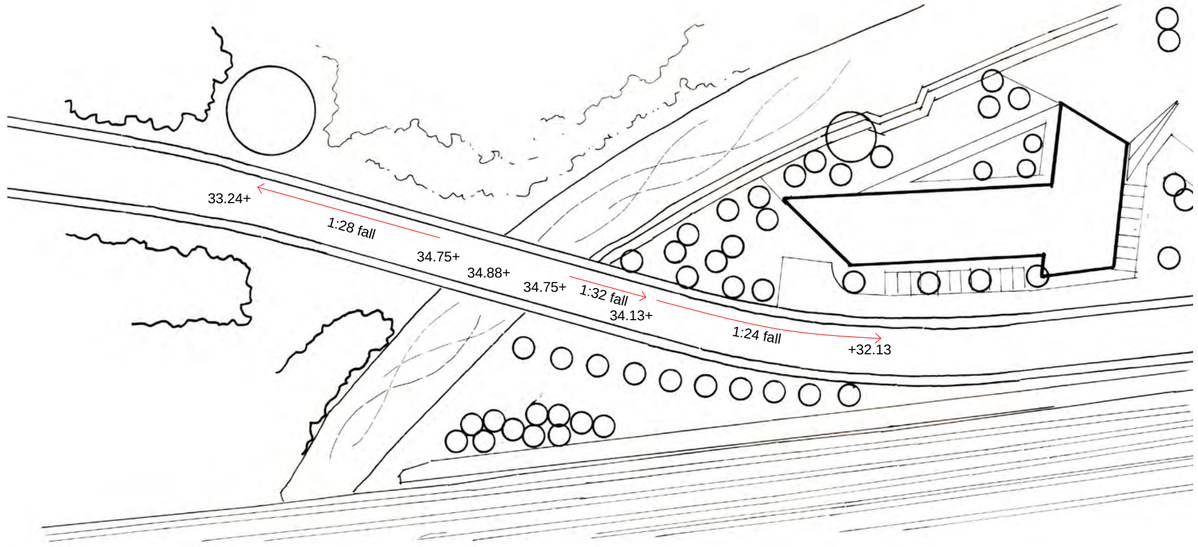
ABLE BODIED AND WHEELCHAIR ACCESS - DDA COMPLIANT

- 3.5 metre level change between towpath and bridge landing
- Able bodied persons can access the bridge using two sets of stairs either side of the bridge landing
- Wheelchair users can access the bridge from the towpath by using DDA compliant ramps positioned adjacent to the two buildings. The user can then navigate around the building blocks and access the bridge

Wheelchair Route

Principal Able Bodied Route

Pump Lane Bridge Proposal



0 10 20 30 40 50m

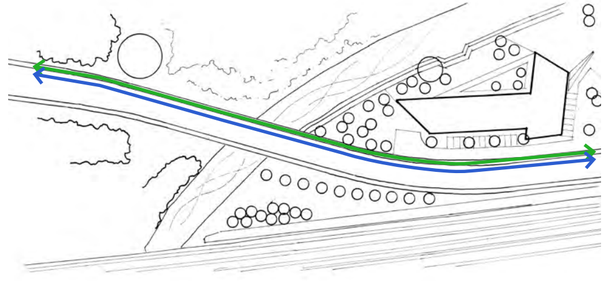
SCHEME PROPSAL

ABLE BODIED AND WHEELCHAIR ACCESS - DDA COMPLIANT

- Able bodied persons and wheelchair users can access the main site using the footpath on either side of the main bridge

Wheelchair Route

Principal Able Bodied Route



National Grid Property Limited

Beyond Green

Capita Lovejoy

Cyril Sweett

Hakes Associates

Hunt Dobson Stringer

Make

Marks Barfield Architects

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RPS

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