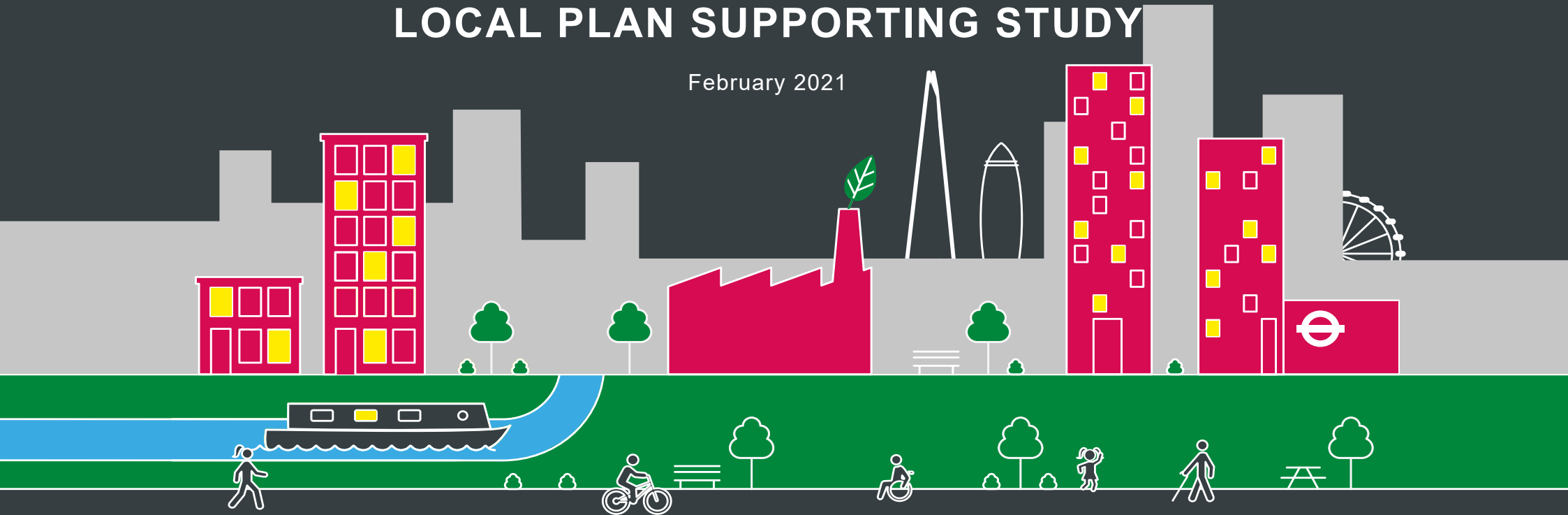


**OPDC**  
OLD OAK AND  
PARK ROYAL  
DEVELOPMENT  
CORPORATION

# Preliminary Infrastructure Design and Costing Study

**LOCAL PLAN SUPPORTING STUDY**

February 2021



**MAYOR OF LONDON**

<b>Document Title</b>	<b>Preliminary Infrastructure Design and Costing Study (2021)</b>
<b>Lead Author</b>	Mott Macdonald
<b>Purpose of the Study</b>	To provide preliminary designs and costs for key infrastructure within the OPDC area and general infrastructure costs to be applied to other infrastructure.
<b>Key outputs</b>	<p>Costs for a variety of infrastructure including:</p> <ul style="list-style-type: none"> <li>• New and enhanced highways and junctions</li> <li>• New and enhanced all-modes and pedestrian and cycle bridges</li> <li>• New and enhanced walking and cycling routes</li> <li>• New and enhanced public open spaces</li> <li>• New and enhanced social infrastructure</li> </ul>
<b>Key recommendations</b>	<p>Identifies bespoke infrastructure requirements and costs for infrastructure in Old Oak South, Old Oak North, North Acton and Acton Wells, Scrubs Lane, Channel Gate, Old Oak Lane/Old Oak Common Lane and Willesden Junction place policies</p> <p>Identifies generic infrastructure costs to be applied to infrastructure across the OPDC area.</p>
<b>Key changes made since submission</b>	This is a new supporting study
<b>Relations to other studies</b>	Outputs from this study have been used to inform the Infrastructure Delivery Plan
<b>Relevant Local Plan Policies and Chapters</b>	All the policies and chapters of the Local Plan

# OPDC Preliminary Design and Cost Study

Final Report  
February 2021



# OPDC Preliminary Design and Cost Study

Final Report  
February 2021

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Approved	C. Greenwood

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# Executive Summary

This report provides preliminary design information and cost estimates for some of the key infrastructure interventions that are required to support development in Old Oak and Park Royal.

The designs for 14 interventions have been explored and are shown in Figure 1. Intervention 1 provides a pedestrian and cycle bridge between Jenner Avenue and a development site referred to as the “Shield Site”, spanning the London Underground Central Line and the Chiltern Line. Interventions 2a and 2b are two options to provide a pedestrian and cycle bridge between the Shield Site and Old Oak Common Lane, spanning the Dudding Hill Line and the North London Line. This bridge forms part of a strategic pedestrian and cycle route between North Acton Station and the new Old Oak Common station. OPDC are also exploring the provision of a pedestrian and cycle bridge which would link the eastern end of the Old Oak Common HS2 station to the Grand Union Canal, spanning over the Crossrail Depot. This eastern access pedestrian and cycle bridge is being explored in a different study and therefore the preliminary designs and costs for this intervention are not included within this report.

Interventions 3 and 4 are enhancements to Old Oak Common Lane, Victoria Road and Old Oak Lane to make these corridors Healthy Streets, enhancing the public realm and improving the pedestrian and cycling environments.

Interventions 5, 6 and 7 include a new street network, a new connection over the Grand Union Canal and a new 2-hectare local park within the Channel Gate development area.

Intervention 8 is a new pedestrian and cycle bridge and intervention 9 is the refurbishment of an existing pedestrian bridge. Both of these bridges span over the Grand Union Canal linking the Car Giant site to the southern edge of the canal, close to the Oaklands North Development site.

Intervention 10 is the enhancement of Willesden Junction Station. Intervention 11 provides an enhanced pedestrian and cycle connection to Willesden Junction from the EMR and Car Giant sites. Intervention 12 provides an 'all modes' connection from Scrubs Lane into the EMR and Car Giant sites, referred to as Laundry Bridge.

Finally, interventions 13, 14 and 15 provide a new pedestrian and cycle access, a new 'all modes' street and a formalised street on the southern boundary of the North Pole Depot. These are key infrastructure interventions required to provide access to this development site.

A cost for each of these interventions is provided in table 1 and further detail on each of the interventions and costs is provided in section 2 of this report.

In addition to the interventions that have been designed, shown in section 2, this report provides cost estimates for general street improvements including new streets, junction upgrades, and pedestrian, cycling and public realm enhancements. Mott MacDonald has experience designing and delivering new and enhanced infrastructure and the costs shown have been derived from this experience. The generalised costs provided will be applied to a number of the infrastructure items within OPDC's Infrastructure Delivery Plan. The costs for these interventions are shown in table 1 and further detail on each of the general street improvements and costs is provided in section 3 of this report.

The report also provides cost estimates for six social infrastructure interventions including two community hubs, a primary school, a health facility, police ward offices and an ambulance station. The cost for these interventions is provided in table 1 and further detail on each of the interventions and costs is provided in section 4 of this report.



Figure 1: Map illustrating the location of all infrastructure proposals



Intervention	Total (inc. Prelims & OHP)	Professional Fess (15%)	Contingency	Total	
<b>Transport Infrastructure Costs</b>					
Intervention 1 - New pedestrian and cycle bridge: Shield site to Jenner Avenue Bridge	£9,380,000.00	£1,407,000.00	40%	£4,314,800.00	£15,101,800.00
Intervention 2a - New pedestrian and cycle bridge: Shield site to Old Oak Common Lane	£5,360,000.00	£804,000.00	40%	£2,465,600.00	£8,629,600.00
Intervention 2b - New pedestrian and cycle bridge: Shield site to Old Oak Common Lane station (safeguarded)	£11,340,000.00	£1,701,000.00	40%	£5,216,400.00	£18,257,400.00
Intervention 3 - Enhancements to Old Oak Common Lane	£2,240,000.00	£336,000.00	10%	£257,600.00	£2,833,600.00
Intervention 4 - Enhancements to Victoria Road and Old Oak Lane	£5,000,000.00	£750,000.00	10%	£575,000.00	£6,325,000.00
Intervention 5 - New street network in the Channel Gate site	£3,410,000.00	£511,500.00	10%	£392,150.00	£4,313,650.00
Intervention 6 - 'All Modes' Bridge Option A and Option B	£5,310,000.00	£796,500.00	40%	£2,442,600.00	£8,549,100.00
Intervention 6 - Pedestrian and cycle only bridge Option C	£880,000.00	£132,000.00	40%	£404,800.00	£1,416,800.00
Intervention 7 - Local Park - Option 1	£1,400,000.00	£210,000.00	10%	£161,000.00	£1,771,000.00
Intervention 7 - Local Park - Option 2	£1,370,000.00	£205,500.00	10%	£157,550.00	£1,733,050.00
Intervention 8 - New pedestrian & cycle bridge over the canal	£1,580,000.00	£237,000.00	40%	£726,800.00	£2,543,800.00
Intervention 9 - Existing pedestrian & cycle bridge over the canal	£730,000.00	£109,500.00	40%	£335,800.00	£1,175,300.00
Intervention 10 - Willesden Junction station	£26,220,029.03	£3,933,004.35	60%	£16,516,836.81	£46,669,870.19
Intervention 11a - Old Oak North to Willesden Junction bridge – Approach Ramp	£8,420,051.40	£1,263,007.71	10-40%	£2,506,820.78	£12,189,879.89
Intervention 11b - Old Oak North to Willesden Junction bridge – Lift Option	£7,386,926.40	£1,108,038.96	10-40%	£2,502,068.41	£10,997,033.77
Intervention 12 - Scrubs Lane to EMR Bridge	£9,520,000.00	£1,428,000.00	40%	£4,379,200.00	£15,327,200.00
Intervention 13 - Pedestrian & Cycle Access from Scrubs Lane to North Pole Depot	£410,000.00	£61,500.00	10%	£47,150.00	£518,650.00
Intervention 14 - 'All modes' connection Scrubs Lane to Mitre Way	£210,000.00	£31,500.00	10%	£24,150.00	£265,650.00
Intervention 15 - Wormwood Scrubs Street	£1,580,000.00	£237,000.00	10%	£181,700.00	£1,998,700.00
<b>Social Infrastructure Costs</b>					
Community Hub 1	£7,360,000.00	£1,104,000.00	10%	£846,400.00	£9,310,400.00
Community Hub 2	£7,040,000.00	£1,056,000.00	10%	£809,600.00	£8,905,600.00
Primary School	£10,370,000.00	£1,555,500.00	10%	£1,192,550.00	£13,118,050.00
Health Facility	£4,680,000.00	£702,000.00	10%	£538,200.00	£5,920,200.00
Police Ward Offices	£450,000.00	£67,500.00	10%	£51,750.00	£569,250.00
Ambulance Station	£1,430,000.00	£214,500.00	10%	£164,450.00	£1,808,950.00
<b>Generalised Costs</b>					
	<b>Price</b>	<b>Unit</b>			
New streets / major street upgrades	£320.00	per m2			
New pedestrian / cycle route	£280.00	per m2			
Modest interventions to existing streets	£160.00	per m2			
Major junction upgrades / realignment	£650,000.00	per item			
Modest junction improvements including pedestrian and cycle interventions	£400,000.00	per item			
New open space / public realm	£630.00	per m2			
Upgrade to existing open space / public realm	£340.00	per m2			
Soft Landscaping	£100.00	per m2			
Segregated cycle lane to existing carriageways	£40.00	per lm			

Table 1: Cost table for interventions and generalised costs

1

Introduction

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# Introduction

1.1 Old Oak and Park Royal Development Corporation (OPDC) has commissioned Mott MacDonald to undertake a preliminary infrastructure design and cost study for the strategic infrastructure items identified in the Local Plan.

1.2 As a Mayoral Development Corporation with regeneration and plan-making powers, OPDC is developing a Local Plan and a Delivery strategy that will support comprehensive regeneration and delivery of significant numbers of homes and jobs in Old Oak and Park Royal.

1.3 As the plan making authority, OPDC has submitted to the Planning Inspector a Local Plan for the area for examination under the 2012 National Planning Policy Framework (NPPF), in accordance with the transitional arrangements for plans submitted by March 2019. The Planning Inspector's Interim Findings of the examination were published in October 2019. As a result of these findings, OPDC is proposing changes (modifications) to the Local Plan site allocations which involve retaining certain sites (which were previously proposed to allow for mixed-use development) as Strategic Industrial Location (SIL), and releasing other sites within the OPDC area from SIL for mixed-use development.

1.4 The draft Local Plan submitted for examination incorporated a list of key infrastructure items required to support the delivery of development anticipated by the original site allocations. Following the proposed changes to site allocations, preliminary analysis undertaken by OPDC has identified (at a high level) changes to the transport infrastructure items that would be required to support development as set out in the proposed modifications, and to support the revised delivery strategy.

1.5 The site allocation changes are consistent with OPDC's Delivery Strategy. The revised delivery strategy seeks to unlock the potential for comprehensive regeneration on primarily public sector owned sites to the north and west of the new interchange station at Old Oak Common through the delivery of strategic infrastructure. Key to unlocking these opportunities is the delivery of strategic transport infrastructure and the release of public sector land.

1.6 Old Oak and Park Royal Development Corporation (OPDC) has commissioned Mott MacDonald to provide a clear and robust understanding of the cost and extent of some of the key infrastructure requirements to support the development as proposed in the modifications of the Local Plan. The modifications to the Local Plan will be consulted upon in 2021 with adoption expected by the end of 2021.

# 2

## Interventions

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# Interventions

This section indicates the preliminary designs and costs for the 14 interventions that have been explored as part of this study.



## Interventions 1, 2a and 2b

2.1 Interventions 1, 2a and 2b are pedestrian and cycle bridges that form part of an important strategic pedestrian and cycle route between North Acton, a potential new station at Old Oak Common Lane which would serve the North London Line and the West London Orbital and the new Old Oak Common HS2, Crossrail and Great West Mainline (GWML) interchange station. The route is indicated in Figure 2. It should be noted that there are three options to provide this pedestrian and cycling route between North Acton station and the new Old Oak Common Station, as shown in Figure 2. One of the routes includes a bridge from North Acton Station directly north and this has been investigated in a separate study as part of the North Acton Station Improvements which is published in OPDC's examination library. As such, this study has just explored the design and cost for the new bridge linking Jenner Avenue and the Shield Site which would be required if this routing option were to be delivered.

2.2 The delivery of the potential new station at Old Oak Common Lane serving the North London Line and the West London Orbital is not yet certain at the time of this study and therefore two

options for the bridge that spans over these rail lines have been provided. One option (intervention 2a) provides a pedestrian and cycle bridge only and the other option (intervention 2b) provides the pedestrian and cycle bridge integrated with a station entrance and access from the bridge down to the proposed North London Line platforms.

2.3 There is the potential that intervention 2a could be delivered and then later demolished if the London Overground station comes forward. However, the bridge has been designed as a permanent structure.

2.4 For intervention 2b, the designs shown are taken from the GRIP 3 study which was produced by Transport for London (TfL) in 2017. It has been assumed that the intervention 2b bridge design can also cater for access to the potential future West London Orbital platforms if the West London Orbital scheme progresses. This was not part of the TfL GRIP 3 study designs because the West London Orbital scheme had not been developed when the GRIP 3 study was produced.

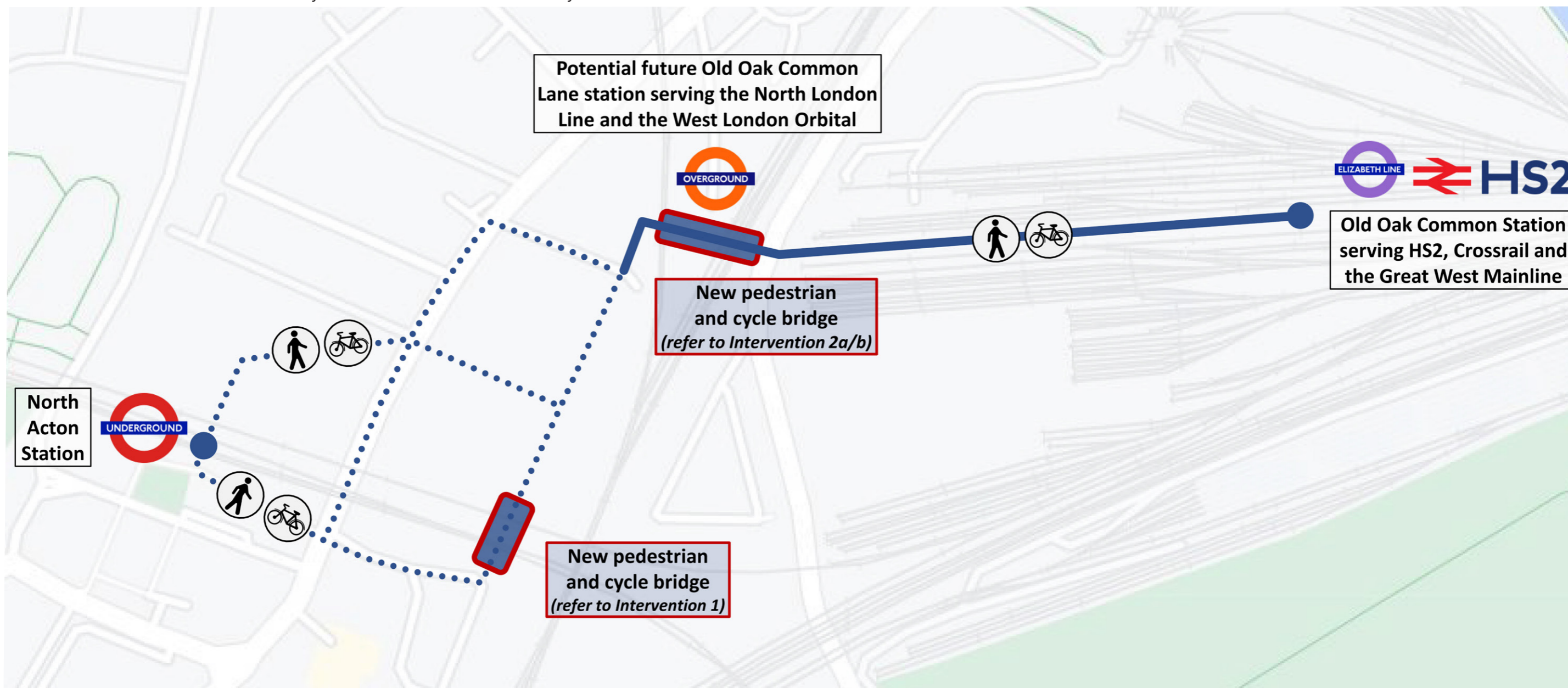


Figure 2: Map showing location of intervention 1, 2a and 2b

# 1 | New pedestrian and cycle bridge linking Jenner Avenue and the Shield Site

3.1 Intervention 1, shown in Figure 3, is a potential pedestrian and cycle bridge linking Jenner Avenue to a development site referred to as the “Shield Site”. The bridge spans over the London Underground Central Line and the Chiltern Line which run alongside each other at this point.

3.2 This pedestrian and cycling route may be used for commuters as well as leisure trips and therefore the bridge has been designed as a segregated pedestrian and cycle route, rather than a shared space route. In line with the London Cycling Design Standards (LCDS), the bridge has been designed with a two-way cycle lane of 4.0m and a 0.2m low upstand. 2m clear width is provided for pedestrians. The cycle width provision enables high cycle flows – over 800 cycles per hour at peak one-way, or 1,000 two-way. The pedestrian provision is in line with TfL’s Streetscape Guidance.

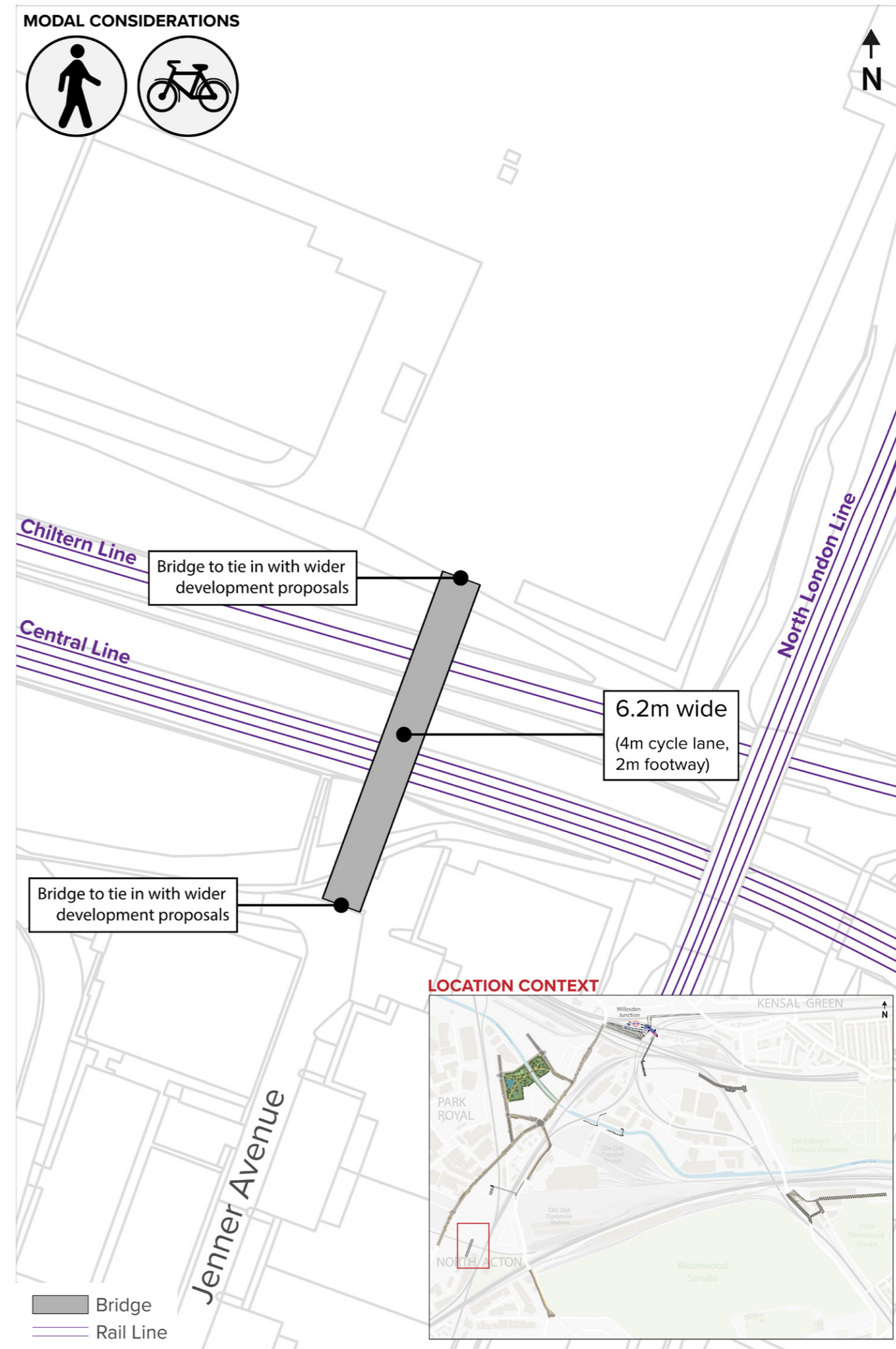


Figure 3: Intervention 1, proposed layout for the new pedestrian and cycle bridge

3.3 The cost estimate for this bridge is provided in table 2, and the assumptions and exclusions are indicated in table 3. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 1: New pedestrian and cycle bridge linking Jenner Avenue and the Shield Site					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works &amp; Substructure</b>				
1.1	Allowance for enabling works & sub structure; includes demolitions, site clearance, sheet piling, pile foundations	1	item	£3,900,000.00	£3,900,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Allowance for construction of bridge structure; including abutement, deck, parapets, surfacing etc; assume furniture and lighting included	800	m2	£4,500.00	£3,600,000.00
	<b>Subtotal</b>				<b>£7,500,000.00</b>
<b>3.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
3.1	Main Contractor's Preliminaries	20.0	%	£7,500,000.00	£1,500,000.00
	Main Contractor's OH&P	5.0	%	£7,500,000.00	£375,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£9,380,000.00</b>
<b>4.0</b>	<b>Professional Fees</b>				
4.1	Professional Fees	15.0	%	£9,380,000.00	£1,407,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£10,787,000.00</b>
<b>5.0</b>	<b>Contingency</b>				
5.1	Contingency	40.0	%	£10,787,000.00	£4,314,800.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£15,101,800.00</b>

Table 2: Costs for Intervention 1

Intervention 1: New pedestrian and cycle bridge linking Jenner Avenue and the Shield Site		
Assumptions	Exclusions	
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax	
Construction begins in 2021.	Client costs / design fees	
Main Contractor's Prelims have been assumed at 20.0 %.	Legal fees	
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees	
There are no abnormal ground conditions on site.	Statutory fees	
There are no contaminated materials on site.	Finance charges	
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>	
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated	
The site has access to existing power supplies.	Works beyond boundary of the site	
No diversions to existing utilities are required for these works.	Special equipment (unless stated)	
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Utilities charges	
These costs are based upon a similar cost study undertaken on Park Royal Footbridge	Disconnections of existing electrical equipment to be removed	
No diversions to existing utilities are required for these works.	Main contractor pre-construction fee	
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	No allowances have been made for temporary accommodation whilst works are carried out	
	Spoil disposed as contaminated (unless stated)	
	Hostile vehicle mitigation furniture	
	Costs associated with disruption to existing railway lines.	
	Adoption Costs	

Table 3: Assumptions and exclusions for Intervention 1



## 2a | Pedestrian and cycle bridge from the Shield site to Old Oak Common Lane

4.1 Intervention 2a is a proposed bridge providing a link for pedestrians and cyclists between Old Oak Common Lane and the Shield Site, as indicated in Figure 4.

4.2 The bridge spans over two railway lines, the North London Line (NLL) and the Dudding Hill Line, at its east and west ends, as well as the former recycling yard at Midland Terrace. The NLL carries a mixture of passenger services as part of the London Overground network, and freight services. The line is electrified by means of Overhead Line Equipment (OLE), which is in the form of a catenary system supported off masts. The railway line to the west, the Dudding Hill line, is understood to currently have no scheduled services, but is occasionally used by freight trains. However, in future it could potentially be brought into use as part of the proposed West London Orbital project. The line is not currently electrified.

4.3 Network Rail requires a minimum clearance of 5.10m from the top of track level to the underside of the bridge structure, including for structures over electrified railway lines. However, it should be noted that exact levels for the tracks and heights of the cables for the OLE are not known at this stage, therefore construction of this bridge may require either lowering the height of the OLE system, or increasing the height of the bridge in order to provide necessary OLE clearance. If either of these mitigations are required, this would lead to higher costs.



Figure 4: Intervention 2a, proposed layout for a new pedestrian and cycle bridge between the Shield Site and Old Oak Common Lane.

4.4 This bridge will form part of an important strategic pedestrian and cycling route, which may be used for commuters as well as more leisurely trips. As such, the bridge has been designed as a segregated pedestrian and cycle route, rather than a shared space route. In line with the London Cycling Design Standards (LCDS), the bridge has been designed with a two-way cycle lane of 4.0m and a 0.2m low upstand. 2m clear width is provided for pedestrians in line with TfL Streetscape Guidance. The proposed cross section of the bridge is indicated in Figure 5. The parapets would need to be 1.80m high with a solid face to ensure that they are “anti-climb” given that the bridge spans over railway lines.

4.5 The approximate length of the bridge is approximately 105m, subject to confirmation by detailed topographical survey. At this stage it is considered that the simplest form of construction would be a three-span structure made up of three 35m spans formed from individually fabricated steel trusses simply supported from piled reinforced concrete piers and abutments. The proposals shown here consider the use of steel arch trusses. Typically, the trusses are formed from hollow steel sections, which can be circular, square or rectangular. However, there are various alternative forms of structure and appearance that could be considered depending on the degree of architectural merit or cost effectiveness desired or required.

4.6 Due to the length of the bridge and its usage, it is proposed that the parapets have some degree of transparency to enable light on the bridge deck and offer some vision for users out beyond the bridge. This can be achieved by incorporating small perforations into the panels that clad the parapets, or alternatively by incorporating vision panels along the length of the bridge.

4.7 At the ends of the bridge a combination of approach ramps and stairs will be required for access to and from street level. Stairs and ramps would need to be designed in accordance with the Equality Act requirements and Design Manual for Roads and Bridges (DMRB), with ramps ideally having a maximum gradient of 1:20. However in order to achieve this, the ramp at the east end of the bridge would be approximately 50m in length, while at the west end of the bridge, due to the increased change in levels required from the bridge deck to ground level, the total length of the ramps is approximately 120m. As per the main deck the stairs and ramps would be fabricated using steel, but due to the shorter spans and therefore loads they would be supported on steel columns potentially with pad foundations.

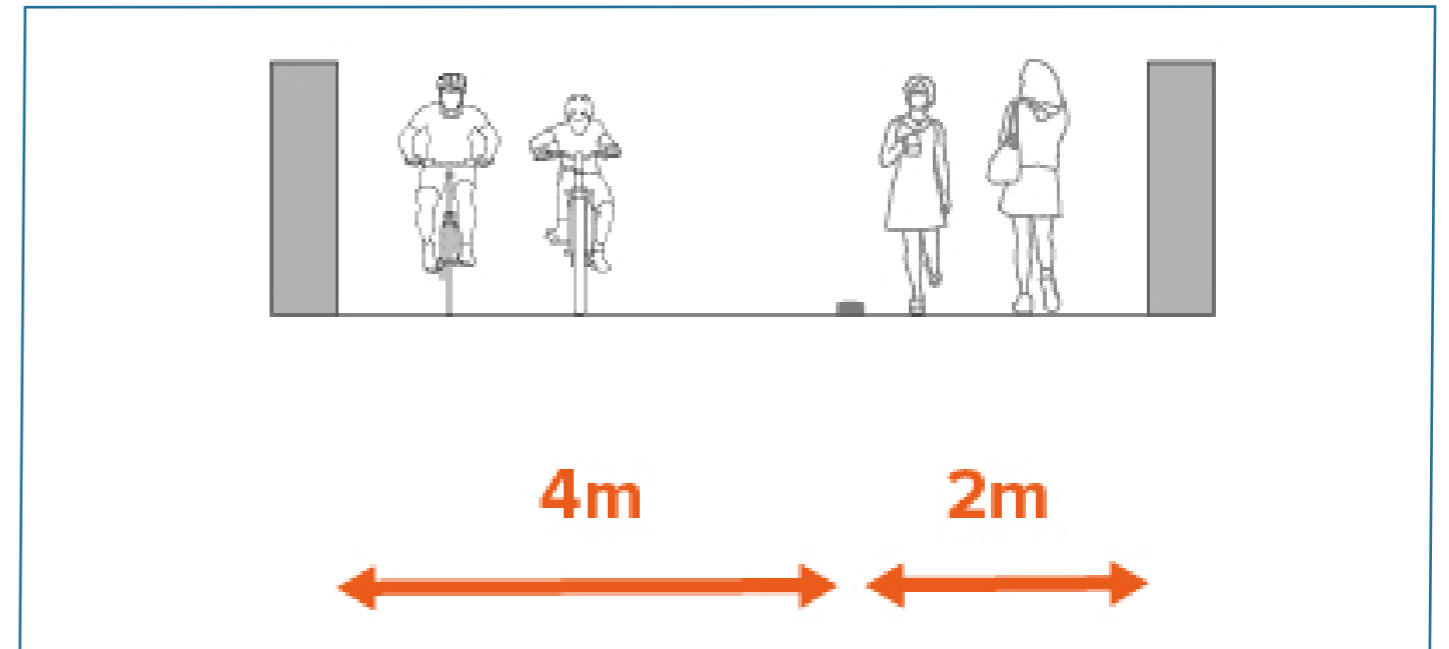


Figure 5: Proposed cross section of the pedestrian and cycle bridge



Figure 6: Lille Langebro cycle and pedestrian bridge; Copenhagen, Denmark

4.8 Figures 7 to 10 illustrate precedent examples of truss structures that could be utilised at this location with the spans being replicated to form the full length of the bridge. Should a more architectural and aesthetic form of structure be required, forms of structure such as the bridge shown in Figures 11 and 12, which spans the HS1 railway at the Queen Elizabeth Park could be considered. Figures 6, 13 and 14 indicate precedent examples of segregated cycle and pedestrian routes.



Figure 7: Camerton Footbridge. Source: NuSteel Structures Ltd.



Figure 9: Truss Bridge. Source: NuSteel Structures Ltd.



Figure 8: Phoenix Way Footbridge. Source: NuSteel Structures Ltd.



Figure 10: Warren Truss cycle bridge over a railway line. Source: CTS Bridges Ltd.



Figure 11: Shared use bridge in Queen Elizabeth Park over HS1 railway line; London, England. Source: Knight Architects



Figure 13: Jewell bike and pedestrian bridge, Denver Colorado, USA.



Figure 12: Shared use bridge in Queen Elizabeth Park over HS1 railway line; London, England. Source: Knight Architects



Figure 14: Weerdsprong shared use bridge; Venlo, Netherlands

4.9 The cost estimate for this bridge is provided in table 4, and the assumptions and exclusions are indicated in table 5. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 2a: Pedestrian and cycle bridge from the Shield site to Old Oak Common Lane					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Allowance for general site clearance; assumed to car park areas	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Pad foundations to abutments/piers; including excavation; assume 6.2m x 2.0m x 1.0m	50	m3	£380.00	£19,000.00
2.2	Pad foundations to access ramp columns; including excavation; assume 2.0m x 2.0m x 1.0m	52	m3	£380.00	£19,760.00
2.3	Pad foundations to access ramp columns; including excavation; assume 6.0m x 3.0m x 1.0m	72	m3	£380.00	£27,360.00
2.4	Abutment/pier construction; dimensions - 6.2m x 1.0m x 2.75m; assumed reinforced concrete	70	m3	£500.00	£35,000.00
2.5	Supply and installation of pre-fabricated pedestrian/cycleway bridge; 3-6.2m width; includes design and delivery; assumes anti-slip surface treatment	920	m2	£2,500.00	£2,300,000.00
2.6	E/O for night works associated with working above a live railway line;	1	item	£50,000.00	£50,000.00
2.7	Supply and installation of pre-fabricated access ramp to western development; 3m width; includes design and delivery; assumes anti-slip surface treatment	500	m2	£2,500.00	£1,250,000.00
2.8	Supply and installation of pre-fabricated access ramp to eastern development; 3m width; includes design and delivery; assumes anti-slip surface treatment	175	m2	£2,500.00	£437,500.00
2.9	Perspex/glass panels to bridge parapet above railway; assume 600mm height	200	m	£200.00	£40,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for street furniture; signage, wayfinding, litter bins etc.	1	item	£20,000.00	£20,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting to structure; includes associated cables etc; assume existing power infrastructure is present	1	item	£40,000.00	£40,000.00
	<b>Sub Total</b>				<b>£4,288,620.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	20.0	%	£4,288,620.00	£857,724.00
5.2	Main Contractor's OH&P	5.0	%	£4,288,620.00	£214,431.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£5,360,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£5,360,000.00	£804,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£6,164,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	40.0	%	£6,164,000.00	£2,465,600.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,629,600.00</b>

Table 4: Costs for Intervention 2a

Intervention 2a: Pedestrian and cycle bridge from the Shield site to Old Oak Common Lane	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 20.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated
Existing utilities exist and are adequate for new development.	Works beyond boundary of the site
Pad foundations have been assumed to abutments/piers, as per drawings provided.	Special equipment (unless stated)
Abutments/piers are constructed from reinforced concrete.	Utilities charges
Bridge structure is pre-fabricated.	Disconnections of existing electrical equipment to be removed
No diversions to existing utilities are required for these works.	Main contractor pre-construction fee
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with disruption to existing railway lines.
	Adoption Costs

Table 5: Assumptions and exclusions for Intervention 2a

## 2b | Pedestrian and cycle bridge from the Shield Site to Old Oak Common Lane with Safeguarding for the Old Oak Common Lane London Overground Station

5.1 The location, alignment and length of the bridge is similar to intervention 2a. However, this intervention also forms an integral part of the proposed Old Oak Common Lane Overground station designs as it provides the means of access to the station's platforms. The designs, shown in Figure 15, are taken from the GRIP 3 study for the station which was developed by TfL in 2017. In addition, it is assumed that this bridge would also provide the means of access to the potential future West London Orbital station platforms on the Dudding Hill Line which have not yet been designed.

5.2 The TfL designs include a station building constructed over the platforms and the bridge passes through the station building on to Old Oak Common Lane. The bridge proposed is a six-span structure with seven piers / abutments. The rationale behind this needs to be understood, as it is considered that at GRIP Stage 4 (Single Option Development) it is likely that the structure would have a reduced number of spans, of increased length and therefore piers.

5.3 The proposals identify the use of an Island platform, between tracks. This would necessitate extensive re-modelling of the railway lines in this area in order to enable a platform to be constructed between two tracks. It would therefore also require extensive modifications to the OLE system in the vicinity of the station, as well as extensive modifications and changes to the signalling and telecoms equipment. A pier is proposed to be constructed on the platform in order to support the bridge deck.

5.4 As mentioned in paragraph 4.3, Network Rail requires a minimum clearance of 5.10m from the top of track level to the underside of the bridge structure, including for structures over electrified railway lines. It should be noted that exact levels for the tracks and heights of the cables for the OLE are not known at this stage, however given the modifications that will be required to the OLE to facilitate the construction of the station, it is likely that this level can be achieved, rather than increasing the height of the bridge in order to provide necessary OLE clearance.

Figure 15: Intervention 2b, proposed layout for a new pedestrian and cycle bridge between the Shield Site and Old Oak Common Lane



5.5 The approximate length of the bridge is approximately 105m, subject to confirmation by detailed topographical survey. The TfL design proposals have a combination of spans of varying length, up to a maximum of approximately 25.00m.

5.6 The TfL designs propose a cross section of the bridge deck of a 4.50m wide cycleway and a 4.20m wide footway with a 0.30m wide upstand between the two to provide a segregated crossing, as indicated in Figure 16. This gives a deck with of 9.00m between the internal face of the parapets, and approximately 10.20m overall to the extents of the string course / parapet beams.

5.7 Overall, the bridge would need to be designed with consideration to the Network Rail Design Manual “Station Footbridges & Subways” ref: NR/GN/CIV/200/07. The parapets would need to be 1.80m high with a solid face to ensure that they are “anti-climb” given that the bridge spans over railway lines.

5.8 Due to the length of the bridge and its usage, it is proposed that the parapets have some degree of transparency to enable daylight on the bridge deck to minimise shade and offer some vision for users out beyond the bridge. This can be achieved by incorporating small perforations into the panels that clad the parapets, or alternatively by incorporating vision panels along the length of the bridge be they a full height glazed system, or part of a combined system. Typically, this form of structure would be a pair of steel trusses or “half through” arrangement which would support a concrete deck.

5.9 The bridge would also require to comply with Network Rail’s “Access For All” (AFA) requirements, therefore in addition to the access staircases at each end of the bridge, lifts would need to be provided for access up to the bridge deck from street level.

5.10 Consideration will also be required concerning the provision of access ramps for cyclists, or whether they are to use the lifts. Where the bridge passes over the proposed new station, platform lifts and stairs or escalators will also be required to provide access to and from the platform level.

5.11 The current GRIP Stage 3 proposals appear to propose in-situ construction where piers and abutments are built and then the deck is constructed in-situ, necessitating works alongside the railway lines to construct the piers and abutments, and over the railway lines to construct the deck.

5.12 The deck could be in the form of a steel and concrete composite construction utilising steel beams to support a concrete deck, or a concrete composite construction utilising pre-stressed concrete bridge beams to support a concrete deck. In both cases there will be working restrictions arising from the interface with the railway. These will affect the construction of piers and abutments adjacent to the railway, but also the installation of beams which will need to be undertaken during a possession of the railway, as well as the works to construct the concrete decks, resulting in a considerable impact on both the cost and programme.

5.13 Compared to a highway bridge the loadings on the pedestrian/ cycle bridge are relatively small, therefore the deck construction can utilise smaller section beams than would be needed for a highway bridge. At GRIP Stage 4 it may be possible to consider alternative pier and abutment arrangements, different numbers of spans and different forms of construction. One particular change

could be to the deck construction changing from in-situ work which necessitates multiple railway possessions and the risks of working over the railway, and instead investigate the use of a pre-fabricated deck. A pre-fabricated deck could be constructed in the area to the west of the bridge and then launched horizontally over the pre-constructed piers and abutments and railway lines in one exercise, significantly reducing the number of railway possessions and also programme.

5.14 A good example of this form of structure and approach to construction is the link bridge that was constructed over Stratford Station to provide the link into the Westfield Shopping Centre and Olympic / Queen Elizabeth Park site, as shown in Figures 17 and 18. Figure 19 provides a further example from the Netherlands.

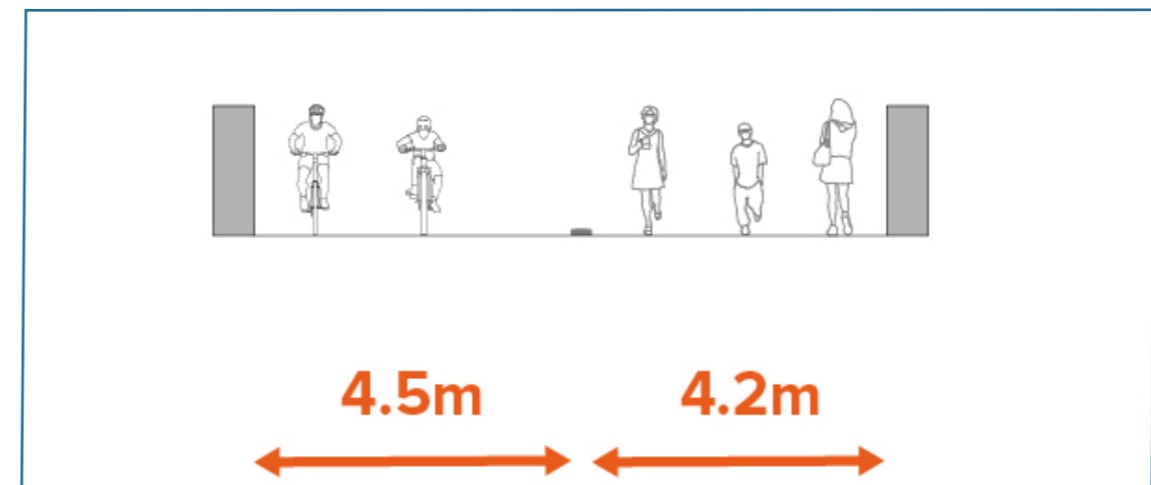


Figure 16: Cross section illustrating the width of the shared use bridge proposed.





Figure 17: Westfield - Stratford Link Bridge; London, England. Source: Knight Architects



Figure 18: Westfield - Stratford Link Bridge; London, England. Source: Knight Architects

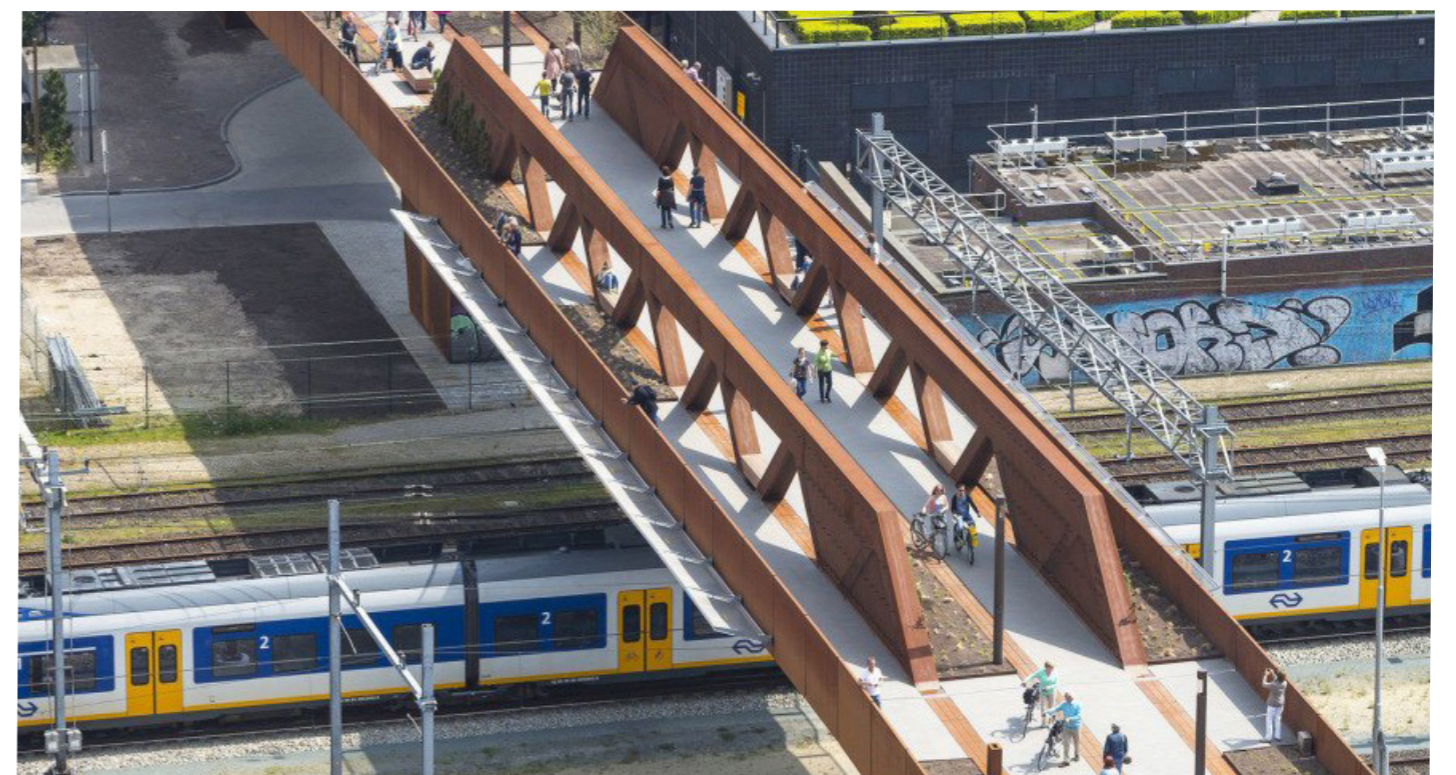


Figure 19: Paleisbrug pedestrian and cycle bridge, Netherlands. Source: Inhabitat

5.15 The cost estimate for this bridge is provided in table 6, and the assumptions and exclusions are indicated in table 7. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 2b: Pedestrian and Cycle bridge from the Shield site to Old Oak Common Lane with safeguarding for the Old Oak Common Lane London Overground Station					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Allowance for general site clearance; assumed to car park areas	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Pad foundations to abutments/piers; including excavation; assume 10.2m x 2.0m x 1.5m	150	m3	£380.00	£57,000.00
2.2	Abutment/pier construction; dimensions - 10.2m x 1.2m x 5.5m; assumed reinforced concrete	480	m3	£500.00	£240,000.00
2.3	Bridge Structure; multi beam bridge; reinforced concrete slab, assume 250mm thick; 4 sets of beams at 2.85m centres; 1.80m high; 5.1m clearance to railway below.	1,216	m2	£5,000.00	£6,080,000.00
2.4	E/O for works above active railway lines	1,216	m2	£1,500.00	£1,824,000.00
2.5	Perspex/glass panels to bridge parapet above railway; assume 600mm height	200	m	£200.00	£40,000.00
2.6	Bridge Footpaths/cycleways; assumed 250mm thickness; 50mm tarmac surface finish	1,216	m2	£120.00	£145,920.00
2.7	Supply and installation of access steps on eastern end; 6.0m height, 8.0m length, 4.5m width; inclusive of railings/parapets	1	item	£25,000.00	£25,000.00
2.8	Supply and installation of access steps on western end; 6.0m height, 21.0m length, 9m width; inclusive of railings/parapets	1	item	£100,000.00	£100,000.00
2.9	Supply and installation of access steps on northern elevation; 6.0m height, 30.0m length, 9m width; inclusive of railings/parapets	1	item	£150,000.00	£150,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for street furniture; signage, wayfinding, litter bins etc.	1	item	£20,000.00	£20,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting to structure; includes associated cables etc; assume existing power infrastructure is present	1	item	£40,000.00	£40,000.00
4.2	Supply and installation of lifts	3	nr	£100,000.00	£300,000.00
	<b>Sub Total</b>				<b>£9,071,920.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	20.0	%	£9,071,920.00	£1,814,384.00
5.2	Main Contractor's OH&P	5.0	%	£9,071,920.00	£453,596.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£11,340,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£11,340,000.00	£1,701,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£13,041,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	40.0	%	£13,041,000.00	£5,216,400.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£18,257,400.00</b>

Table 6: Costs for Intervention 2b

Intervention 2b: Pedestrian and Cycle bridge from the Shield site to Old Oak Common Lane with safeguarding for the Old Oak Common Lane London Overground Station	
Assumptions	Exclusions
<p>The base date of this estimate is 1Q 2021 and no inflation is included.</p> <p>Construction begins in 2021.</p> <p>Main Contractor's Prelims have been assumed at 20.0 %.</p> <p>Main Contractor's overheads and profit have been assumed at 5%.</p> <p>There are no abnormal ground conditions on site.</p> <p>There are no contaminated materials on site.</p> <p>There are no works to be demolished on the existing site.</p>	<p>Value Added Tax</p> <p>Client costs / design fees</p> <p>Legal fees</p> <p>Planning fees</p> <p>Statutory fees</p> <p>Finance charges</p> <p>Surveys and subsequent works required as a result including:</p> <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul> <p>Services diversions/upgrades, unless where clearly stated</p> <p>Works beyond boundary of the site</p> <p>Special equipment (unless stated)</p> <p>Utilities charges</p> <p>Disconnections of existing electrical equipment to be removed</p> <p>Main contractor pre-construction fee</p>
<p>There is adequate access to site.</p> <p>Existing utilities exist and are adequate for new development.</p> <p>Pad foundations have been assumed to abutments/piers, as per drawings provided.</p> <p>Abutments/piers are constructed from reinforced concrete.</p> <p>No diversions to existing utilities are required for these works.</p> <p>This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.</p>	<p>No allowances have been made for temporary accommodation whilst works are carried out</p> <p>Spoil disposed as contaminated (unless stated)</p> <p>Hostile vehicle mitigation furniture</p> <p>Costs associated with disruption to existing railway lines.</p> <p>Works associated with Old Oak Common Lane Station construction</p>

Table 7: Assumptions and exclusions for Intervention 2b

## 3 | Enhancements to Old Oak Common Lane

6.1 HS2 Ltd commissioned ARUP to undertake an Urban Integration Study and part of that study proposed enhancements to Old Oak Common Lane. These enhancements included the provision of segregated cycle lanes, wider footways and carriageway lanes of 3.25m. The study split these design enhancements into two separate sections: North and South. The area in between the North and South sections are subject to a future HS2 Limited application and are being costed separately.

6.2 The cost estimate for the design enhancements is provided in table 8, and the assumptions and exclusions are indicated in table 9. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 3: Enhancements to Old Oak Common Lane					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for structural alterations to embankment adjacent to SSEN substation; assumed regrading of existing embankment and construction/reconstruction of retaining wall	1	item	£50,000.00	
1.2	Excavation of existing embankment to south stretch (eastern side); assumed up to 4m; average depth assumed 1.35m	330	m3	£75.00	
1.3	Excavation of existing embankment to south stretch (western side); assumed up to 3m; average depth assumed 0.75m	300	m3	£75.00	
1.4	Retaining wall to eastern embankment; 2.7m height	160	m2	£500.00	
1.5	Retaining wall to eastern embankment; 1.5m height	200	m2	£500.00	
<b>2.0</b>	<b>Hard Landscaping</b>				
2.1	Carriageway reconstruction (north stretch); excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	2,260	m2	£150.00	£339,000.00
2.2	Footpath reconstruction (north stretch); excavate to reduce ground level; includes all sub-bases; assume concrete block paving	1,200	m2	£220.00	£264,000.00
2.3	Two-way segregated cycleway construction (north stretch); excavate to reduce ground level; includes all sub-bases; assume coloured asphalt surface finish	800	m2	£150.00	£120,000.00
2.4	Carriageway reconstruction (south stretch); excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	2,872	m2	£150.00	£430,800.00
2.5	Footpath reconstruction (south stretch); excavate to reduce ground level; includes all sub-bases; assume concrete block paving	1,105	m2	£220.00	£243,100.00
2.6	Two-way segregated cycleway construction (north stretch); excavate to reduce ground level; includes all sub-bases; assume coloured asphalt surface finish	634	m2	£150.00	£95,100.00
2.7	Shared footpath and cycleway construction (south stretch); excavate to reduce ground level; includes all sub-bases; assume coloured asphalt surface finish	326	m2	£150.00	£48,900.00
<b>3.0</b>	<b>Soft Landscaping</b>				
3.1	Allowance for street greening to pedestrian footpath areas (north stretch); assumed trees planted to tree pits	1	item	£25,000.00	£25,000.00
3.2	Allowance for street greening to pedestrian footpath areas (south stretch); assumed trees planted to tree pits	1	item	£25,000.00	£25,000.00
<b>4.0</b>	<b>Installation of New Structures and Street Furniture</b>				
4.1	Allowance for installation of site and street furniture (north stretch); railings, litter bins, bus shelters etc. to replace existing	1	item	£25,000.00	£25,000.00
4.2	Allowance for installation of site and street furniture (south stretch); railings, litter bins, bus shelters etc. to replace existing	1	item	£25,000.00	£25,000.00
<b>5.0</b>	<b>MEP</b>				
5.1	Allowance for alterations to signalised crossing	1	item	£75,000.00	£75,000.00
5.2	Allowance for alterations to external street lighting (north stretch)	1	item	£45,000.00	£45,000.00
5.3	Allowance for alterations to external street lighting (south stretch)	1	item	£50,000.00	£50,000.00
5.4	Allowance for alterations to existing drainage to carriageways/footways/ cycleways (north stretch)	1	item	£45,000.00	£45,000.00
5.5	Allowance for alterations to existing drainage to carriageways/footways/ cycleways (south stretch)	1	item	£50,000.00	£50,000.00
	<b>Sub Total</b>				<b>£1,905,900.00</b>
<b>6.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
6.1	Main Contractor's Preliminaries	12.5	%	£1,905,900.00	£238,237.50
6.2	Main Contractor's OH&P	5.0	%	£1,905,900.00	£95,295.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£2,240,000.00</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£2,240,000.00	£336,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£2,576,000.00</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency	10.0	%	£2,576,000.00	£257,600.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£2,833,600.00</b>

Table 8: Costs for Intervention 3

Intervention 3: Enhancements to Old Oak Common Lane	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	• Existing building site investigation
Works are completed within normal working hours.	• Services
Replacement of site/street furniture will be done on a like for like basis.	• Drainage / CCTV
All rates for hard landscaping include for associated excavation and sub-base layers.	• TPOs
Street greening generally allows for planting of trees in tree pits at roughly 20m centres.	• Asbestos
The site has access to existing power supplies.	Services diversions/upgrades, unless where clearly stated
No diversions to existing utilities are required unless stated.	Works beyond boundary of the site
Alterations to existing street lighting may be required due to footpath/carrageway realignment.	Special equipment (unless stated)
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Utilities charges
Alterations to existing street lighting may be required due to footpath/carrageway realignment.	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 9: Assumptions and exclusions for Intervention 3

# 4 | Enhancements to Victoria Road and Old Oak Lane

7.1 This intervention seeks to enhance the environment for pedestrians and cyclists whilst maintaining adequate carriageway provision for buses and other vehicular traffic on Victoria Road and Old Oak Lane.

7.2 The proposed design for Old Oak Lane from its junction with Station Approach, over the West Coast Mainline to the Atlas Road/ Old Oak Common Lane/ Victoria Road junction which has been enhanced from an existing roundabout to a signalised junction, is shown in Figure 20.

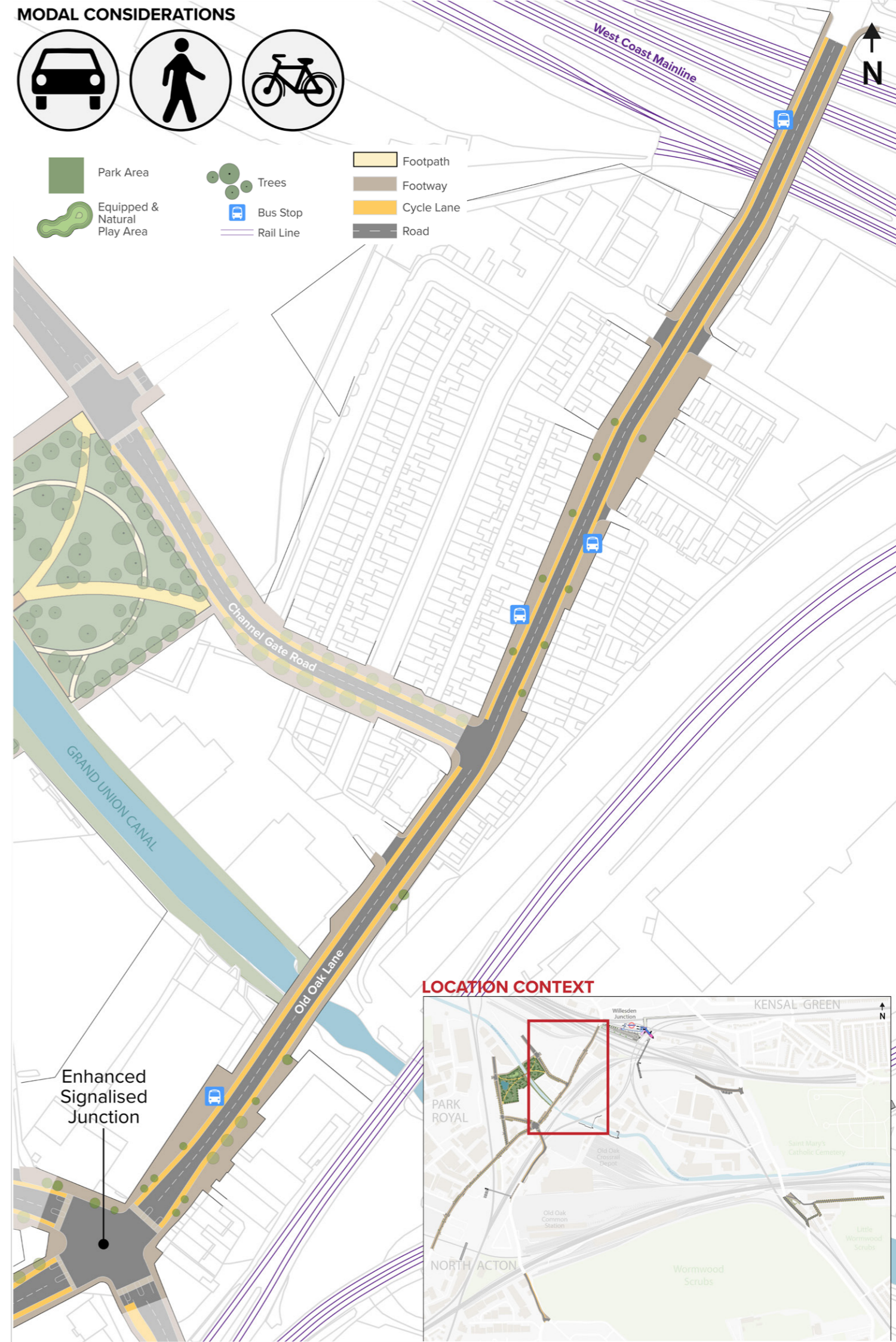


Figure 20: Intervention 4, proposed layout for Old Oak Lane

7.3 Figure 21 indicates the proposed design for Victoria Road from its junction with Old Oak Common Lane and Atlas Road to south of Bethune Road where it meets the Victoria Road gyratory.

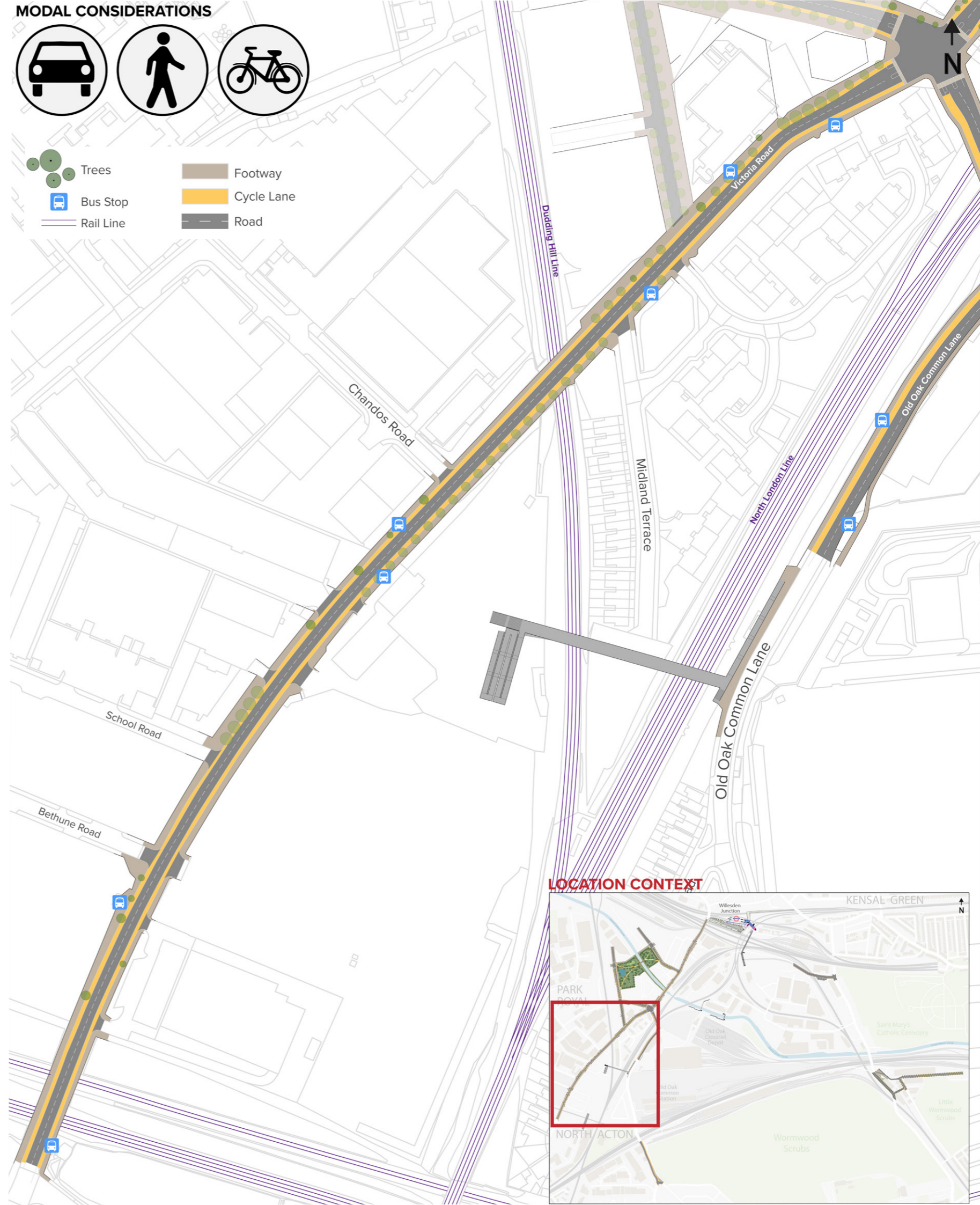


Figure 21: Intervention 4, proposed layout for Victoria Road

7.4 To ensure that Victoria Road and Old Oak Lane are high quality Healthy Street environments, the following enhancements are proposed. A minimum of 2m footway width is proposed on each side of the carriageway in line with TfL Streetscape Guidance. Wider footways are proposed where possible. Street lighting, street furniture and soft landscaping is proposed to enhance the public realm. A continuous 2.0m segregated mandatory cycle lane is proposed in each direction to provide cyclists with adequate protection from vehicular traffic. The carriageway lanes are 3.2m wide in each direction, in line with Manual for Streets (MfS) guidance. This cross section is indicated in Figure 22.

7.5 Along the length of the Old Oak Lane and Victoria Road corridor, the available road width and uses vary. The width on Old Oak Lane narrows when it crosses the West Coast Mainline and the width on Victoria Road narrows when it passes under the Dudding Hill Line. In addition, there is existing on street parking which conflicts with the continuous segregated cycle lane. Figure 23 indicates the locations where the width is constrained along the corridor.

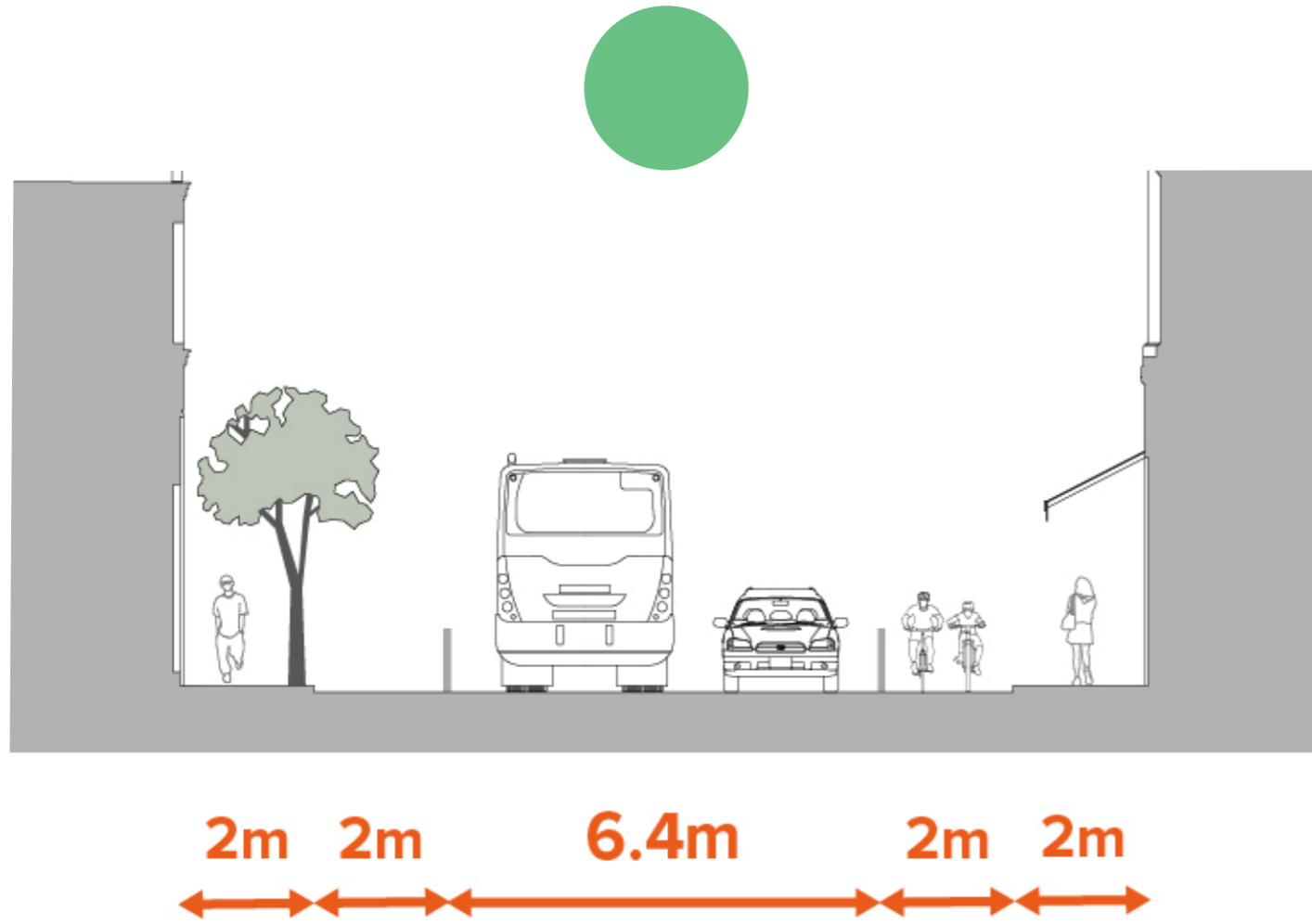
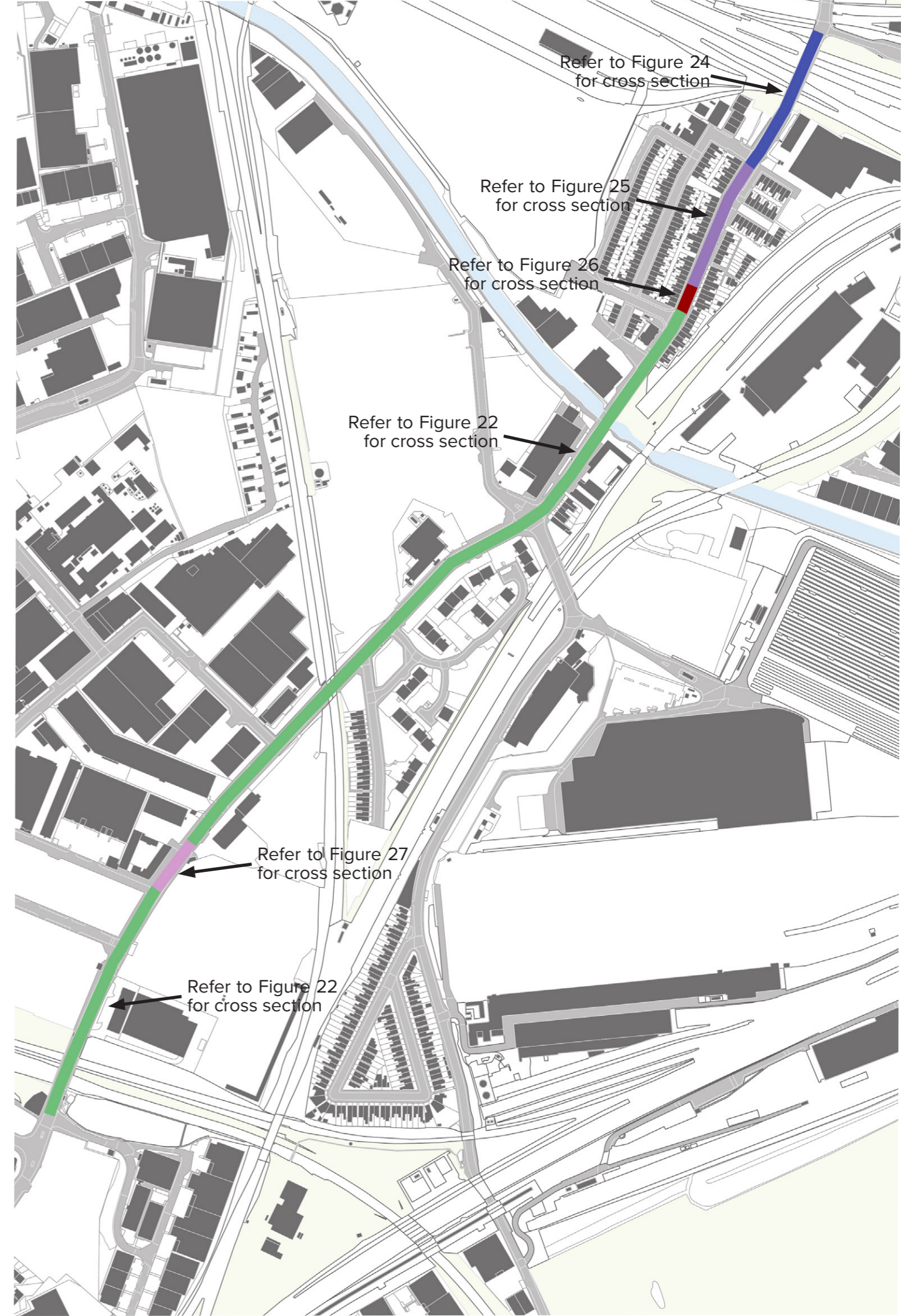


Figure 22: Cross-section illustrating proposed widths along the majority of Old Oak Lane

Figure 23: Map illustrating width constraints





7.6 Where Old Oak Lane crosses over the West Coast Mainline, the clear width of the street is narrower. To ensure continuous provision, the cycle lanes have been reduced in width to 1.5m in each direction, as shown in Figure 24. This is considered acceptable because it is over a short distance and they still align with LCDS guidance.

7.7 From Goodhall Street south to Channel Gate Road there is existing parking provided within unmarked bays on both sides of Old Oak Lane. To enable the provision of a continuous segregated cycle route and a continuous footway, it is proposed to relocate the parking provision to the west side of Old Oak Lane, as shown in this cross section, within formalised, marked bays. There will be no loss of parking provision. In order to accommodate the parking within the available width, the segregated cycle lane in each direction has been reduced to 1.5m each and the carriageway has been reduced to two 3m lanes, as indicated in Figure 25. These widths are acceptable because they are in line with guidance and they are small changes over short distances.

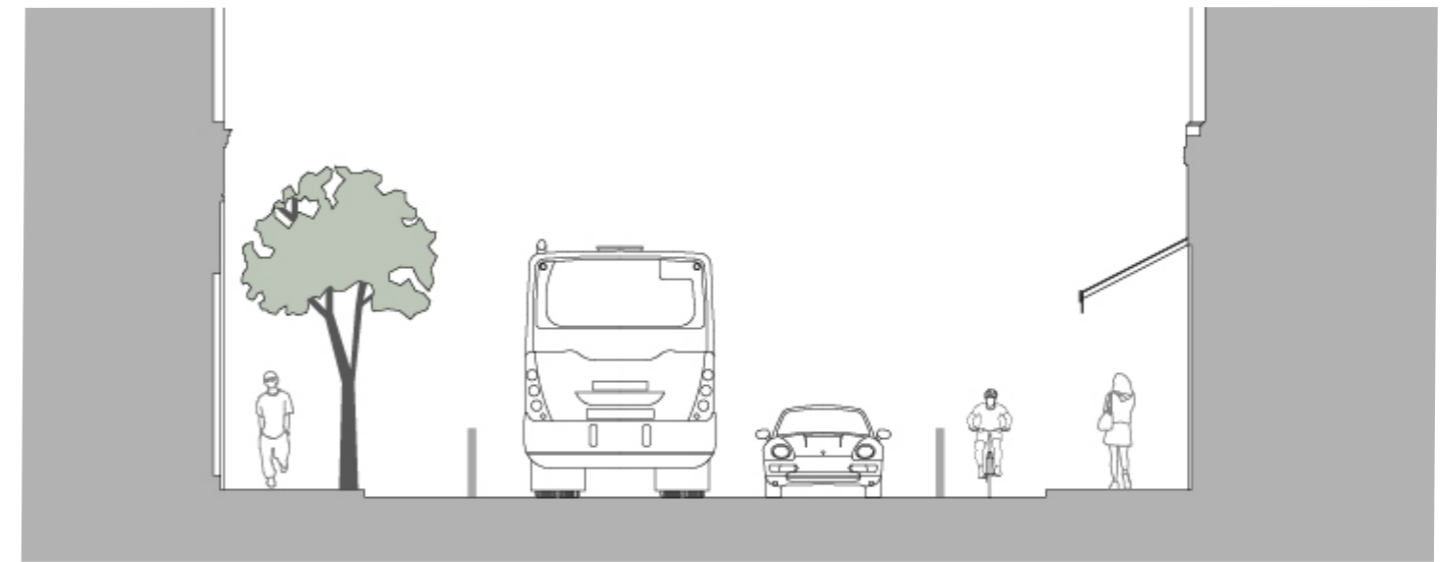


Figure 24: Cross-section illustrating proposed widths where Old Oak Lane crosses over West Coast Manline

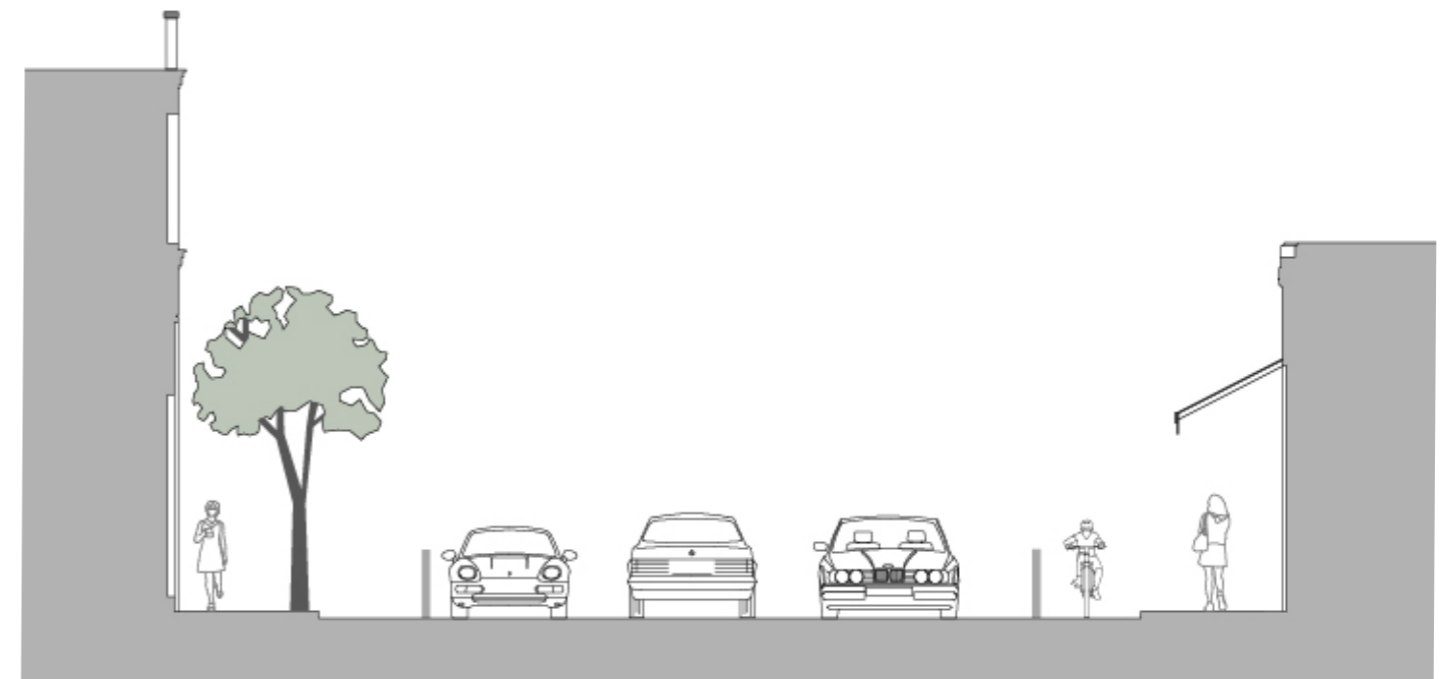
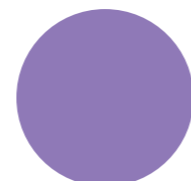


Figure 25: Cross-section illustrating proposed widths from Goodhall Street to Channel Gate Road

7.8 Just north of Channel Gate Road there is a very short section where the width is constrained. As such it is proposed to provide 2 x 3m carriageway lanes and 2 x 1.5m cycle lanes in each direction with 2m footways in this location, see Figure 26.

7.9 On Victoria Road just north of School Road there is existing informal parking. In order to provide a continuous footway and cycling provision, the parking has been relocated to enable the cycle lane to continue along the route, as indicated in Figure 27.

7.10 Where widening or reinstating of pavement construction is required, the build-up is proposed to be in accordance with LTN 1/20 and Streetscape Guidance. For the carriageway and on-street parking, an asphalt construction is assumed to have a total construction depth of 620mm based on a 3% California Bearing Ration (CBR) with an assumed Million Standard Axles (MSA) value of 1.0. The structural design of this pavement is in accordance with DMRB CD 266. Cycleway construction has been specified from the Local Transport Note (LTN) 1/20 Section 15.2.13, where the base course is recommended to be a 60mm layer of asphalt concrete with a coarse stone size, overlain by a 20mm smooth asphalt riding surface. For the footpath construction, Streetscape Guidance recommends 900x600x50mm concrete slabs.

7.11 As Intervention 4 relates to the enhancement of the existing Victoria Road and Old Oak Lane the horizontal and vertical geometry should remain as existing and has therefore not been assessed. Please note that no road safety audit has been undertaken on the proposed design.

7.12 Visibility splays on junctions are taken 2.4m back, spanning 25m left and right in accordance with the proposed design speed of 20mph (based on requirements from MfS 2), unobstructed visibility shall be provided within this envelope. The visibility on the approach to the junction is taken 15m back from the give way line, unobstructed visibility shall be provided within this envelope (based on requirements within CD123 Rev 2). For bends within proposed roads, a composite visibility splay of distance 25m has been checked (based on requirements from MfS 2). Please note that existing priority junction's visibility have not been assessed.

7.13 An initial high-level design of priority and signalised junctions has been undertaken in accordance with DMRB CD 123. Enhanced designs for Atlas Road, Old Oak Common Lane, Victoria Road junction have been proposed. The enhancements include junction signalisation and segregated provision for cyclists.

7.14 The Digital Map obtained through Enviro check was used to review existing utilities. It is assumed that any utilities located within the existing public highway will have a minimum level of cover as defined within current guidance. Current proposals associated with improvements to the public highway do not intend to reduce existing levels and the introduction of cycle infrastructure will be provided by relocating existing road space. As such there we be minimal requirements for diversionary works. The raising or lowering of service covers to finished surface levels and replacement of existing gully gratings to 'cycle friendly' gratings should be included. If an existing utility currently within the carriageway is beneath a kerb line due to changes in carriageway width, diversionary works may be necessary (utilities running parallel to kerb line not crossing). Any diversionary/ protection works and any required special measures should be in accordance with the C2 responses provided by the identified utility companies.

7.15 The cost estimate for the design enhancements is provided in table 10, and the assumptions and exclusions are indicated in table 11. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

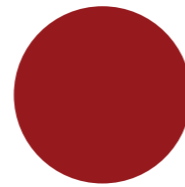


Figure 26: Cross-section illustrating proposed width of a small section of Old Oak Lane north of Channel Gate Road

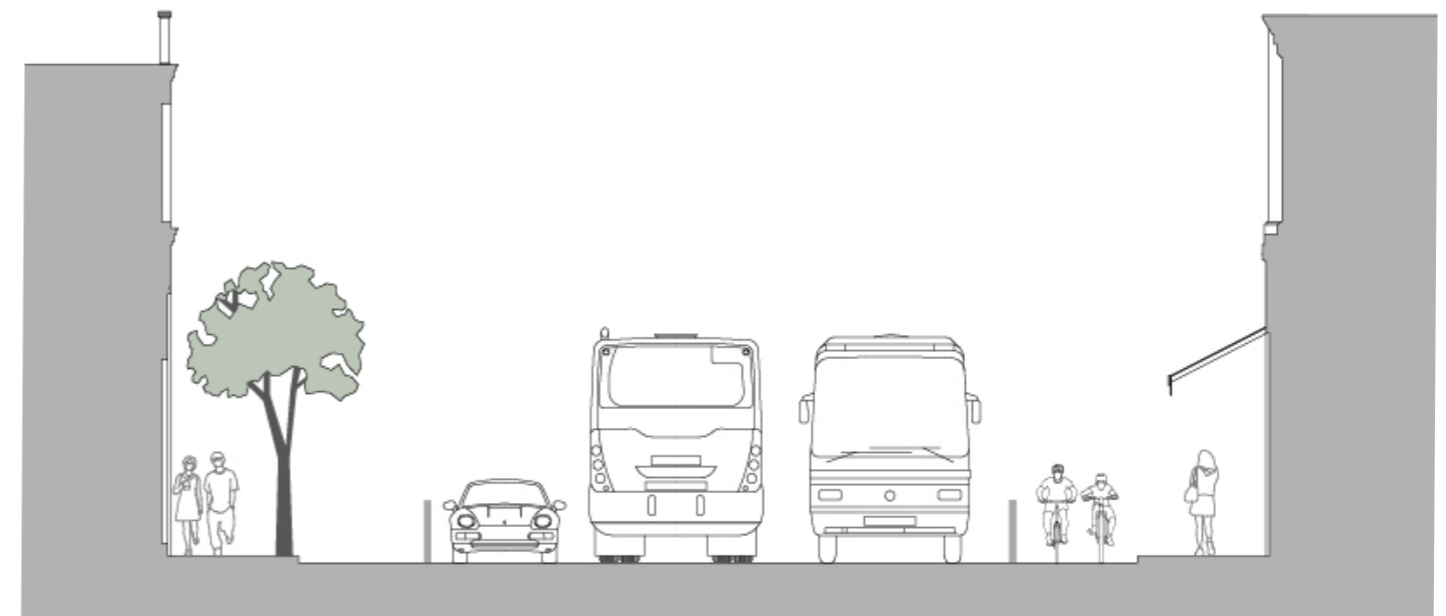
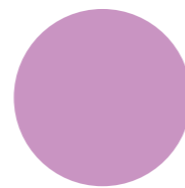


Figure 27: Cross-section illustrating proposed width of Old Oak Lane just north of School Road

Intervention 4: Enhancements to Victoria Road and Old Oak Lane					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Hard Landscaping</b>				
1.1	Carriageway reconstruction; excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	8,720	m2	£150.00	£1,308,000.00
1.2	Footpath reconstruction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving	5,270	m2	£220.00	£1,159,400.00
1.3	Excavation of existing embankment to south stretch (western side); assumed up to 3m; average depth assumed 0.75m	300	m3	£150.00	£759,000.00
<b>2.0</b>	<b>Soft Landscaping</b>				
2.1	Allowance for street greening to pedestrian footpath areas; assumed trees planted to tree pits	1	item	£250,000.00	£250,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for installation of site and street furniture; railings, litter bins, bus shelters etc. to replace existing	1	item	£100,000.00	£100,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for alterations to junction; Victoria Road	1	item	£300,000.00	£300,000.00
4.2	Allowance for alterations to external street lighting	1	item	£190,000.00	£190,000.00
4.3	Allowance for alterations to existing drainage to carriageways/footways/ cycleways	1	item	£190,000.00	£190,000.00
	<b>Sub Total</b>				<b>£4,256,400.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	12.5	%	£4,256,400.00	£532,050.00
5.2	Main Contractor's OH&P	5.0	%	£4,256,400.00	£212,820.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£5,000,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£5,000,000.00	£750,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£5,750,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	<b>10.0</b>	<b>%</b>	<b>£5,750,000.00</b>	<b>£575,000.00</b>
	<b>Rounded Total (carried forward to summary)</b>				<b>£6,325,000.00</b>

Table 10: Costs for Intervention 4

Intervention 4: Enhancements to Victoria Road and Old Oak Lane	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated
Works are completed within normal working hours.	Works beyond boundary of the site
Replacement of site/street furniture will be done on a like for like basis.	Special equipment (unless stated)
All rates for hard landscaping include for associated excavation and sub-base layers.	Utilities charges
Street greening generally allows for planting of trees in tree pits at roughly 20m centres.	Disconnections of existing electrical equipment to be removed
The site has access to existing power supplies.	Main contractor pre-construction fee
No diversions to existing utilities are required unless stated.	No allowances have been made for temporary accommodation whilst works are carried out
Alterations to existing street lighting may be required due to footpath/carriageway realignment.	Spoil disposed as contaminated (unless stated)
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Hostile vehicle mitigation furniture

Table 11: Assumptions and exclusions for Intervention 4

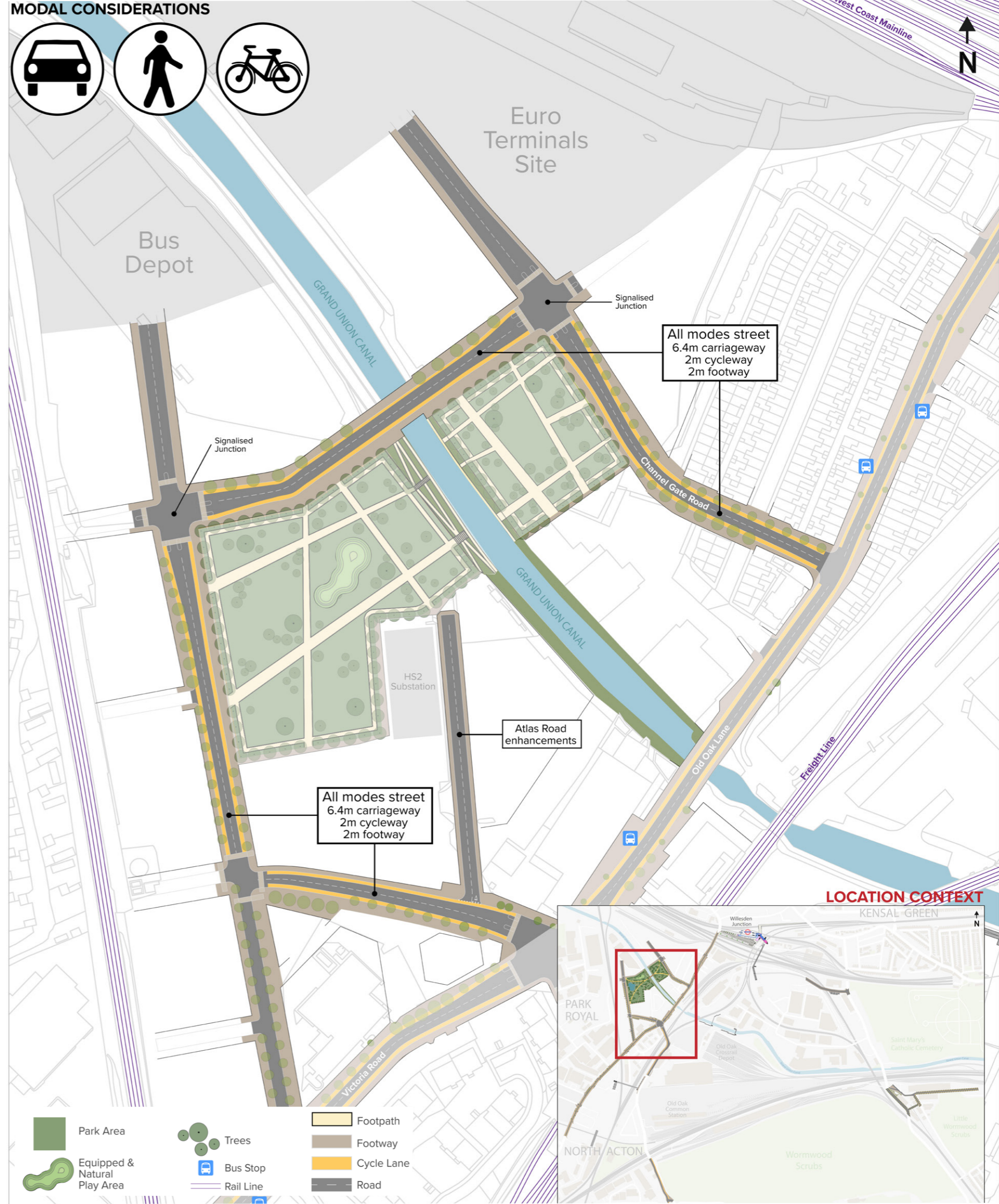
## 5 | Street network in Channel Gate site

8.1 Intervention 5 is a new street network required to facilitate access within the Channel Gate development site. Figure 28 indicates the design of the proposed streets. They provide access to the future development plots and to the reconfigured / relocated bus depot on the south side of the canal and to the Euro terminal site to the north of the canal. A HS2 sub-station is located within the Channel Gate development site, south of the canal, which requires vehicular access. This vehicular access to the substation has been included in the street network designs and costs.

8.2 Two signalised junctions are proposed to manage potentially conflicting movements. Further work will be required to determine whether the junctions need to be signalised or if traffic volumes are low enough for the junctions to be priority junctions rather than signalised. The remaining junctions are proposed to be priority junctions.

8.3 The streets have been designed in accordance with Manual for Streets (MfS), Transport for London (TfL) Streetscape guidance, the London Cycling Design Standards (LCDS) and Local Transport Note (LTN) 1/20. The street design proposed accommodates footways with a minimum width of 2m, segregated cycle lanes of 2m and 3.2m carriageway lanes, as indicated in Figure 29. Please note that more detailed work to design the location of required signage, lighting and street furniture has not been undertaken but there is sufficient space for these items to be provided within the space available.

Figure 28: Intervention 5, proposed street design for Channel Gate site



8.4 For the carriageway, an asphalt construction is assumed to have a total construction depth of 620mm based on a 3% CBR with an assumed Million Standard Axles (MSA) value of 1.0. The cycle lane construction has been specified from LTN 1/20 Section 15.2.13, where the base course is recommended to be a 60mm layer of asphalt concrete with a coarse stone size, overlain by a 20mm smooth asphalt riding surface. For the footpath construction, TfL Streetscape Guidance recommends 900x600x50mm concrete slabs.

8.5 The horizontal geometry is in accordance with MfS. The design speed of the proposed road network is 20mph, which corresponds to a minimum radius of 16m. The minimum radius with transitions that has been applied to the roads in this area is 64m and the minimum radius without transitions is 520m. The vertical profiles of the links have not been assessed as level data in this area was not available. Please note that no road safety audit has been undertaken on the proposed road layouts/design.

8.6 Visibility splays on proposed junctions are taken 2.4m back, spanning 25m left and right in accordance with the proposed design speed of 20mph (based on requirements from MfS 2). Unobstructed visibility would be provided within this envelope. The visibility on the approach to the junction is taken 15m back from the give way line. Unobstructed visibility would be provided within this envelope (based on requirements within CD123 Rev 2). For bends within proposed roads, a composite visibility splay of distance 25m has been checked (based on requirements from Manual for Streets 2).

8.7 The Digital Map obtained through Enviro check was used to review potential clashes with existing utilities. Any diversionary/ protection works and any required special measures should be in accordance with the C2 responses provided by the identified utility companies. As well as existing utilities that need to be diverted, the cost of this intervention takes account of the need for this new street network to incorporate the running of strategic telecoms, gas, electricity and Sustainable Drainage Systems (SuDS).

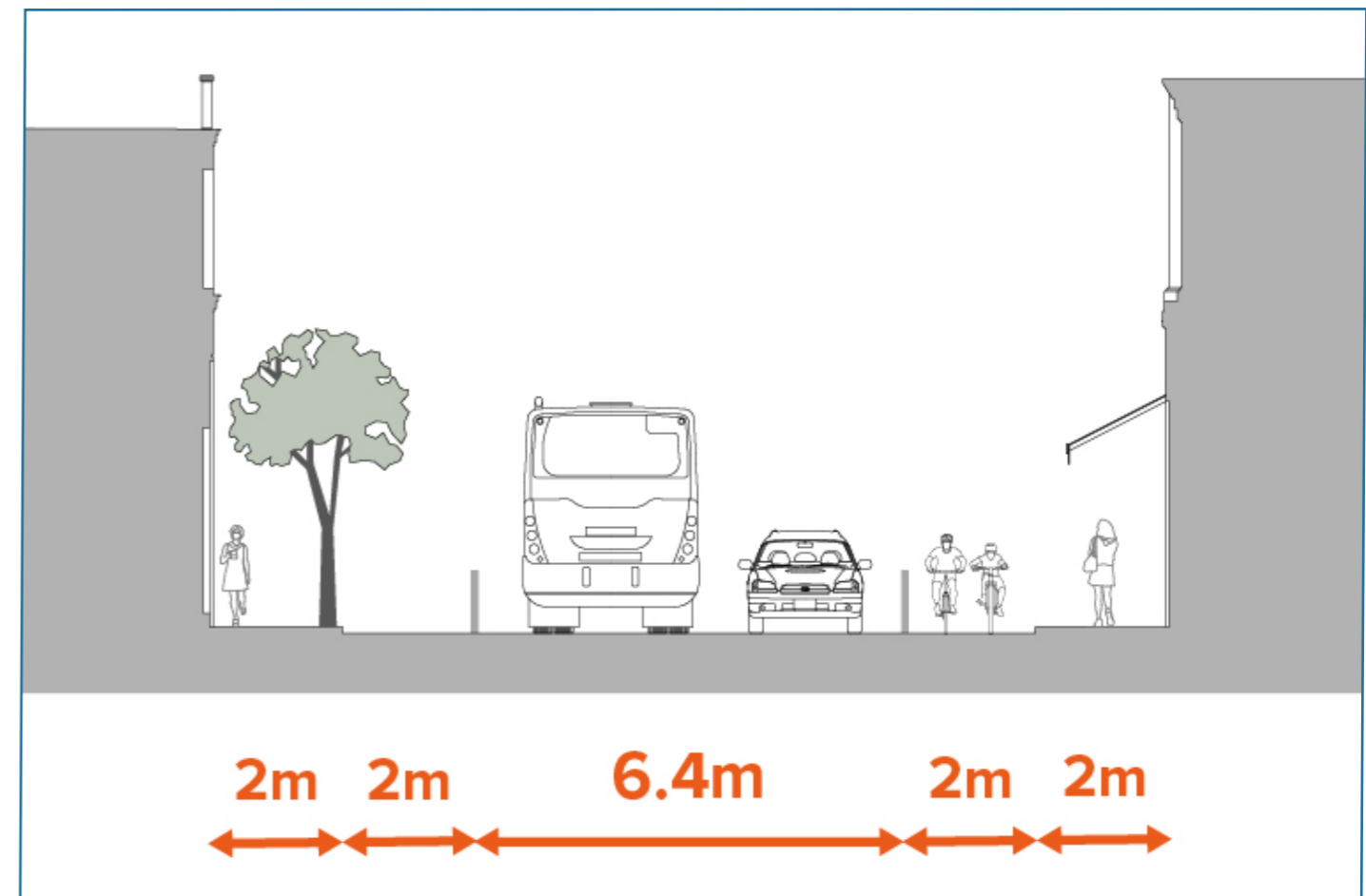


Figure 29: Cross-section illustrating proposed widths of the streets within the Channel Gate site.

8.8 The cost estimate for the new street network is provided in table 12, and the assumptions and exclusions are indicated in table 13. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 5: Street network in Channel Gate site					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Allowance for general site clearance	10,290	m2	£5.00	£51,450.00
<b>2.0</b>	<b>Hard Landscaping</b>				
2.1	Carriageway construction; excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	4,690	m2	£150.00	£703,500.00
2.2	Footpath construction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving	2,800	m2	£220.00	£616,000.00
2.3	Cycleway construction; excavate to reduce ground level; includes all sub-bases; assume coloured asphalt surface finish	2,800	m2	£150.00	£420,000.00
<b>3.0</b>	<b>Soft Landscaping</b>				
3.1	Allowance for street greening to pedestrian footpath areas; assumed trees planted to tree pits	1	item	£50,000.00	£50,000.00
<b>4.0</b>	<b>Installation of New Structures and Street Furniture</b>				
4.1	Allowance for installation of site and street furniture; railings, litter bins, bus shelters etc	1	item	£50,000.00	£50,000.00
<b>5.0</b>	<b>MEP</b>				
5.1	Allowance for signal lights and associated cabling for new signalised junctions	2	nr	£100,000.00	£200,000.00
5.2	Allowance for installation of new external street lighting; includes associated cables	1	item	£300,000.00	£300,000.00
5.3	Allowance for installation of new drainage system	1	item	£300,000.00	£300,000.00
5.4	Allowance for installation of strategic telecoms	1	item	£60,000.00	£60,000.00
5.5	Allowance for installation of gas mains	1	item	£150,000.00	£150,000.00
	<b>Sub Total</b>				<b>£2,900,950.00</b>
<b>6.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
6.1	Main Contractor's Preliminaries	12.5	%	£2,900,950.00	£362,618.75
6.2	Main Contractor's OH&P	5.0	%	£2,900,950.00	£145,047.50
	<b>Rounded Total (carried forward to summary)</b>				<b>£3,410,000.00</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£3,410,000.00	£511,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£3,921,500.00</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency	10.0	%	£3,921,500.00	£392,150.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£4,313,650.00</b>

Table 12: Costs for Intervention 5

Intervention 5: Street network in Channel Gate site	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	• Existing building site investigation
Works are completed within normal working hours.	• Services
The site has access to existing power supplies.	• Drainage / CCTV
All rates for hard landscaping include for associated excavation and sub-base layers.	• TPOs
Street greening generally allows for planting of trees in tree pits at roughly 20m centres.	• Asbestos
No junctions require signalised lights.	Services diversions/upgrades, unless where clearly stated
No diversions to existing utilities are required for these works.	Works beyond boundary of the site
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Special equipment (unless stated)
No junctions require signalised lights.	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Adoption Costs

Table 13: Assumptions and exclusions for Intervention 5

## 6 | Option A and B: 'All modes' bridge over Grand Union Canal in Channel Gate site

9.1 Three options for a bridge over the Grand Union Canal within the Channel Gate development site have been developed. Interventions 6a and 6b enable 'all modes' to use the bridge and differ dependent on their deck form. Intervention 6c is for pedestrians and cyclists only. The Canal & River Trust will need to review and approve the bridge option designs and the impact of the bridge options on the towpath.

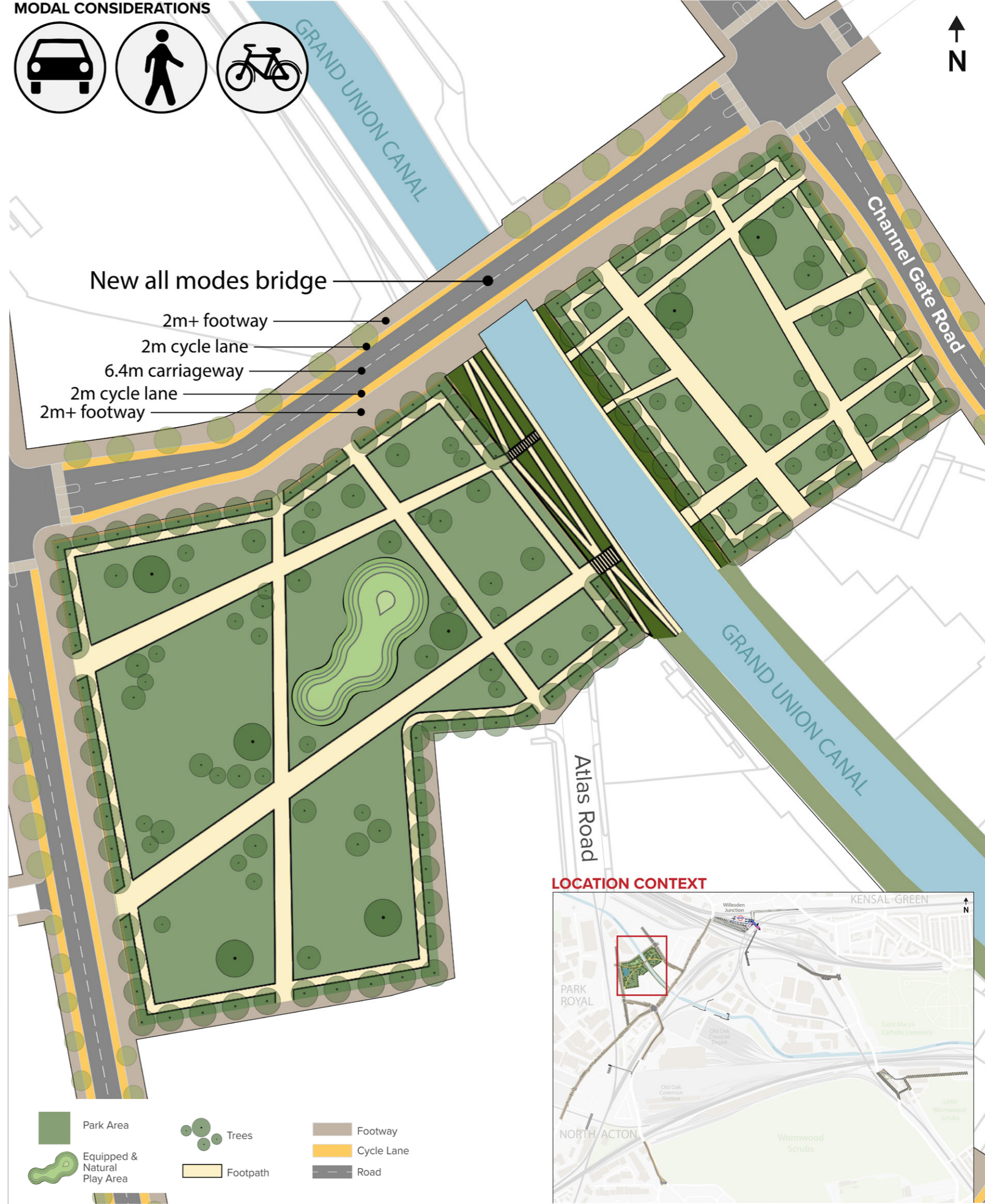
9.2 The proposed new 'all modes' crossing over the Grand Union Canal would link the land around Atlas Road on the south side of the canal to the Channel Gate Road area on the north side of the canal. HS2 Ltd have constructed a temporary bridge over the canal at this location to transport construction material. There is a possibility that the HS2 bridge foundations could be modified and used for the permanent bridge. This would need to be further explored in future stages of the design.

9.3 At this location, the bridge spanning over the Grand Union Canal is effectively in a cutting. The southern side is currently at a higher level than the northern side, however overall finished levels would need to be developed as part of the wider project development. An existing towpath runs along the south side of the canal, which is to be maintained. Whilst there is no towpath on the northern side of the canal, it has been assumed that in the future a canalside walk or similar will be provided as part of the development of the site.

9.4 In order to provide a clear span over the canal, with the bridge abutments being positioned at locations suitable for the provision of the existing and potential future towpaths, the structure is required to be a single span of approximately 40m.

9.5 The bridge deck would comprise of a 2.0m footway and a 2.0m cycle lane on each side with two 3.20m carriageway lanes to provide a 6.4m wide carriageway, as indicated in Figure 30. The bridge deck would be 14.4m between parapets and with a 15.6m overall deck width based on the provision of 0.6m wide string courses on either side of the bridge. These widths include pedestrian provision in line with TfL's Streetscape Guidance. The segregated cycle lane width provision caters for high flows (according to LCDS), consistent provision with the surrounding streets and protection from buses and HGVs.

Figure 30: Intervention 6a and 6b, proposed design for 'all modes' bridge over the Grand Union Canal





9.6 The bridge would span the canal with a square or near to square orientation, which would lend itself to the use of integral construction. Two options have been considered for the bridge structure. Both forms of structure would be founded on reinforced concrete abutments with pile foundations. The principal difference between the two being the form of construction of the bridge deck.

**Option A – Steel and Concrete Composite:**

9.7 The bridge deck would comprise of 6 fabricated “I” section plate girders installed in a multi-beam arrangement, i.e. the bridge beams are evenly spaced parallel to each other. These would be 2.85m centre to centre. The beams would be fabricated from Weathering Steel, this has a rust coloured appearance when first manufactured, but over time develops a deeper more natural appearance as the surface oxidises. However, if it is considered that graffiti is a significant issue then painted steel should be considered. The bridge beams would be installed as a series of three braced pairs of beams. Once in place permanent formwork would be installed between the beams prior to constructing the concrete deck slab to form the composite structure. For bridges of this form of construction the deck slab is typically 0.25m thick. Typically, the roadway over the bridge would have 0.125m of surfacing. The bridge parapets and edge protection for pedestrians and cyclists would be 1.40m high, with an N1 W1 vehicle containment capacity.

**Option B – Concrete Composite:**

9.8 The bridge deck would comprise of pre-stressed concrete bridge beams with a concrete deck cast in-situ in order to form the composite structure. The overall appearance of the bridge would be similar to the steel and concrete composite structure, the principal difference being the use of pre-cast concrete pre-stressed bridge beams. The bridge deck cross section would be the same as Option A, however the construction depth of the bridge would be deeper, due to the increased depth of the bridge beams being used. For spans of this length pre-fabricated beams of either the SY or W type are the most suitable to use. In this case W type beams are proposed as they give a more solid visual appearance to the soffit of the bridge deck. An example of a concrete composite deck using W type beams is shown in Figure 31. To form the deck 5no W19 beams would be utilised, spaced at 3.00m centre to centre, with a beam depth of 2.3m, the composite deck slab that is cast in situ would be approximately 0.2m thick.

9.9 The finished levels of the bridge will be dictated by the finished site levels on either side of the canal, as well as the clearances required to provide the air draft over the canal and for pedestrians and cyclists using the towpath. It is understood that the air draft for vessels using the Grand Union Canal at this location is approximately 2.3m (source; www.canals.com). The required headroom clearance for cyclists passing under the structure along the tow-path is 2.8m.

9.10 If desired more architectural bespoke designs and forms of construction could be utilised to give the structure a more sympathetic appearance, when compared to the standard and more common forms of construction. These types of structure will typically be more expensive, but not necessarily significantly more. For the steel and concrete composite structure, the use of welded box beams with a trapezoidal profile could be used in place of plate girder “I” section beams. Alternatively, a suspension form of structure could be considered, such as a “tied-arch”, where a thin steel deck is supported by cables which are suspended from the arches at the sides of the structure.

9.11 Similarly, more bespoke concrete bridges can be designed, either utilising full in-situ construction, or by combining the use of standard pre-cast concrete elements with bespoke elements. An example is the Regents Canal Bridge, shown in Figure 32, which is part of the King’s Cross Railway Land Redevelopment. The main deck is made up of standard pre-cast bridge beams, but bespoke edge beams were fabricated which, married to profiled abutments, gave a more aesthetic appearance to the structure. Other bridge designs are shown in Figures 33-35.



Figure 31: Concrete composite bridge using W type beams. Source: Shay Murtagh Ltd.



Figure 32: Regents Canal Bridge, a concrete bridge. Source: Knights Architects



Figure 33: A typical multi beam bridge completed. Source: steelconstruction.org



Figure 34: Welded box beams with a trapezoidal profile. Source: Volker Fitzpatrick Ltd .



Figure 35: A “tied-arch” structure.

Intervention 6a and 6b: 'All modes' bridge over Grand Union Canal in Channel Gate site					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Allowance for general site clearance; including disposal	2,740	m2	£5.00	£13,700.00
1.2	Allowance for clearance of embankments; removing vegetation and grading	1	item	£25,000.00	£25,000.00
1.3	Allowance for backfill to embankments up to abutment	1	item	£10,000.00	£10,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Sheet Piling to abutments; 3.3m height	60	m	£2,500.00	£150,000.00
2.2	Pile foundations; 750mm dia. CFA piles @ 3m centres; assumed 25m depth; 12 per abutment	24	nr	£4,200.00	£100,800.00
2.3	Pile caps; 15.6m x 4.35 x 1.5m; including excavation, partial backfill, disposal, formwork, reinforcement @ 50kg/m3	200	m3	£380.00	£76,000.00
2.4	Abutment construction; dimensions - 3.3m x 15.6m x 1.5m	160	m3	£500.00	£80,000.00
2.5	Bridge Structure; multi beam bridge; reinforced concrete slab, 250mm thick; 3 sets of braced pairs of beams at 2.85m centres; parapets N1 1.40m high	620	m2	£5,000.00	£3,100,000.00
2.6	Bridge carriageway surfacing; assume 125mm thick	260	m2	£50.00	£13,000.00
2.7	Bridge Footpaths/cycleways; assumed 250mm thickness; 50mm tarmac surface finish	320	m2	£120.00	£38,400.00
<b>3.0</b>	<b>Hard Landscaping</b>				
3.1	Carriageway construction; excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	1,220	m2	£150.00	£183,000.00
3.2	Allowance for line markings to carriageway	1	item	£5,000.00	£5,000.00
3.3	Footpath construction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving	760	m2	£220.00	£167,200.00
3.4	Cycleway construction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving	760	m2	£220.00	£167,200.00
<b>4.0</b>	<b>Installation of New Structures and Street Furniture</b>				
4.1	Allowance for installation of site and street furniture; railings, litter bins, bus shelters etc	1	item	£15,000.00	£15,000.00
<b>5.0</b>	<b>MEP</b>				
5.1	Allowance for installation of new external street lighting; includes associated cables	1	item	£45,000.00	£45,000.00
5.2	Allowance for installation of new drainage system	1	item	£55,000.00	£55,000.00
	<b>Sub Total</b>				<b>£4,244,300.00</b>
<b>6.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
6.1	Main Contractor's Preliminaries	20.0	%	£4,244,300.00	£848,860.00
6.2	Main Contractor's OH&P	5.0	%	£4,244,300.00	£212,215.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£5,310,000.00</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£5,310,000.00	£796,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£6,106,500.00</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency	<b>40.0</b>	<b>%</b>	<b>£6,106,500.00</b>	<b>£2,442,600.00</b>
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,549,100.00</b>

9.12 The cost estimate for the bridge is provided in table 14, and the assumptions and exclusions are indicated in table 15. The assumptions made and contingency amounts included are reflective of the preliminary stage of design. At this stage of design, it is not considered that there would be a difference in cost between the design options, hence only one cost is provided.

Table 14: Costs for Intervention 6a and 6b

Intervention 6a and 6b: 'All modes' bridge over Grand Union Canal in Channel Gate site	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 20.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	• Existing building site investigation
Works are completed within normal working hours.	• Services
The site has access to existing power supplies.	• Drainage / CCTV
Abutments/piers are constructed from reinforced concrete.	• TPOs
No diversions to existing utilities are required for these works.	• Asbestos
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Services diversions/upgrades, unless where clearly stated
	Works beyond boundary of the site
	Special equipment (unless stated)
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Adoption Costs

Table 15: Assumptions and exclusions for Intervention 6a and 6b

## 6C | Pedestrian and cycle bridge over Grand Union Canal in Channel Gate site

10.1 As per Options A and B, the proposed bridge is intended to provide a permanent crossing over the Grand Union Canal, linking the land around Atlas Road on the south side of the canal to the Channel Gate Road area on the north side of the canal. However, this option indicates the designs if the bridge were to be for pedestrians and cyclists only. The pedestrian and cycle bridge could be integrated with the local park, as indicated in Figure 36. The Canal & River Trust will need to review and approve the bridge option design and the impact of the bridge option on the towpath.

10.2 The bridge spans the Grand Union Canal which is effectively in cutting at this location, whilst exact levels and dimensions from topographical surveys are not available at this moment, it is evident that the two sides of the crossing are at different levels. The south side of the site is higher than the north. Overall finished levels would need to be developed as part of the wider project development. Running along the south side of the canal there is an existing towpath which is to be maintained. Whilst there is no towpath on the northern side of the canal, it has been assumed that a riverside walk or similar will be provided as part of the future development of the site.

10.3 In order to provide a clear span over the canal, with the bridge abutments being positioned at locations suitable for the provision of the towpaths, the structure is required to be a single span of approximately 40m. It is proposed to provide a shared use crossing for pedestrians and cyclists, and therefore, the width of the deck would be 4.0m with 1.4m high parapets. It would be assumed that the bridge would be founded onto piled reinforced concrete abutments which would tie-into the finished ground levels and profile. This width is considered justified because this is a shared route through a park and therefore demand is likely to be lower.

10.4 Due to the standardised design parameters and uniform loadings for pedestrian and cycle bridges, standard design solutions are available from many suppliers, effectively as proprietary products. The fabricators have approved standard designs for the different forms of structure that they manufacture, predominantly varying based on the increasing spans of the structure. The bridges take the form of Steel Truss structures of different types, such as Warren Truss, Vierendeel Truss, Pratt Truss, or Bow-String Arches. Alternatively, they can take the form of “through” structures or suspension or cable stayed bridges which require more bespoke designs.

10.5 Proprietary bridges are typically fabricated off-site and delivered to site as a complete assembly for installation. The bridges are steel, utilising Circular, Rectangular or Square Hollow Sections for the main structural members with smaller Hollow Sections or Angle Sections used to provide the stringers between the two trusses, onto which steel plate will be fitted to form the deck prior to painting and surfacing.

Figure 36: Intervention 6c, proposed design for pedestrian and cycle bridge over the Grand Union Canal



10.6 Figures 37-40 show a range of proprietary pedestrian and cycle bridges that could be utilised at this location. Also see the forms of footbridge structure proposed with Intervention 2a. Should a more architectural and aesthetic form of structure be required, then bespoke forms of structure such as the bridge spanning Ruckholt Road at the Queen Elizabeth Park, shown in Figure 37, could be considered.



Figure 37: Ruckholt Road at the Queen Elizabeth Park. Source: Allies and Morrison



Figure 39: Somers Town Link Bridge, at King's Cross, spanning the Regents Canal, this is a "half-through" structure Source: steelconstruction.org



Figure 38: Bowstring bridge. Source: CTS Bridges Ltd.



Figure 40: Mill Lane footbridge, a tied arch structure with the deck supported by high tensile hangers fixed to the bridge arches to suspend the deck. Source: NuSteel Structures Ltd

10.7 The cost estimate for the bridge is provided in table 16, and the assumptions and exclusions are indicated in table 17. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

<b>Intervention 6c: New pedestrian and cycle bridge over Grand Union Canal in Channel Gate site</b>						
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total	
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>					
1.1	Allowance for general site clearance	1	item	excluded	excl.	
1.2	Allowance for clearance of embankments; removing vegetation and grading	1	item	£25,000.00	£25,000.00	
<b>2.0</b>	<b>Bridge Structure</b>					
2.1	Sheet Piling to abutments; 3.3m height	20	m	£2,500.00	£50,000.00	
2.2	"Pile foundations; 750mm dia. CFA piles @ 3m centres; assumed 25m depth; 6 per abutment"	12	nr	£4,200.00	£50,400.00	
2.3	Pile caps; assume 6m x 4.35 x 1.5m; including excavation, partial backfill, disposal, formwork, reinforcement @ 50kg/m3	80	m3	£380.00	£30,400.00	
2.4	Abutment construction; assume dimensions - 3.3m x 6.0m x 1.5m	60	m3	£500.00	£30,000.00	
2.5	Supply and installation of pre-fabricated pedestrian/cycleway bridge; assumed either Warren Truss or Vierendeel Truss design; 5m width; 40m span; includes design and delivery; assumes anti-slip surface treatment	1	item	£500,000.00	£500,000.00	
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>					
3.1	Allowance for site and street furniture; signage, litter bins etc.	1	item	£5,000.00	£5,000.00	
<b>4.0</b>	<b>MEP</b>					
4.1	Allowance for installation of external street lighting; includes associated cables	1	item	£10,000.00	£10,000.00	
	<b>Sub Total</b>				<b>£700,800.00</b>	
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>					
5.1	Main Contractor's Preliminaries	20.0	%	£700,800.00	£140,160.00	
5.2	Main Contractor's OH&P	5.0	%	£700,800.00	£35,040.00	
	<b>Rounded Total (carried forward to summary)</b>				<b>£880,000.00</b>	
<b>6.0</b>	<b>Professional Fees</b>					
6.1	Professional Fees	15.0	%	£880,000.00	£132,000.00	
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,012,000.00</b>	
<b>7.0</b>	<b>Contingency</b>					
7.1	Contingency	<b>40.0</b>	<b>%</b>	<b>£1,012,000.00</b>	<b>£404,800.00</b>	
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,416,800.00</b>	

Table 16: Costs for Intervention 6c

Intervention 6c: New pedestrian and cycle bridge over Grand Union Canal in Channel Gate site	
Assumptions	Exclusions
<p>The base date of this estimate is 1Q 2021 and no inflation is included.</p> <p>Construction begins in 2021.</p> <p>Main Contractor's Prelims have been assumed at 20.0 %.</p> <p>Main Contractor's overheads and profit have been assumed at 5%.</p> <p>There are no abnormal ground conditions on site.</p> <p>There are no contaminated materials on site.</p> <p>There are no works to be demolished on the existing site.</p> <p>All site clearance/enabling works are costed in Intervention 5 - Option 1</p> <p>There is adequate access to site.</p> <p>Works are completed within normal working hours.</p> <p>The site has access to existing power supplies.</p> <p>Abutments/piers are constructed from reinforced concrete.</p> <p>No diversions to existing utilities are required for these works.</p> <p>This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.</p>	<p>Value Added Tax</p> <p>Client costs / design fees</p> <p>Legal fees</p> <p>Planning fees</p> <p>Statutory fees</p> <p>Finance charges</p> <p>Surveys and subsequent works required as a result including:</p> <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul> <p>Services diversions/upgrades, unless where clearly stated</p> <p>Works beyond boundary of the site</p> <p>Special equipment (unless stated)</p> <p>Utilities charges</p> <p>Disconnections of existing electrical equipment to be removed</p> <p>Main contractor pre-construction fee</p> <p>No allowances have been made for temporary accommodation whilst works are carried out</p> <p>Spoil disposed as contaminated (unless stated)</p> <p>Hostile vehicle mitigation furniture</p> <p>Adoption Costs</p>

Table 17: Assumptions and exclusions for Intervention 6c



## 7 | Local park

11.1 OPDC has produced an Environmental Standards Study, which identifies that a minimum of 30% of the developable area outside of the Strategic Industrial Location (SIL) should be allocated to provision of high quality public open space as part of a strategic approach to green infrastructure.

11.2 Local parks are defined within the London Plan as public open spaces of a minimum of 2ha. OPDC’s Environmental Standards Study cites the importance of delivering new local parks as part of the open space strategy. These parks would provide much needed on-site open space, that would act as a focal point for the new community, as well as important ecological assets, and will be a major component of a climate resilience strategy.

11.3 A 2-hectare local park is proposed to be located in the Channel Gate development area. There are two different proposed layouts, shown in Figures 41 and 42. Both park options include park areas on both sides of the Grand Union Canal. Engagement with the Canal & River Trust on the park design options will need to be undertaken.

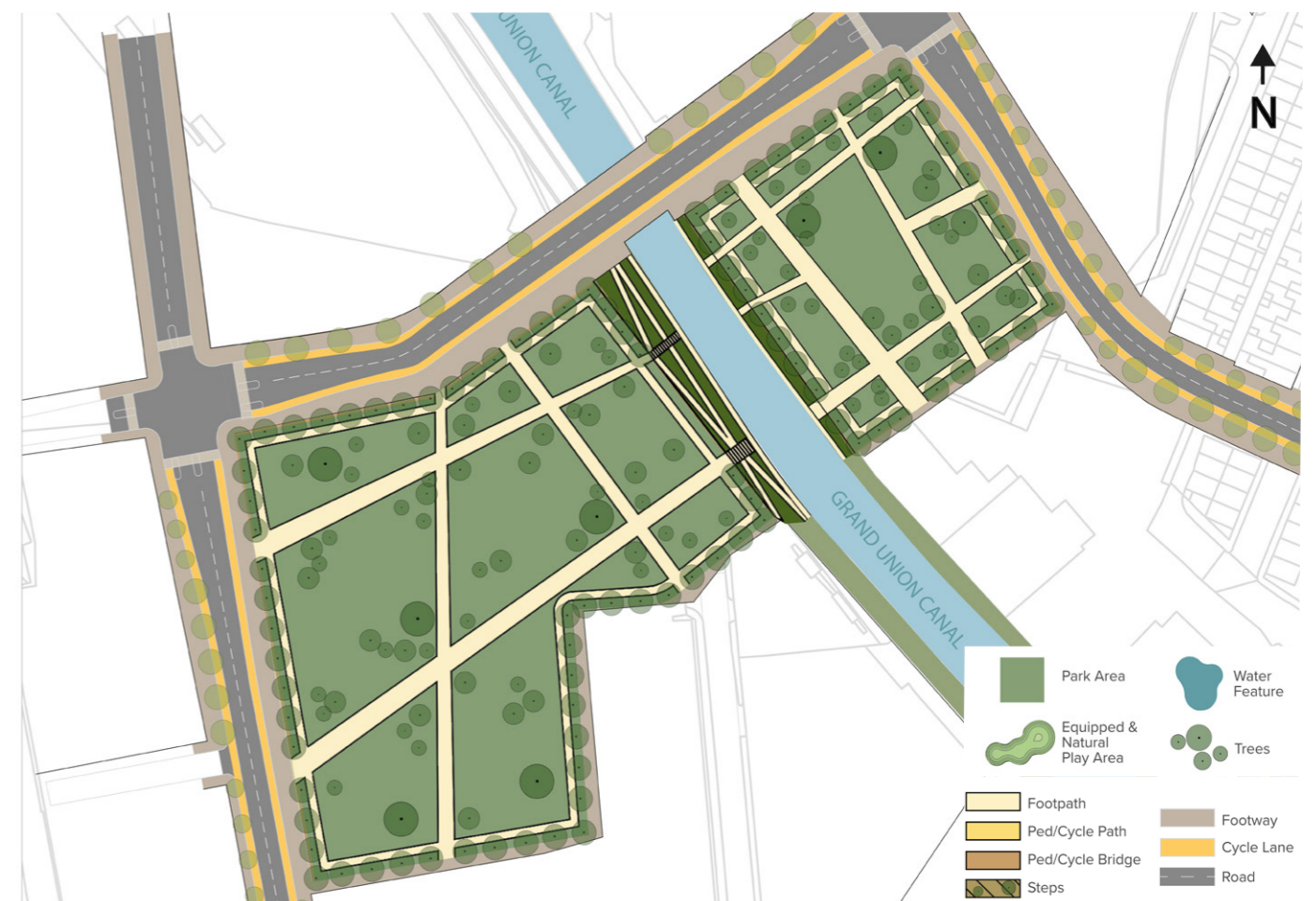
11.4 The first proposed design represents a park scheme with a naturalistic approach and extensive green infrastructure. The layout of the park with gentle curves, provides a very soft touch of nature in contrast to the modern linear new development that will surround it. The new park will also provide an extension to the existing habitats alongside the Grand Union Canal, and will be designed to increase the interconnectivity of habitats within the wider area. The park design incorporates the cycle and pedestrian bridge (intervention 6c) with paths that connect the two sides of the canal, a natural pond, an equipped and natural play area, access to the canal from both sides of the Grand Union Canal and step-like seating that allows locals and visitors to enjoy the waterscape.

11.5 The second proposed design layout is mostly linear with slightly asymmetrical pedestrian paths across the park and located south of the 'all modes' bridge (intervention 6a and b). The park is formed of open grass and wildflower fields with planted native trees. The park is located on both sides of the canal and offers access to the Grand Union Canal through the organised paths and stairs that follow the slopes allowing end-users easily access the water. The park includes an equipped and natural play area. Other amenities such as a café could be incorporated later on or from the beginning of the design development.

Figure 41: First proposed park layout



Figure 42: Second proposed park layout



11.6 The following case studies have been considered in the Local Park design and images of the case studies are shown in Figures 43-46.

#### **Kings Cross, London UK**

11.7 King's Cross is one of the largest redevelopment projects in London. The guiding principle was to create a community with a long-term future with minimal impact on the environment. This ambition has been realised and the area transformed from an underused industrial wasteland into a vibrant community, providing new homes, shops, offices, galleries, bars, restaurants and schools.

11.8 The development consists of a new network of streets and footpaths leading through parks, gardens and green squares. Regent's Canal flows through the site connecting King's Cross with a wider network of green spaces and making it a valuable ecological link in the heart of London. The wide paths provide organised open spaces available for residents and visitors allowing people to experience and enjoy the green space and Regent's Canal.

#### **Buga Heilbronn, Paula-Fuchs-Allee, Heilbronn, Germany**

11.9 The urban riverscapes of the River Neckar in the heart of Heilbronn were inaccessible and vacant, characterized by spatial obstacles such as roads and railway lines. New development of the "Neckarbogen" brought new opportunities to the former brownfield sites where landscape and waterfronts became the most prominent part connecting the whole city.

11.10 In addition, the new design scheme brings essential landscape functions such as noise protection, stormwater retention and urban wildlife protection.

11.11 North of Neckarbogen, Neckarhabitat urban wetlands shows how an experience of nature can be offered in the midst of the city. Terraced floodplains have been planted with shrubs and grasses and will be left to natural succession. A "floating" wooden footbridge 500m in length runs across the habitat, serving as a pedestrian connection.

11.12 The cost estimates for the local park options are provided in tables 18 and 19, and the assumptions and exclusions are indicated in tables 20 and 21. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.



Figure 43: Kings Cross redevelopment



Figure 44: Kings Cross local park



Figure 45: Heilbronn redevelopment



Figure 46: Heilbronn local park

Intervention 7: Local park (option 1)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Allowance for general site clearance	21,680	m2	£5.00	£108,400.00
<b>2.0</b>	<b>Hard Landscaping</b>				
2.1	Shared cycle and pedestrian path; assume resin bound surfacing including sub-bases, edging etc	1,890	m2	£90.00	£170,100.00
2.2	Pedestrian path; assume resin bound surfacing including sub-bases	1,310	m2	£90.00	£117,900.00
2.3	Cycle and pedestrian bridge	1	item	excl.	excl.
2.4	Steps; assumed to be timber decking	410	m2	£100.00	£41,000.00
<b>3.0</b>	<b>Soft Landscaping</b>				
3.1	Proposed grassed and wildflower area	15,990	m2	£10.00	£159,900.00
3.2	Playground hills; allowance for forming of mounds and seeding lawns	880	m2	£30.00	£26,400.00
3.3	Proposed trees	160	nr	£750.00	£120,000.00
<b>4.0</b>	<b>Installation of New Structures and Street Furniture</b>				
4.1	Allowance for site and street furniture; assumed benches, litter bins etc.	1	item	£110,000.00	£110,000.00
4.2	Allowance for supply and installation of new natural play area; assume area of 45m x 30m	1	item	£100,000.00	£100,000.00
<b>5.0</b>	<b>MEP</b>				
5.1	Allowance for installation of new external lighting; includes associated cables	1	item	£150,000.00	£150,000.00
<b>6.0</b>	<b>Misc.</b>				
6.1	Proposed water feature; assume pond	1,200	m2	£75.00	£90,000.00
	<b>Sub Total</b>				<b>£1,193,700.00</b>
<b>7.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
7.1	Main Contractor's Preliminaries	12.5	%	£1,193,700.00	£149,212.50
7.2	Main Contractor's OH&P	5.0	%	£1,193,700.00	£59,685.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,400,000.00</b>
<b>8.0</b>	<b>Professional Fees</b>				
8.1	Professional Fees	15.0	%	£1,400,000.00	£210,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,610,000.00</b>
<b>9.0</b>	<b>Contingency</b>				
9.1	Contingency	10.0	%	£1,610,000.00	£161,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,771,000.00</b>

Table 18: Costs for Intervention 7 option 1

Intervention 7: Local park (option 2)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Allowance for general site clearance	18,922	m2	£5.00	£94,610.00
<b>2.0</b>	<b>Hard Landscaping</b>				
2.1	Pedestrian path; assume resin bound surfacing including sub-bases	4,768	m2	£90.00	£429,120.00
<b>3.0</b>	<b>Soft Landscaping</b>				
3.1	Proposed grassed and wildflower area	14,154	m2	£10.00	£141,540.00
3.2	Proposed trees	188	nr	£750.00	£141,000.00
<b>4.0</b>	<b>Installation of New Structures and Street Furniture</b>				
4.1	Allowance for site and street furniture	1	item	£110,000.00	£110,000.00
4.2	Allowance for supply and installation of new natural play area; assume area of 45m x 30m	1	item	£100,000.00	£100,000.00
<b>5.0</b>	<b>MEP</b>				
5.1	Allowance for installation of new external lighting; includes associated cables	1	item	£150,000.00	£150,000.00
<b>6.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
6.1	Main Contractor's Preliminaries	12.5	%	£1,166,270.00	£145,783.75
6.2	Main Contractor's OH&P	5.0	%	£1,166,270.00	£58,313.50
	<b>Sub Total</b>				<b>£1,370,000.00</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£1,370,000.00	£205,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,575,500.00</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency	10.0	%	£1,575,500.00	£157,550.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,733,050.00</b>

Table 19: Costs for Intervention 7 option 2

Intervention 7: Local park (option 1)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	<ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
Works are completed within normal working hours.	Services diversions/upgrades, unless where clearly stated
Pedestrian paving and cycleways are resin bound.	Works beyond boundary of the site
Timber decking will be used for the stepped area.	Special equipment (unless stated)
All works associated with the pedestrian bridge are costed in Intervention 3 - Option C	Utilities charges
The site has access to existing power supplies.	Disconnections of existing electrical equipment to be removed
No diversions to existing utilities are required for these works.	Main contractor pre-construction fee
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 20: Assumptions and exclusions for Intervention 7 option 1

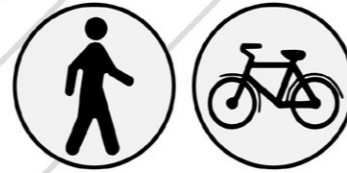
Intervention 7: Local park (option 2)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	<ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
Works are completed within normal working hours.	Services diversions/upgrades, unless where clearly stated
Pedestrian paving is resin bound.	Works beyond boundary of the site
The site has access to existing power supplies.	Special equipment (unless stated)
No diversions to existing utilities are required for these works.	Utilities charges
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 21: Assumptions and exclusions for Intervention 7 option 2

## 8 | New pedestrian and cycle crossing over the Grand Union Canal

12.1 This new pedestrian and cycle bridge, shown in Figure 47 would be located on the east side of the North London Line rail bridge, spanning over the Grand Union Canal, providing a connection between Hythe Road to the north and the southern towpath. It could also be extended to be incorporated with the Oaklands North development to provide a continuous connection from that site, if desired.

### MODAL CONSIDERATIONS



### LOCATION CONTEXT

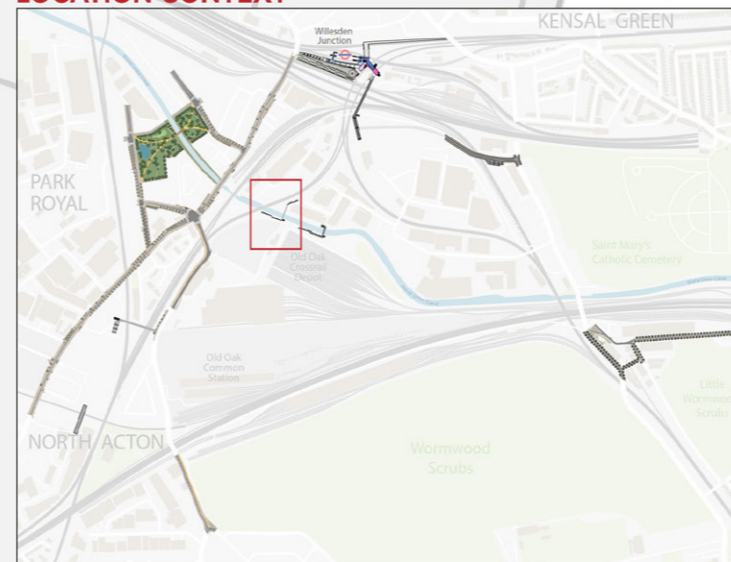


Figure 47: Intervention 8, new proposed pedestrian and cycle crossing over the Grand Union Canal

- Bridge
- Rail Line
- Stairs
- Ramp

12.2 The North London Line railway bridge crosses the canal at a skewed angle, however the new pedestrian and cycle structure is proposed to cross the canal squarely in order to reduce its length. There would be merit in reflecting the shape and form of the existing railway bridge by having a more modern arch structure for this crossing.

12.3 The main span of the proposed bridge would be approximately 25.0m with a minimum width of 4.0m, aligned to TfL Streetscape Guidance and LCDS for a shared space route. Ramps would be provided at each end in order to transition back to ground level. As with other structures over the canal, the clearance to the towpath would be a minimum of 2.80m in order to maintain both free movement of pedestrians and cyclists along the towpath, but also the air draft over the canal.

12.4 On the north side of the canal a route would need to be created for users to access through the industrial estate to Hythe Road. On the south side of the canal, approach ramps are required to provide access to the bridge at 1:20 gradient. These would be prefabricated steel structures.

12.5 As shown in Figures 48-50, the main span of the bridge would be supported on steel columns and concrete pad foundations. The alignment of the ramps on the south side of the canal will need to be confirmed. They are currently proposed to run parallel to the canal and provide access to the towpath. However, as mentioned, the bridge could be integrated with the Oaklands North development south of the canal.

12.6 Figure 48 shows the existing railway bridge and Figures 49 and 50 indicate forms of structure that could be considered for this crossing. They could be based on proprietary designs or more bespoke architectural designs.



Figure 48: Existing bridge over a canal



Figure 49: Existing bridge example Source: CTS Bridges Ltd



Figure 50: Example of a bridge structure over a canal Source: CTS Bridges Ltd

12.7 The cost estimates for the new pedestrian and cycling crossing is provided in table 22, and the assumptions and exclusions are indicated in table 23. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 8: New pedestrian bridge over the Grand Union Canal					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Clearance of existing dense vegetation to north and south banks	1	item	£20,000.00	£20,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Pad foundations; including excavation; 750x750x500mm below columns to access ramp	16	nr	£1,000.00	£16,000.00
2.2	Supply and installation of pre-fabricated access ramp and bridge; 3m width; includes design and delivery; assumes anti-slip surface treatment	470	m2	£2,500.00	£1,175,000.00
2.3	Supply and installation of access steps on southern bank; 2.85m height, 6.80m length; assume pre-fabricated unit to match access ramp and bridge; inclusive of railings.	1	item	£25,000.00	£25,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for street furniture; signage, wayfinding, litter bins etc.	1	item	£10,000.00	£10,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting; includes associated cables etc; assume existing power infrastructure is present	1	item	£15,000.00	£15,000.00
	<b>Sub Total</b>				<b>£1,261,000.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	20.0	%	£1,261,000.00	£252,200.00
5.2	Main Contractor's OH&P	5.0	%	£1,261,000.00	£63,050.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,580,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£1,580,000.00	£237,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,817,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	40.0	%	£1,817,000.00	£726,800.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£2,543,800.00</b>

Table 22: Costs for Intervention 8

Intervention 8: New pedestrian bridge over the Grand Union Canal	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 20.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	<ul style="list-style-type: none"> <li>Existing building site investigation</li> <li>Services</li> <li>Drainage / CCTV</li> <li>TPOs</li> <li>Asbestos</li> </ul>
Existing utilities exist and are adequate for new development.	Services diversions/upgrades, unless where clearly stated
Pad foundations have been assumed to abutments/piers, as per drawings provided.	Works beyond boundary of the site
Bridge structure is pre-fabricated.	Special equipment (unless stated)
No diversions to existing utilities are required for these works.	Utilities charges
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with disruption to existing railway lines.
	Adoption Costs

Table 23: Assumptions and exclusions for Intervention 8

## 9 | Refurbishment of existing pedestrian and cycle crossing over the Grand Union Canal

13.1 This intervention is to enhance the existing pedestrian and cycle bridge, shown in Figure 51, that spans over the canal from the southern towpath to the north of the canal where it lands in an alleyway between two buildings that leads to Hythe Road. The footbridge is not currently accessible for mobility impaired users because it has steep stair access at both sides of the bridge and no ramp facilities, as shown in Figure 52. A steel “V” channel is provided on stairs in order to aid wheeling cycles over the bridge, though it is noted that the parapets are 1.1m high so the bridge is not suitable for cycling. The surfacing on the steel deck and the stair treads is wearing and the structure has significant graffiti throughout.

13.2 The exact form of the footbridge is not known, but it appears to comprise of 2no main steel beams connected by transverse stringers with a steel plate to form a ladder deck. Approximate dimensions of the bridge are a single span of 22m by 2m wide. The approximate height to the underside of the bridge is estimated at 2.5m on the south side. The north side appears to be lower as the bridge lands on an embankment.

13.3 On the south side of the canal, the bridge deck is supported on a trestle formed by Square Hollow Section Columns with a cross head mounted on a concrete plinth.

13.4 The surfacing on the steel deck and the stair treads is wearing and the structure has significant graffiti throughout, as seen in Figures 51 and 52.



Figure 51: View of the existing pedestrian bridge over a canal



Figure 52: Existing pedestrian bridge over a canal



13.5 A thorough inspection of the bridge would be required in order to develop a repair and maintenance strategy, however from the information available at this stage no signs of significant corrosion were noted.

13.6 The proposed works would have two key aspects:

- Refurbish the existing structure
- Improve accessibility – Install new approach ramps

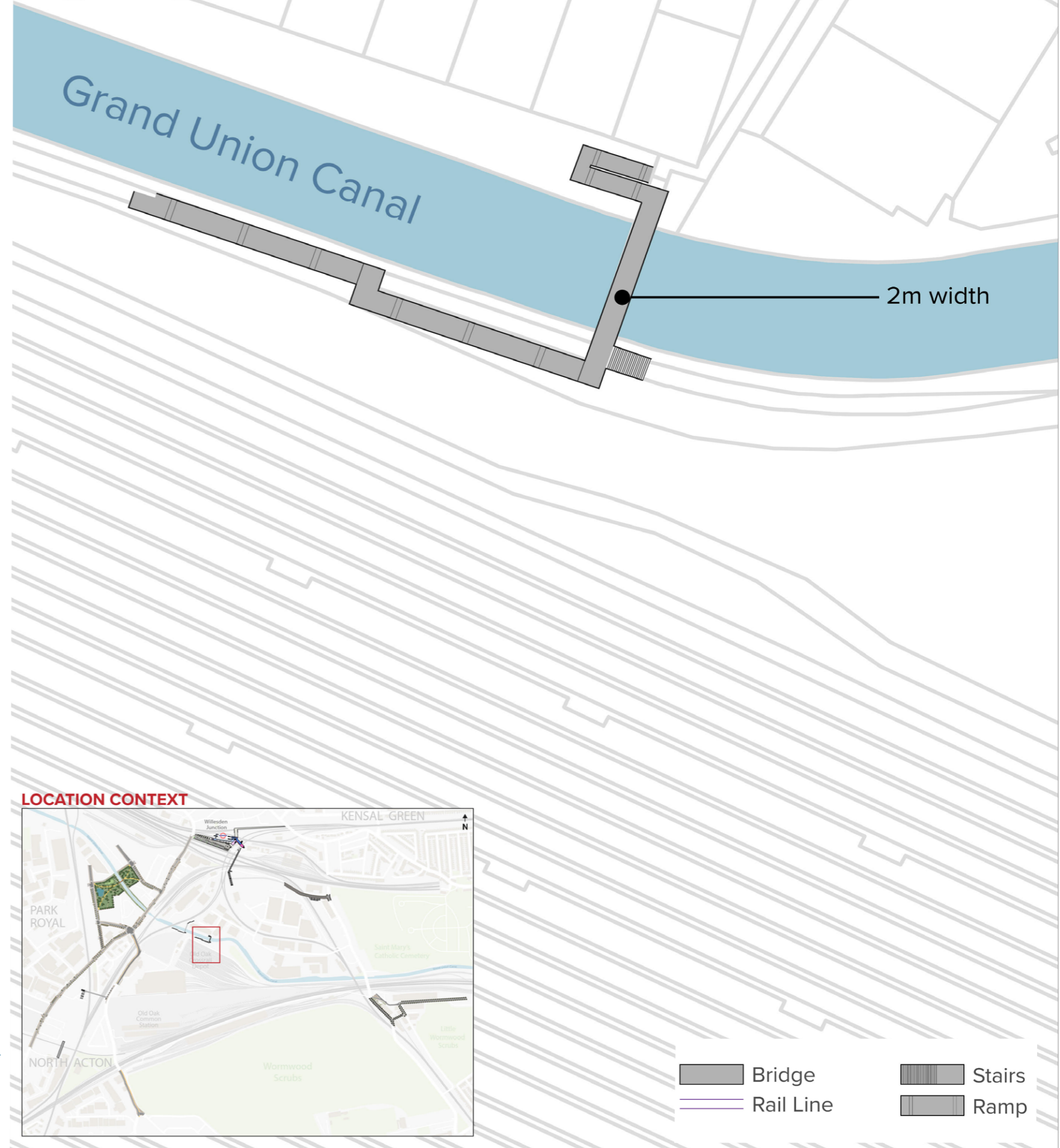
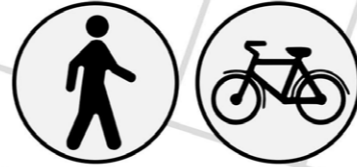
13.7 The refurbishment of the existing structure would require various activities, including:

- Removal of overgrown vegetation from around the structure.
- Preparation of steelwork and re-paint.
- Removal of existing surfacing and re-apply a non-slip surfacing directly to the steel deck
- Replace treads and edgings on stairs at each end of the bridge.

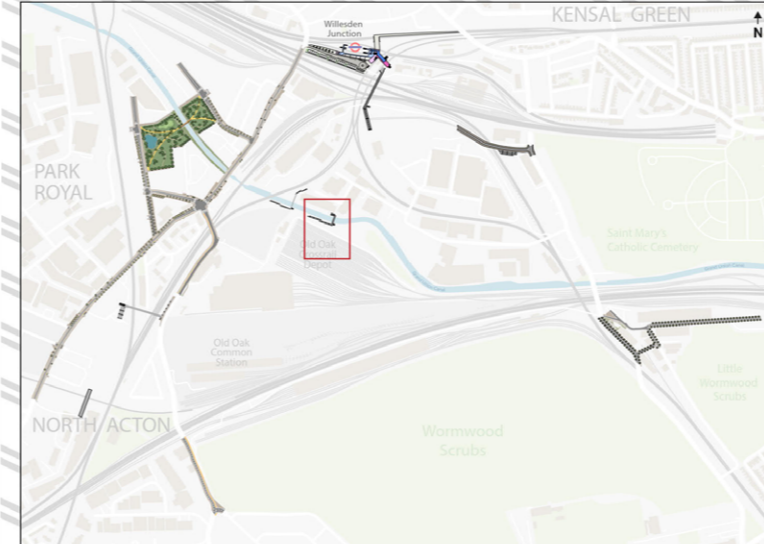
13.8 In order to improve accessibility, it is proposed that new approach ramps should be constructed at each end of the bridge. These would be prefabricated steel ramps supported on steel columns with concrete pad foundations. On the south side of the bridge the ramps would need to turn through 90° and run parallel to the canal, however it would be necessary to ensure that the tow-path was not impeded so the ramps would have to be constructed in the area of vegetation at the back of the tow-path. The available land for this construction will need to be confirmed. At the northern end of the bridge approach ramps would also be constructed. These would link between the two existing buildings at this location in order to tie-into Hythe Road and the wider industrial estate. In both cases the ramps would have a deck 2.00m wide, to match the bridge, and would have a gradient of 1:20. The proposed design for this bridge is shown in Figure 53.

13.9 It should be noted that the existing bridge has 1.10m high parapets and is not suitable for cyclists, therefore considerations should be made whether to increase the height of the bridge parapets to 1.40m or to keep them as they are but provide signage to instruct cyclists to dismount when using the bridge. The current costs for this bridge assume that cyclists are signed to dismount when using the bridge.

**MODAL CONSIDERATIONS**



**LOCATION CONTEXT**



- Bridge
- Rail Line
- Stairs
- Ramp

Figure 53: Intervention 9, refurbishment of existing pedestrian and cycle crossing over Grand Union Canal

13.10 The cost estimates for the bridge refurbishment is provided in table 24, and the assumptions and exclusions are indicated in table 25. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 9: Existing pedestrian bridge over the Grand Union Canal					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
	Clearance of existing dense vegetation to north and south banks	1	item	£10,000.00	£10,000.00
1.1	Removal of existing steps to northern bank	1	item	£10,000.00	£10,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Existing deck surfacing to be replaced with resin based surfacing; including waterproofing	55	m2	£120.00	£6,600.00
2.2	Existing metal parapet railing prepared and repainted; assume 1.2m height	47	m	£50.00	£2,350.00
2.3	Existing metal girder face prepared and repainted	47	m	£100.00	£4,700.00
2.4	Pad foundations; including excavation; 750x750x500mm below columns to access ramp	12	nr	£1,000.00	
2.5	Supply and installation of pre-fabricated access ramp; ; 2m width; includes design and delivery; assumes anti-slip surface treatment	210	m2	£2,500.00	£525,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for street furniture; signage, wayfinding, litter bins etc.	1	item	£10,000.00	£10,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting; includes associated cables etc; assume existing power infrastructure is present	1	item	£15,000.00	£15,000.00
	<b>Sub Total</b>				<b>£583,650.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	20.0	%	£583,650.00	£116,730.00
5.2	Main Contractor's OH&P	5.0	%	£583,650.00	£29,182.50
	<b>Rounded Total (carried forward to summary)</b>				<b>£730,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£730,000.00	£109,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£839,500.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	40.0	%	£1,817,000.00	£335,800.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,175,300.00</b>

Table 24: Costs for Intervention 9

Intervention 9: Existing pedestrian bridge over the Grand Union Canal	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 20.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site unless otherwise stated.	Surveys and subsequent works required as a result including:
There is adequate access to site.	• Existing building site investigation
Existing utilities exist and are adequate for new development.	• Services
Pad foundations have been assumed to abutments/piers, as per drawings provided.	• Drainage / CCTV
Bridge structure is pre-fabricated.	• TPOs
No diversions to existing utilities are required for these works.	• Asbestos
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Services diversions/upgrades, unless where clearly stated
	Works beyond boundary of the site
	Special equipment (unless stated)
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with disruption to existing railway lines.

Table 25: Assumptions and exclusions for Intervention 9

## 10 | Willesden Junction Station proposed enhancements

14.1 A feasibility study is being undertaken to explore opportunities to enhance Willesden Junction station. The emerging design option for the station is indicated in Figure 54. Other more extensive options are being investigated as part of a second stage of the feasibility study that include creating a continuous route between Old Oak Lane and Harrow Road and relocating the bus turn around facility and interchange on Station Approach to the north which unlocks land on Station Approach for development. The emerging option shown in Figure 54 does not preclude the more extensive options that are being considered.

14.2 The option includes the following elements. Public realm enhancements are proposed to Station Approach to make it a more pleasant environment for station users. A retaining wall will be erected along the northern edge of Station Approach to provide a straight line of sight along Station Approach towards the station entrance, improving the visibility and presence of the station.

14.3 Two entrances will be provided on Station Approach. One entrance will be provided halfway down Station Approach just west of the current station entrance. The station box will be rotated to front towards Old Oak Lane, enhancing the presence and visibility of the station on Old Oak Lane. A second entrance will be provided at the eastern end of the station. The new entrances provide the opportunity to implement more gate line capacity and better entrance facilities for station staff and passengers. Between the two entrances there is space for cycle parking and activation uses such as coffee shops and retail facilities. Boarding and alighting bus stops on Station Approach will be positioned as close as possible to the station entrances and the existing bus stands will be retained as this is a terminus point for two buses. A minimum of 150 covered, secure, high quality cycle parking spaces will be provided.

14.4 From the entrance in the middle of Station Approach, passengers can access the existing overbridge, stairs and lift down to the lower level platforms which serve the Bakerloo Line and the Watford DC Line. Or, they can use an internal walkway to access the concourse area in the middle of the station. This new, generous concourse can also be accessed step-free from the eastern entrance on Station Approach. From the concourse passengers can route down to the lower level platforms using a second set of stairs or a lift. Or, they can use the double stairs and lifts to access a new high-level overbridge which has stairs and a lift down to the high-level platforms. The concourse and high-level overbridge replaces the

existing narrow space that currently exists in the middle of the station and the convoluted, multiple-level changing routes between the high level and low level platforms.

14.5 From Harrow Road, a new pedestrian and cycle route is provided in the space north of the City Lines freight track and south of Tubbs Road. The pedestrian and cycle route crosses over the City Lines freight track and routes under the station to join the eastern entrance. Unpaid routes are provided from Old Oak North to Harrow Road, Station Approach and Old Oak Lane, and from Old Oak Lane via Station Approach to Harrow Road.

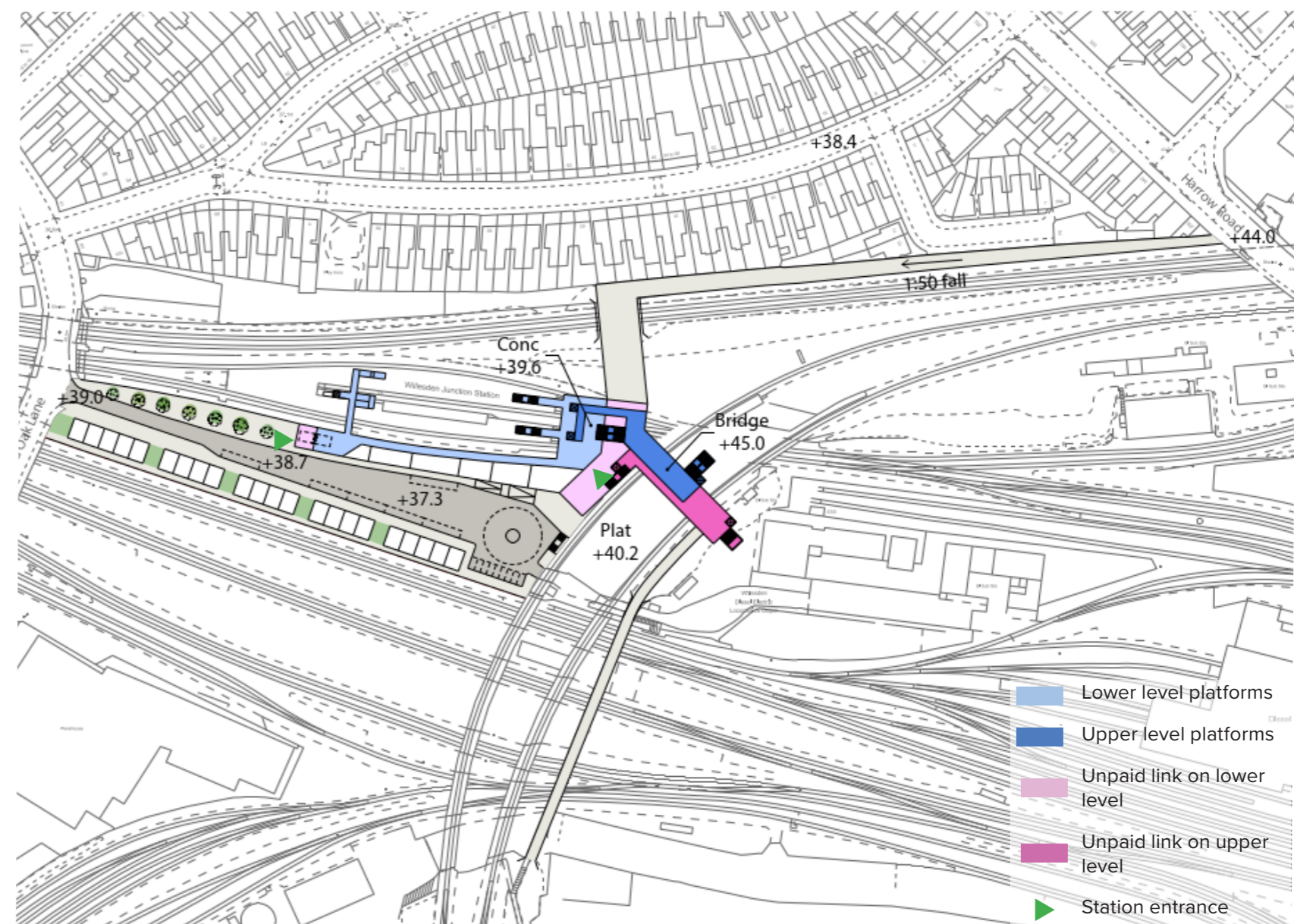


Figure 54: Emerging design option for Willesden Junction Station

14.6 The cost estimates for the station enhancements outlined above is provided in table 26, and the assumptions and exclusions are indicated in table 29. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

Intervention 10: Willesden Junction Station					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition / Enabling Works</b>				
1.1	Demolition of existing station low level	1,192	m2	£100	£119,200
1.2	Demolition of existing station high level	554	m2	£150	£83,100
1.3	Demolish stairs low level	40	m2	£100	£4,000
1.4	Demolish stairs high level	135	m2	£150	£20,250
<b>2.0</b>	<b>Station Works</b>				
2.1	Construction of new station low level	1,192	m2	£4,500	£5,364,000
2.2	Construction of new station high level	554	m2	£6,500	£3,601,000
2.3	Construction of stairs all levels	175	m2	£1,000	£175,000
2.4	Lift shafts and installation of lifts	8	Nr	£300,000	£2,400,000
2.5	Gatelines; includes ticket machines	12	Nr	£40,000	£480,000
2.6	Allowance for resurfacing of platforms	4,000	m2	£75	£300,000
2.7	Allowance for renewel of station furniture; benches, bins etc.	1	item	£10,000	£10,000
2.8	Allowance for new lighting to station paltpforms; assumed LED	1	item	£50,000	£50,000
2.9	Allowance for upgrade to existitng fire alarm systems	1	item	£50,000	£50,000
2.10	Allowance for upgrade to existing comms system	1	item	£50,000	£50,000
2.11	Allowance for wayfinding signage across station	1	item	£10,000	£10,000
2.12	Allowance for new pump station for low level platforms	1	item	£250,000	£250,000
2.13	Allowance for new substation	1	item	£500,000	£500,000
<b>3.0</b>	<b>Misc.</b>				
3.1	Phased, engineering and night working uplift	10%		£12,246,550	£1,224,655
	<b>Sub Total</b>				<b>£14,691,205</b>
<b>4.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
4.1	Main Contractor's Preliminaries	35	%	£14,691,205	£5,141,922
4.2	Main Contractor's OH&P	10	%	£14,691,205	£1,469,121
	<b>Rounded Total (carried forward to summary)</b>				<b>£21,302,247</b>
<b>5.0</b>	<b>Professional Fees</b>				
5.1	Professional Fees	15	%	£21,302,247	£3,195,337
	<b>Rounded Total (carried forward to summary)</b>				<b>£24,497,584</b>
<b>60</b>	<b>Contingency</b>				
6.1	Contingency	<b>60</b>	<b>%</b>	<b>£24,497,584.34</b>	<b>£14,698,551</b>
	<b>Rounded Total (carried forward to summary)</b>				<b>£39,196,135</b>

Table 26: Costs for Willesden Junction Station

Intervention 10: Willesden Junction Station Approach					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition / Enabling Works</b>				
1.1	Site Clearance	5,500	m2	£5	£27,500
1.2	Demolition of existing buildings/structures	1,520	m3	£30	£45,600
<b>2.0</b>	<b>External Works</b>				
2.1	Installation of carriageway/turning circle area; includes break out of existing hard surfacing excavation, associated sub-bases	2,610	m2	£150	£391,500
2.2	Installation of paved footpath; includes break out of existing hard surfacing, excavation, associated sub-bases	2,590	m2	£220	£569,800
2.3	Install ramp structure	1	nr	£10,000	£10,000
2.4	Install staircase to access raised paved area; 3m x 8m	1	nr	£10,000	£10,000
2.5	Install balustrade to raised footpath area	50	m2	£150	£7,500
2.6	Line markings to denote drop off areas/ turning circle etc	1	item	£5,000	£5,000
2.7	Installation of soft landscaping	230	m2	£50	£11,500
2.8	Planting trees; assume mature to tree pit	7	nr	£1,000	£7,000
2.9	Reinforced Concrete Retaining Walls assume 500mm wide x 4.5m deep	1,665	m2	£550	£915,750
<b>3.0</b>	<b>External Services</b>				
3.1	Drainage works to hard surfacing	5,500	m2	£30	£165,000
3.2	Installation of new external lighting; includes removal of existing	5,500	m2	£30	£165,000
	<b>Sub Total</b>				<b>£2,331,150</b>
<b>4.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
4.1	Main Contractor's Preliminaries	12.5	%	£2,331,150	£291,394
4.2	Main Contractor's OH&P	5	%	£2,331,150	£116,558
	<b>Rounded Total (carried forward to summary)</b>				<b>£2,739,101</b>
<b>5.0</b>	<b>Professional Fees</b>				
5.1	Professional Fees	15	%	£2,739,101	£410,865
	<b>Rounded Total (carried forward to summary)</b>				<b>£3,149,966</b>
<b>6.0</b>	<b>Contingency</b>				
6.1	Contingency	10	%	£3,149,966	£314,997
	<b>Rounded Total (carried forward to summary)</b>				<b>£3,464,963</b>

Table 27: Costs for Willesden Junction Station Approach

Intervention 10: Willesden Junction Harrow Road Link					
Elemental Contents	Quantity	Unit	Rate	Total	
<b>Link Path to Harrow Road</b>					
Allowance for clearance of Japanese Knotweed	1	item	£10,000	£10,000	
Sheet Piling to rear gardens	1,150	m2	£300	£345,000	
Paved Path	920	m2	£220	£202,400	
Reinforced Concrete Retaining Walls assume 500mm wide x 4.5m deep	270	m2	£550	£148,500	
Fill to make up levels	1,013	m3	£75	£75,975	
Paved Path	315	m2	£220	£69,300	
Bridge over Freight Line	90	m2	£5,000	£450,000	
Allowance for external lighting	1	item	£40,000	£40,000	
Allowance for CCTV coverage	1	item	£30,000	£30,000	
Schedule 4 Costs (FOC)	11%		£1,291,175	£142,029	
Possession Management	3%		£1,433,204	£42,996	
<b>Sub Total</b>					<b>£1,556,200</b>
<b>Preliminaries, Overheads &amp; Profit</b>					
Main Contractor's Preliminaries	30	%	£1,556,200	£466,860	
Main Contractor's OH&P	10	%	£1,556,200	£155,620	
<b>Rounded Total (carried forward to summary)</b>					<b>£2,178,681</b>
<b>Professional Fees</b>					
Professional Fees	15	%	2,178,681	326,802	
<b>Rounded Total (carried forward to summary)</b>					<b>2,505,483</b>
<b>Contingency</b>					
Contingency	60	%	2,505,483	1,503,290	
<b>Rounded Total (carried forward to summary)</b>					<b>4,008,772</b>

Table 28: Costs for Willesden Junction Harrow Road Link

Intervention 10: Willesden Junction Station	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax.
Construction begins in 2021.	Legal fees.
For Willesden Junction Station Main Contractor's Prelims have been assumed at 35 %.	Planning fees.
Main Contractor's overheads and profit have been assumed at 10%.	Statutory fees.
There are no abnormal ground conditions on site.	Finance charges.
There are no contaminated materials on site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	• Existing building site investigation
The site has access to existing power supplies.	• Services
No diversions to existing utilities are required for these works.	• Drainage / CCTV
Temporary works including wayfinding, temporary paths and segregating the public included within preliminaries.	• TPOs
12 Nr gatelines included in three locations.	• Asbestos
Phased, engineering and night working uplift included.	Services diversions / upgrades, unless where clearly stated.
This estimate should be viewed with an estimating tolerance of +/- 25% due to the high level nature of information it is based upon.	Works beyond boundary of the site.
For Willesden Junction Station Approach Main Contractor's Prelims have been assumed at 12.5 %.	Special equipment (unless stated).
For Willesden Junction Station Approach Main Contractor's overheads and profit have been assumed at 5%.	Utilities charges.
For Station Approach and Harrow Road link works are completed within normal working hours.	Disconnections of existing electrical equipment to be removed.
For Willesden Junction Station Harrow Road Link Main Contractor's Prelims have been assumed at 30 %.	Main contractor pre-construction fee.
For Willesden Junction Station Harrow Road Link Main Contractor's overheads and profit have been assumed at 10%.	Spoil disposed as contaminated (unless stated).
	Hostile vehicle mitigation furniture.
	Works required to improve compliance with NR / TfL standards for areas not directly impacted upon by the works.
	CPO / Land Transfer costs.
	Any works associated with the platform edge. This includes gauge clearance checks and replacement / re-setting of platform coper stones.
	Asbestos removal / treatment.
	Costs related to new commercial units

Table 29: Assumptions and exclusions for Intervention 10

# 11 New pedestrian and cycle bridge over the West Coast Mainline connecting Old Oak North to Willesden Junction

15.1 A new pedestrian and cycling shared use bridge is proposed between Old Oak North (the EMR and Car Giant sites) and Willesden Junction station, spanning over the West Coast Mainline, to replace the existing, substandard footbridge, shown in Figure 55. The current footbridge is narrow, poorly maintained and is non-accessible. Further, it can only be reached from the north via a convoluted and unpleasant route from Station Approach.

15.2 The pedestrian and cycle bridge will need to cross over nine railway lines which are electrified by means of Overhead Line Equipment supported by gantries spanning over the lines.

Figure 55: The current footbridge between Willesden Junction station and Old Oak North



15.3 The proposed bridge design is shown in Figures 56 and 57. The bridge starts at its south abutment which is located to the south of the Haul Road, an access road that runs along the north side of the EMR site and enables access and egress to the Powerday Willesden site. The bridge has five spans to cross the railway lines, supported on piers, before landing on the northern side to the east of the London Overground lines at Willesden Junction Station.

15.4 The bridge will take the form of a steel truss structure, comprising of five individual spans, ranging from approximately 11.00m to 30.00m with an overall length of approximately 116.00m. The width of the bridge deck will be 4.00m in order to provide shared use for pedestrians and cyclists in line with TfL Streetscape and LCDS guidance. It is currently estimated to be less than 2m wide. The structure spans over the railway lines requires 1.80m high parapets with a solid infill where it crosses the railway lines.

15.5 On the north side of the West Coast Mainline, the bridge is proposed to connect to Willesden Junction station, as shown in Figures 56 and 57. On the southern side of the crossing, there are a number of options to gain access to the bridge deck and these would need to be explored through more detailed design work. The designs and costs provided demonstrate two possible options: In Option A access to the bridge deck is gained via a flight of stairs and ramps on the south side of the Haul Road (Figure 56) and Option B provides access to the bridge deck via a lift (Figure 57).

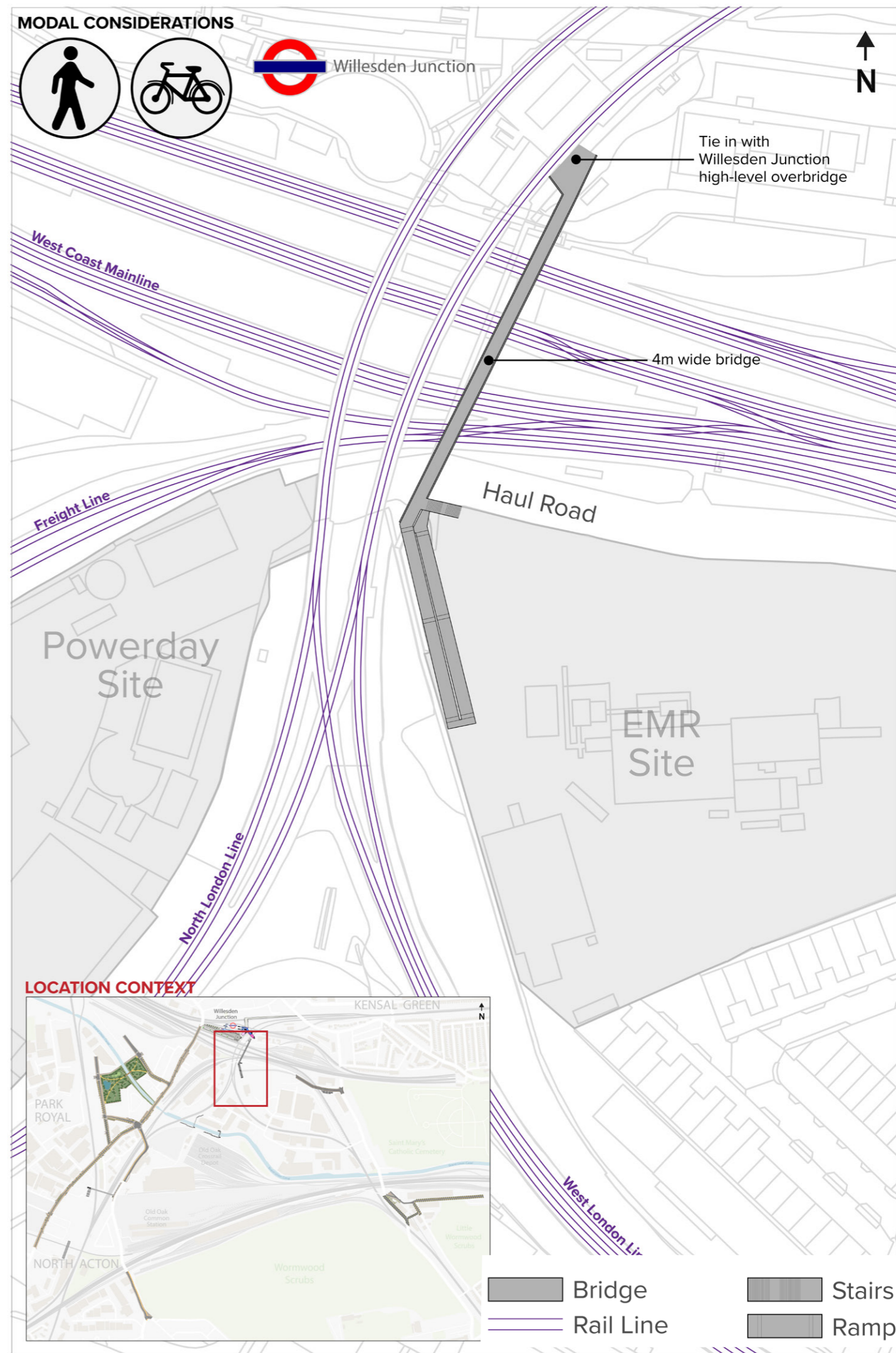


Figure 56 Intervention 11a, proposed bridge with stairs and ramp



15.6 As part of the Willesden Junction Feasibility study, an alternative connection across the West Coast Mainline is being explored which would link Station Approach to the Powerday site and from Powerday, a connection to EMR and the Car Giant site would be provided. This connection needs further investigation to understand whether it is feasible and it is likely that it would only be possible to deliver when the Powerday site is released for development which is outside of the Local Plan period.

15.7 Whilst the new bridge is not on the exact alignment of the existing bridge, the existing bridge may need to be removed in order to facilitate construction. It should also be noted that the railway lines provide significant constraints to the design and construction of the bridge: all nine lines are electrified, there is limited access for plant and equipment for construction, and there will be a need to bring materials into the worksite by means of road rail equipment. The lines are of national significance due to the West Coast Main Line; therefore, planning and undertaking work on the railway will require significant input and liaison with Network Rail, the train operating companies (TOCs) and the freight operating companies (FOCs).

15.8 The cost estimates for the new bridge options are provided in tables 30 and 31, and the assumptions and exclusions are indicated in tables 32 and 33. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

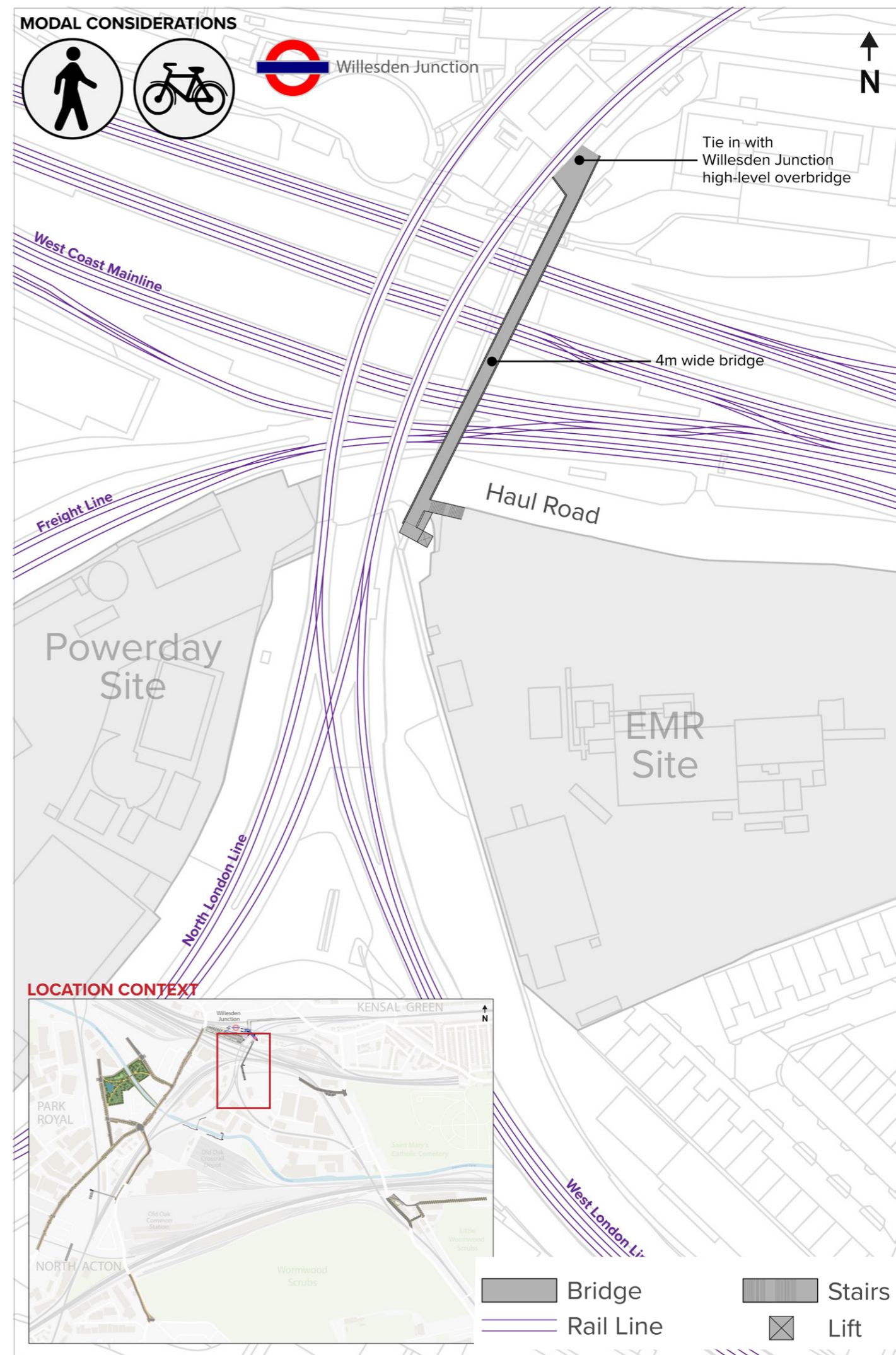


Figure 57: Intervention 11b, proposed bridge with lift

Intervention 11a: New pedestrian and cycle bridge over the West Coast Mainline connecting Old Oak North to Willesden Junction - Approach Ramp					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Demolition/removal of existing bridge structure	1	item	£100,000.00	£100,000.00
1.2	E/O for works above active railway lines	300	m2	£1,500.00	£450,000.00
1.3	Clearance to embankment to north of site; assume dense vegetation	1	m2	£10,000.00	£10,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	"Pile foundations; 600mm dia. CFA piles @ 1.8m centres; assumed 25m depth; 6 per abutment"	36	nr	£3,500.00	£126,000.00
2.2	Pile caps; assume 6m x 2.0m x 1.5m; including excavation, partial backfill, disposal, formwork, reinforcement @ 50kg/m3	110	m3	£380.00	£41,800.00
2.3	Abutment/pier construction; assume dimensions - 5.7m x 1.5m x 5.5m; assumed reinforced concrete	280	m3	£500.00	£140,000.00
2.4	Supply and installation of pre-fabricated pedestrian/cycleway bridge; 4.5m width; includes design and delivery; assumes anti-slip surface treatment	560	m2	£2,500.00	£1,400,000.00
2.5	E/O for works above active railway lines	560	m2	£1,500.00	£840,000.00
2.6	E/O for Kirow support crane and wagon for installation of bridge	1	item	£150,000.00	£150,000.00
<b>3.0</b>	<b>Approach Ramp Structure</b>				
3.1	Sheet piled retaining walls to northern embankment area; to facilitate access ramp from station to bridge; assume maximum height of 15m	800	m2	£350.00	£280,000.00
3.2	Compacted imported fill to form approach ramps to bridge at northern embankment area; 6l/6J	500	m3	£70.00	£35,000.00
3.3	Footpath/cycleway construction to northern embankment area; includes all sub-bases; assume concrete block paving; includes geotextile membrane	300	m2	£220.00	£66,000.00
3.4	Supply and installation of pre-fabricated access ramp; 4.5m width; includes design and delivery; assumes anti-slip surface treatment	490	m2	£2,500.00	£1,225,000.00
3.5	Supply and installation of access steps on southern bank; assume 6.0m height, 16.0 m length; assume pre-fabricated unit to match access ramp and bridge; inclusive of railings.	1	nr	£50,000.00	£50,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting; includes associated cables etc; assume existing power infrastructure is present	1	item	£80,000.00	£80,000.00
4.2	Allowance for alterations to existing overhead lines	1	item	£100,000.00	£100,000.00
	<b>Sub Total</b>				<b>£5,093,800.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	35.0	%	£5,093,800.00	£1,782,830.00
5.2	Main Contractor's OH&P	10.0	%	£5,093,800.00	£509,380.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£7,386,010.00</b>
<b>6.0</b>	<b>Below the Line items</b>				
6.1	TOC's & FOC's	11.0	%	£7,386,010.00	£812,461.10
6.2	Possession Management	3.0	%	£7,386,010.00	£221,580.30
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,420,051.40</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£8,420,051.40	£1,263,007.71
	<b>Rounded Total (carried forward to summary)</b>				<b>£9,683,059.11</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency related to bridge structure	40.0	%	£5,128,382.91	£2,051,353.16
8.2	Contingency related to all other works	10.0	%	£4,554,676.20	£455,467.62
	<b>Rounded Total (carried forward to summary)</b>				<b>£12,189,879.89</b>

Table 30: Costs for Intervention 11a

Intervention 11b: New pedestrian and cycle bridge over the West Coast Mainline connecting Old Oak North to Willesden Junction - Lift Option					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Demolition &amp; Site Clearance</b>				
1.1	Demolition/removal of existing bridge structure	1	item	£100,000.00	£100,000.00
1.2	E/O for works above active railway lines	300	m2	£1,500.00	£450,000.00
1.3	Clearance to embankment to north of site; assume dense vegetation	1	m2	£10,000.00	£10,000.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	"Pile foundations; 600mm dia. CFA piles @ 1.8m centres; assumed 25m depth; 6 per abutment"	36	nr	£3,500.00	£126,000.00
2.2	Pile caps; assume 6m x 2.0m x 1.5m; including excavation, partial backfill, disposal, formwork, reinforcement @ 50kg/m3	110	m3	£380.00	£41,800.00
2.3	Abutment/pier construction; assume dimensions - 5.7m x 1.5m x 5.5m; assumed reinforced concrete	280	m3	£500.00	£140,000.00
2.4	Supply and installation of pre-fabricated pedestrian/cycleway bridge; 4.5m width; includes design and delivery; assumes anti-slip surface treatment	610	m2	£2,500.00	£1,525,000.00
2.5	E/O for works above active railway lines	610	m2	£1,500.00	£915,000.00
2.6	E/O for Kirow support crane and wagon for installation of bridge	1	item	£150,000.00	£150,000.00
<b>3.0</b>	<b>Approach Ramp Structure</b>				
3.1	Sheet piled retaining walls to northern embankment area; to facilitate access ramp from station to bridge; assume maximum height of 15m	800	m2	£350.00	£280,000.00
3.2	Compacted imported fill to form approach ramps to bridge at northern embankment area; 6I/6J	500	m3	£70.00	£35,000.00
3.3	Footpath/cycleway construction to northern embankment area; includes all sub-bases; assume concrete block paving; includes geotextile membrane	300	m2	£220.00	£66,000.00
3.5	Supply and installation of access steps on southern bank; assume 6.0m height, 16.0 m length; assume pre-fabricated unit to match access ramp and bridge; inclusive of railings.	1	nr	£50,000.00	£50,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting; includes associated cables etc; assume existing power infrastructure is present	1	item	£80,000.00	£80,000.00
4.2	Allowance for alterations to existing overhead lines	1	item	£100,000.00	£100,000.00
4.3	Allowance for supply and installation of lift to southern end of bridge; assume 4.0 x 4.0m	1	item	£400,000.00	£400,000.00
	<b>Sub Total</b>				<b>£4,468,800.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	35.0	%	£4,468,800.00	£1,564,080.00
5.2	Main Contractor's OH&P	10.0	%	£4,468,800.00	£446,880.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£6,479,760.00</b>
<b>6.0</b>	<b>Below the Line items</b>				
6.1	TOC's & FOC's	11.0	%	£6,479,760.00	£712,773.60
6.2	Possession Management	3.0	%	£6,479,760.00	£194,392.80
	<b>Rounded Total (carried forward to summary)</b>				<b>£7,386,926.40</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£7,386,926.40	£1,108,038.96
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,494,965.36</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency related to bridge structure	40.0	%	£5,508,572.91	£2,203,429.16
8.1	Contingency related to all other works	10.0	%	£2,986,392.45	£298,639.25
	<b>Rounded Total (carried forward to summary)</b>				<b>£10,997,033.77</b>

Table 31: Costs for Intervention 11b

### Intervention 11a: New pedestrian and cycle bridge over the West Coast Mainline connecting Old Oak North to Willesden Junction - Approach Ramp

Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Legal fees
Main Contractor's Prelims have been assumed at 35%.	Planning fees
Main Contractor's overheads and profit have been assumed at 10%.	Statutory fees
There are no abnormal ground conditions on site.	Finance charges
There are no contaminated materials on site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	<ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
Existing utilities exist and are adequate for new development.	
Abutments/piers are constructed from reinforced concrete.	
No diversions to existing utilities are required for these works.	Services diversions/upgrades, unless where clearly stated
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Works beyond boundary of the site
	Special equipment (unless stated)
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	Spoil disposed as contaminated unless stated
	Hostile vehicle mitigation furniture
	Costs associated with disruption to existing railway lines.
	Works required to improve compliance with NR / TfL standards for areas not directly impacted upon by works
	CPO / Land Transfer costs.
	Asbestos removal / treatment.

Table 32: Assumptions and exclusions for Intervention 11a

### Intervention 11b: New pedestrian and cycle bridge over the West Coast Mainline connecting Old Oak North to Willesden Junction - Lift Option

Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Legal fees
Main Contractor's Prelims have been assumed at 35%.	Planning fees
Main Contractor's overheads and profit have been assumed at 10%.	Statutory fees
There are no abnormal ground conditions on site.	Finance charges
There are no contaminated materials on site.	Surveys and subsequent works required as a result including:
There is adequate access to site.	<ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
Existing utilities exist and are adequate for new development.	
Abutments/piers are constructed from reinforced concrete.	
No diversions to existing utilities are required for these works.	Services diversions/upgrades, unless where clearly stated
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Works beyond boundary of the site
	Special equipment (unless stated)
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	Spoil disposed as contaminated unless stated
	Hostile vehicle mitigation furniture
	Costs associated with disruption to existing railway lines.
	Works required to improve compliance with NR / TfL standards for areas not directly impacted upon by works
	CPO / Land Transfer costs.
	Asbestos removal / treatment.

Table 33: Assumptions and exclusions for Intervention 11b

## 12 | 'All modes' bridge from Scrubs Lane to EMR

16.1 Intervention 12 is the proposal for a new 'all modes' connection from Scrubs Lane into the EMR site, spanning over the freight railway line, referred to as Laundry Bridge. The proposed design is shown in Figure 58. The need for this new access from Scrubs Lane will be driven by the existing capacity of the Hythe Road junction with Scrubs Lane and the impact that the increased industrial intensification on the Car Giant and EMR sites will have on this junction. This will be dependent on the type and scale of industrial intensification that could occur on these sites. The additional connection would provide additional resilience to support access into the two industrial sites.

16.2 The location of the east abutment of the proposed bridge is approximately 85m from the junction that would need to be constructed at Scrubs Lane. On the west side of the railway line it is expected that the approach ramp to the bridge would be sited in the current EMR site, following the perimeter boundary with the railway property.

16.3 The railway at this location has three tracks which join into the West Coast Mainline, though it is believed that this line is primarily for freight only. The railway is electrified by means of Overhead Line Equipment (OLE) suspended from masts on either side of the tracks.

16.4 The relatively short length of the approach ramp on the east side of the bridge, from the bridge abutment to the junction with Scrubs Lane results in a gradient that is steeper than the design requirement of 5%. As such separate ramps are required for pedestrians and cyclists at a lower gradient to enable an accessible route. These pedestrian and cycle ramps would have a 5% (1:20) gradient.

16.5 On the southern side of the bridge it is considered that there is sufficient room to construct the approach ramp with a compliant gradient, however care will be required to ensure that it does not unduly result in sterilising of the site or creating unusable parcels of land. When designing the structure and approach ramps careful consideration will be required to ensure that the highway is compliant in terms of both horizontal and vertical alignment.

16.6 As such, the proposed width of the bridge deck would be 11.00m, comprised of one 2.0m footway and one 2.0m segregated cycle lane with two 3.2m carriageways for traffic, and a 0.6m wide verge on the north side of the road. As such, the proposed width of the bridge deck would be 11.00m, comprised of one 2.00m footway and one 2.00m segregated cycle lane with two 3.20m carriageways for traffic, and a 0.60m wide verge on the north side of the road.

16.7 The alternative option to overcome the gradient issue would be to lower the OLE, which would enable the height of the bridge over the freight lines to be reduced. However, this would need to be agreed with Network Rail and would be challenging to deliver and would generate high costs.

16.8 For the purposes of this design and cost exercise, it has been assumed that a ramp is provided to enable an accessible link from Scrubs Lane into the EMR site.

16.9 It should also be noted that the railway is on a curve at this location, therefore investigations will also be needed into the Signalling and the Signal Sighting along this section of the route. Whilst the railway is comprised of three tracks, two of which join the West Coast Main Line there is also a line that provides a further link from the south to the west, adjacent to this. There is also a branch off the line which appears to be disused, but previously went to sidings in what is now the EMR site. It is assumed that this disused siding can be removed.

16.10 The set back of the bridge abutments from the nearest running rail of the tracks is ideally a minimum of 4.50m, however consideration is also required for the boundary of the Network Rail property. Whilst it results in a longer span for the bridge deck, it is prudent to set the bridge

abutments further back than the 4.50m from the railway, in order to provide safe working areas and separation of the works from the railway during construction. Therefore, in this case it would be suggested that the bridge abutments should be moved further away, with the face of the abutments 6.00m from the nearest rail track. This results in the bridge having a skew span of approximately 26.00m.

16.11 Given the nature of the bridge it is felt that the use of a steel and concrete composite multi-beam bridge structure, as per the proposals for Intervention 6a, would provide the most efficient solution. One of the key benefits being that the use of fabricated plate girders to form the bridge deck means that a thinner deck could be designed which would reduce the level of the bridge deck, in turn helping to reduce the gradient of the approach ramp from Scrubs Lane on the east side.

16.12 In order to minimise land take from the approach embankments it would be proposed that Reinforced Earth Walls are utilised, these are constructed using compacted layers of suitably graded fill material, wrapped in geotextile, which is faced by concrete blocks or panels. The facing walls are steeply angled, therefore resulting in a base of the structure that is only marginally wider than the highway that it is supporting.

16.13 The cost estimates for the new bridge is provided in table 34, and the assumptions and exclusions are indicated in table 35. The assumptions made and contingency amounts included are reflective of the preliminary stage of design.

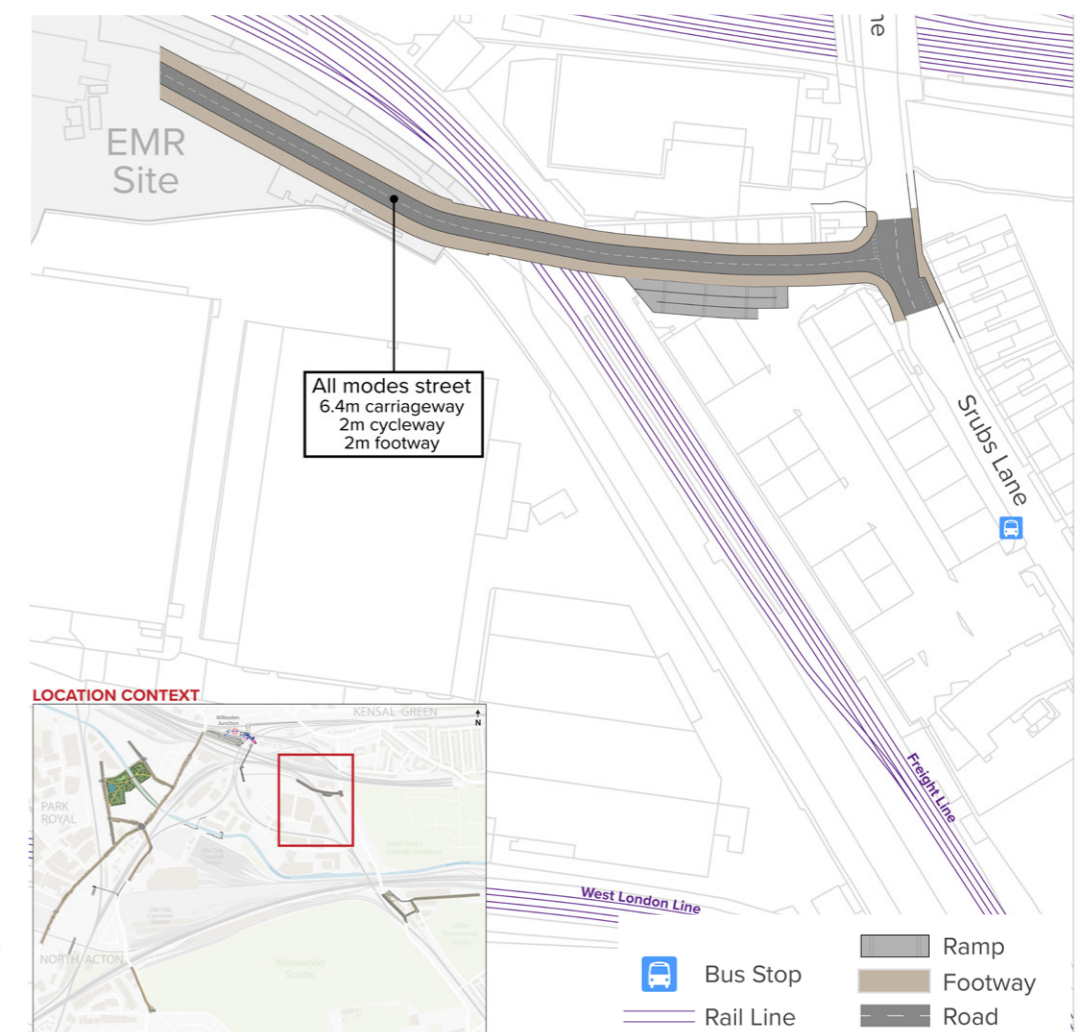


Figure 58: Design proposal for a new 'all modes' connection near Hythe Road

Intervention 12: 'All modes' bridge from Scrubs Lane to EMR					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Site Clearance &amp; Enabling Works</b>				
1.1	Allowance for general site clearance; including disposal	3,480	m2	£5.00	£17,400.00
<b>2.0</b>	<b>Bridge Structure</b>				
2.1	Pile foundations; 750mm dia. CFA piles @ 3m centres; assumed 25m depth; 12 per abutment	24	nr	£4,200.00	£100,800.00
2.2	Pile caps; 15.5m x 4.35 x 1.5m; including excavation, partial backfill, disposal, formwork, reinforcement @ 50kg/m3	200	m3	£380.00	£76,000.00
2.3	Abutment construction; dimensions - 7.6m x 15.5m x 1.5m	360	m3	£500.00	£180,000.00
2.4	Bridge Structure; multi beam bridge; reinforced concrete slab, 250mm thick; 3 sets of braced pairs of beams at 2.85m centres; parapets N1W1 1.40m high	630	m2	£5,000.00	£3,150,000.00
2.5	E/O for works above active railway lines	630	m2	£1,500.00	£945,000.00
2.6	Bridge carriageway surfacing; assume 125mm thick	260	m2	£50.00	£13,000.00
2.7	Bridge Footpaths/cycleways; assumed 250mm thickness; 50mm tarmac surface finish	360	m2	£120.00	£43,200.00
<b>3.0</b>	<b>Carriageway Structure</b>				
3.1	Compacted imported fill to form approach ramps to bridge; 6N/6P	12,200	m3	£70.00	£854,000.00
3.2	Carriageway construction; includes all sub-bases; includes kerbs to both sides; macadam surface finish	1,540	m2	£130.00	£200,200.00
3.3	Allowance for line markings to carriageway	1	item	£5,000.00	£5,000.00
3.4	Footpath/cycleway construction; includes all sub-bases; assume concrete block paving	1,920	m2	£200.00	£384,000.00
3.5	Precast parapet beam with 1.4m high steel N2 parapet; to approach ramps	420	m	£250.00	£105,000.00
3.6	Precast vertical retaining wall panels to reinforced earth embankments; assume 140mm thickness	1,640	m2	£400.00	£656,000.00
<b>4.0</b>	<b>Pedestrian/Cycle Ramp Structure</b>				
4.1	Ground beam/ strip foundation to precast concrete retaining structure; assume 750mm width, depth unknown	140	m	£150.00	£21,000.00
4.2	Precast concrete retaining wall structure; 500mm thick	600	m2	£500.00	£300,000.00
4.3	Compacted imported fill to form approach ramps to bridge; 6I/6J	1,700	m3	£70.00	£119,000.00
4.4	Footpath/cycleway construction; includes all sub-bases; assume concrete block paving; includes geotextile membrane	480	m2	£220.00	£105,600.00
4.5	Guard rail to retaining wall structure; assume 1400mm height	110	m	£175.00	£19,250.00
<b>5.0</b>	<b>Installation of New Structures and Street Furniture</b>				
5.1	Allowance for site and street furniture; signage, litter bins etc.	1	item	£15,000.00	£15,000.00
<b>6.0</b>	<b>MEP</b>				
6.1	Allowance for installation of new external street lighting; includes associated cables	1	item	£120,000.00	£120,000.00
6.2	Allowance for installation of new drainage system	1	item	£120,000.00	£120,000.00
6.3	Allowance for installation of strategic telecoms	1	item	£20,000.00	£20,000.00
6.4	Allowance for installation of gas mains	1	item	£50,000.00	£50,000.00
	<b>Sub Total</b>				<b>£7,619,450.00</b>
<b>7.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
7.1	Main Contractor's Preliminaries	20.0	%	£7,619,450.00	£1,523,890.00
7.2	Main Contractor's OH&P	5.0	%	£7,619,450.00	£380,972.50
	<b>Rounded Total (carried forward to summary)</b>				<b>£9,520,000.00</b>
<b>8.0</b>	<b>Professional Fees</b>				
8.1	Professional Fees	15.0	%	£9,520,000.00	£1,428,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£10,948,000.00</b>
<b>9.0</b>	<b>Contingency</b>				
9.1	Contingency	40.0	%	£10,948,000.00	£4,379,200.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£15,327,200.00</b>

Table 34: Costs for Intervention 12

Intervention 12: 'All modes' bridge from Scrubs Lane to EMR	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 20.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated
The site has access to existing power supplies.	Works beyond boundary of the site
All rates for hard landscaping include for associated excavation and sub-base layers.	Special equipment (unless stated)
Abutments/piers are constructed from reinforced concrete.	Utilities charges
No diversions to existing utilities are required for these works.	Disconnections of existing electrical equipment to be removed
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Main contractor pre-construction fee
No junctions require signalised lights.	No allowances have been made for temporary accommodation whilst works are carried out
No diversions to existing utilities are required unless stated.	Spoil disposed as contaminated (unless stated)
Alterations to existing street lighting may be required due to footpath/ carriageway realignment.	Hostile vehicle mitigation furniture
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Costs associated with disruption to existing railway lines.

Table 35: Assumptions and exclusions for Intervention 12

# 13 | Pedestrian and cycle link from North Pole Depot to Scrubs Lane

17.1 Interventions 13, 14 and 15 are proposed to provide access to the North Pole Depot development area.

17.2 Intervention 13 is a new pedestrian and cycle shared use route linking the North Pole Depot site to Scrubs Lane. The proposed route is adjacent to an existing shared use route within the North Pole Depot site and as such the design provides an initial flat section to allow pedestrians and cyclists to manoeuvre with ease between the two paths. A second flat section is provided in the design at the top of the shared use route alignment at the intersection with Scrubs Lane. In between these points the shared route is on a gradient due to the level differences between Scrubs Lane and Mitre Way.

17.3 The proposed design is indicated in Figure 59. The proposed cross-section has been specified from LTN 1/20 Cycle Infrastructure Design and the LCDS. The design assumes that the route will have cycle flows of up to 300 cyclists an hour, resulting in a shared space cross-section width of 3.0m.

17.4 Please note that more detailed work to design the location of required signage, lighting and street furniture has not been undertaken but there is sufficient space for these items to be provided within the space available.

17.5 The pavement construction of the shared use route is assumed to be a 60mm layer of asphalt concrete base course with a coarse stone size, overlain by a 20mm smooth asphalt riding surface. This is based on information from Section 15.2.13 of LTN 1/20.

17.6 The horizontal and vertical geometry has been specified from LTN 1/20. Table 5/7 of LTN 1/20 specifies the minimum horizontal radii for various design speeds. Due to the nature of intervention 6 as a shared space route for pedestrians and cyclists, the design speed has been assumed to be 10kph, resulting in a minimum radius of 4m. Table 5-8 of LTN 1/20 specifies the maximum lengths for gradients. The proposed alignment has a maximum gradient of 3.42% with a sag K value of 5 and a crest K value of 6 in accordance with Section 5.9.5 of LTN 1/20.16.6

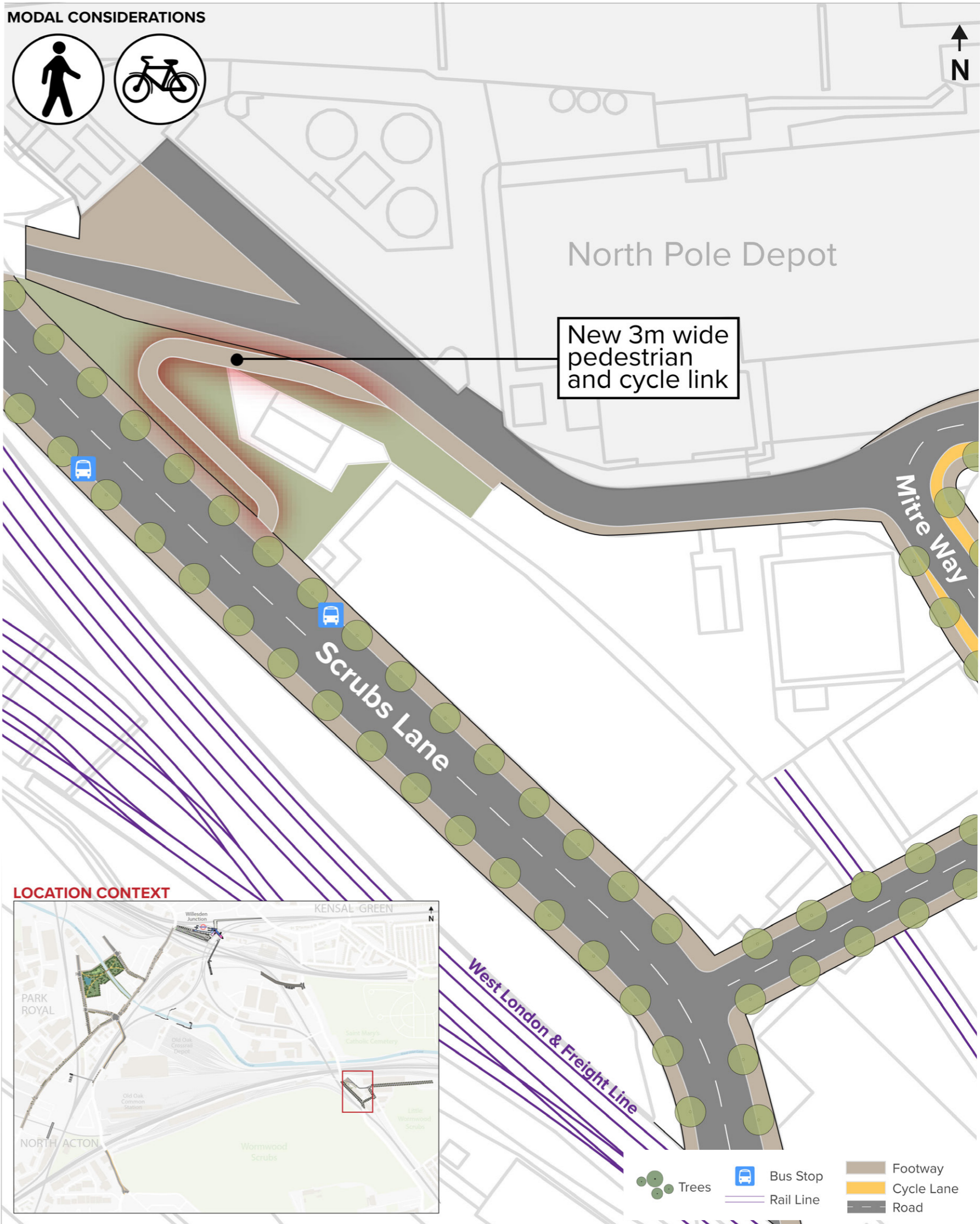


Figure 59: Intervention 13, pedestrian and cycle link from North Pole Depot to Scrubs Lane





Figure 60: VU.City image showing elevations.

17.7 The elevation data used to assess the feasibility was obtained using Vu City. Figure 60 shows the levels that were taken from Vu City in the vicinity of the proposed new route. At the top of Mitre Way the elevation of the pedestrian and cycle link is 25.0m AOD, and at the junction with Scrubs Lane it is 26.5m AOD. The location of the access where the pedestrian and cycle route starts on Scrubs Lane cannot be located further north because Scrubs Lane is rising in height and this would make an accessible pedestrian and cycle connection very challenging to deliver.

17.8 Please note that no road safety audit has been undertaken on the proposed layouts/design.

17.9 Visibility for the new shared route at the intersection with Scrubs Lane would achieve 11m left/right 2.4m back from the give way point. Along the new proposed shared route, a forward visibility of 11m must also be maintained.

17.10 The Digital Map obtained through Enviro check was used to review the location of existing utilities. Figure 61 highlights the sections where diversionary works may be required for this intervention. Any diversionary/protection works and any required special measures should be in accordance with the C2 responses provided by the identified utility companies. For this intervention, these are UK Power Networks (UKPN), Openreach -[British Telecommunications], Vodafone, Cadent Gas Ltd and Thames Water – Sewerage.

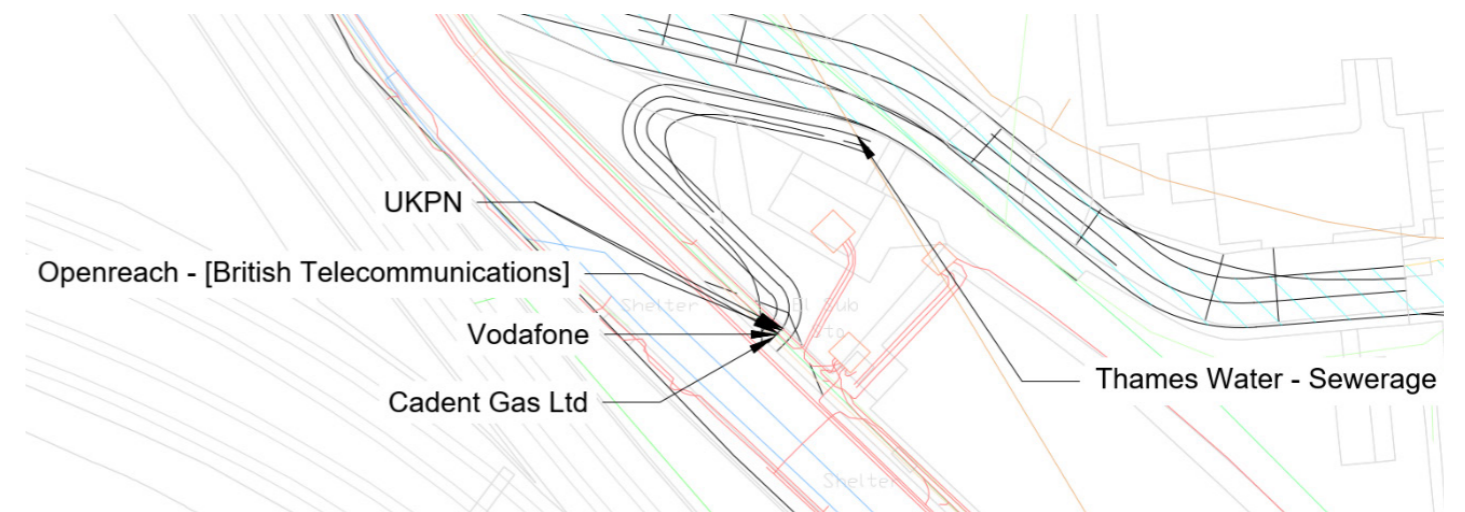


Figure 61: Illustration of the utilities under the proposed shared use path

17.11 The cost estimates for the new pedestrian and cycle route is provided in table 36, and the assumptions and exclusions are indicated in table 37. The assumptions made and the contingency amounts included are reflective of the preliminary stage of design.

Intervention 13: Pedestrian and cycle link from North Pole Depot to Scrubs Lane					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for general site clearance; assume entire embankment area	700	m2	£5.00	£3,500.00
1.2	Allowance for reprofiling/regrading to embankment required for cycleway installation; extents of works required unknown	1	item	£25,000.00	£25,000.00
1.3	Allowance for retaining walls/structures associated constructing cycleway to embankment.	1	item	£200,000.00	£200,000.00
1.4	Allowance for alterations to existing retaining wall surrounding substation area	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Hard Landscaping</b>				
2.1	Cycleway construction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving; assumed 4m width	270	m2	£150.00	£40,500.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for site and street furniture	1	item	£10,000.00	£10,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for external lighting to cycleway; includes associated cables etc	1	item	£20,000.00	£20,000.00
	<b>Sub Total</b>				<b>£349,000.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	12.5	%	£349,000.00	£43,625.00
5.2	Main Contractor's OH&P	5.0	%	£349,000.00	£17,450.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£410,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£410,000.00	£61,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£471,500.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	10.0	%	£471,500.00	£47,150.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£518,650.00</b>

Table 36: Costs for Intervention 13

Intervention 13: Pedestrian and cycle link from North Pole Depot to Scrubs Lane	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated
Site clearance is required to the entire embankment area.	Works beyond boundary of the site
Works are completed within normal working hours.	Special equipment (unless stated)
The site has access to existing power supplies.	Utilities charges
No below ground drainage works are required for the cycleway.	Disconnections of existing electrical equipment to be removed
No diversions to existing utilities are required due to surface depth required for cycleway.	Main contractor pre-construction fee
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 37: Assumptions and exclusions for Intervention 13

## 14 | New 'all modes' street from Scrubs Lane to Mitre Way

18.1 Intervention 14 is the provision of a new 'all modes' street from Scrubs Lane to Mitre Way. The proposed design is shown in Figure 62. Two give way junctions are provided at Scrubs Lane and at Mitre Way which is considered acceptable given the low expected traffic volumes using the street.

18.2 The alignment shown is indicative. The exact alignment and land take is dependent on further design and discussions with land owners and would be secured through the delivery of relevant site allocations. The levels at this location are suitable for providing an accessible street for pedestrians and cyclists as well as vehicles, creating a direct street that does not require a ramp or switchback facility.

18.3 There is an existing unused rail track that would need to be removed in order for this new street to be delivered.

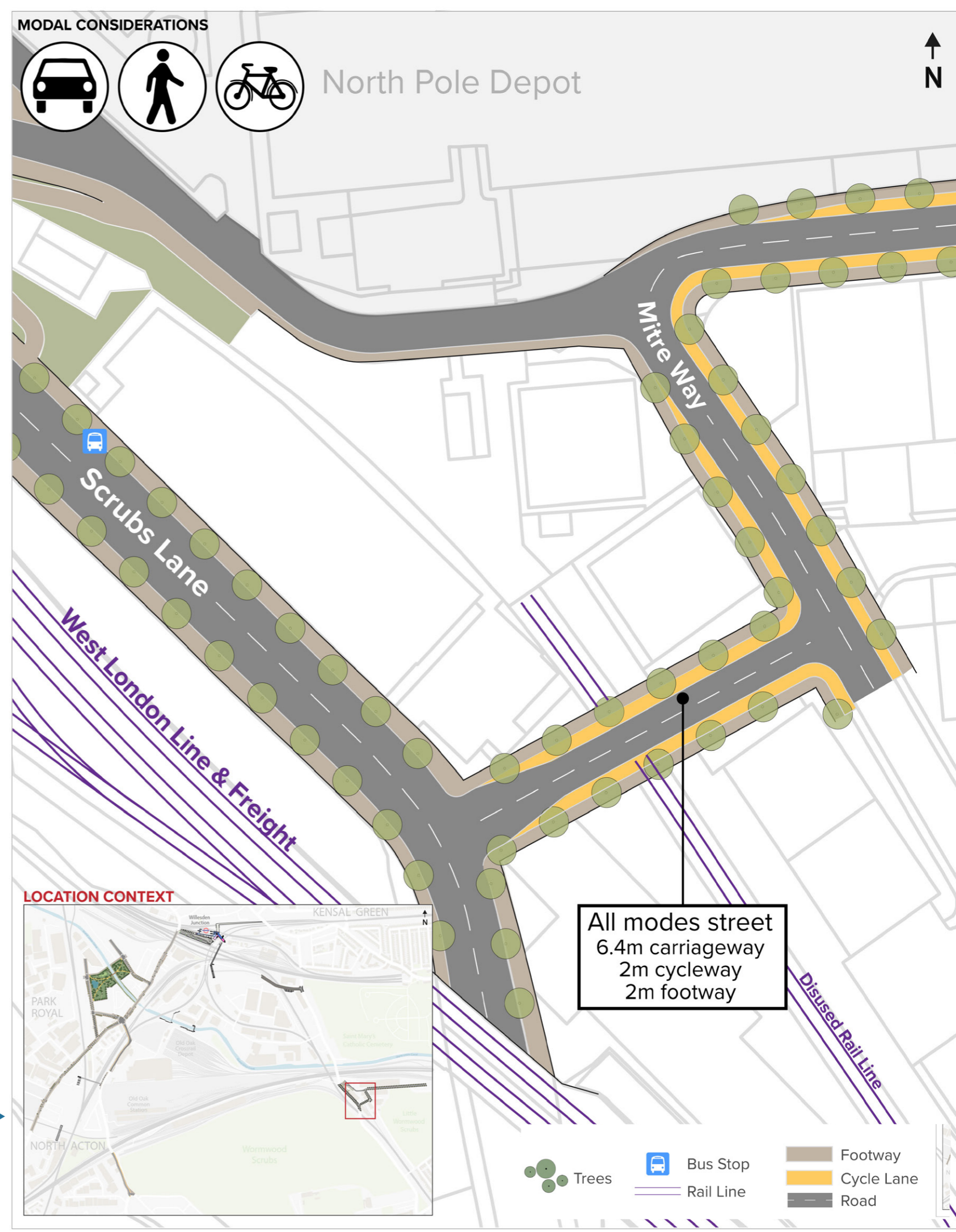


Figure 62: Intervention 14, new 'all modes' street from Scrubs Lane to Mitre Way

18.4 The proposed cross-section, seen in Figure 63, has been developed in accordance with Manual for Streets (MfS), Transport for London (TfL) Streetscape Guidance, the London Cycling Design Standards (LCDS) guidance and Local Transport Note (LTN) 1/20. The carriageway consists of two 3.2m lanes, a 2m wide segregated cycle lane is provided in each direction, and a 2m minimum footway is provided on either side of the cycle lane. Please note that more detailed work to design the location of required signage, lighting and street furniture has not been undertaken but there is sufficient space for these items to be provided within the space available.

18.5 Where widening or reinstating of pavement construction is required, the build-up is proposed to be in accordance with LTN 1/20 and Streetscape Guidance. For the carriageway and on-street parking, an asphalt construction is assumed to have a total construction depth of 620mm based on a 3% CBR with an assumed Million Standard Axles (MSA) value of 1.0. The structural design of this pavement is in accordance with DMRB CD 266. Cycleway construction has been specified from LTN 1/20 Section 15.2.13, where the base course is recommended to be a 60mm layer of asphalt concrete with a coarse stone size, overlain by a 20mm smooth asphalt riding surface. For the footpath construction, Streetscape Guidance recommends 900x600x50mm concrete slabs.

18.6 Visibility splays on junctions are taken 2.4m back, spanning 25m left and right in accordance with the proposed design speed of 20mph (based on requirements from Manual for Streets 2), unobstructed visibility shall be provided within this envelope. The visibility on the approach to the junction is taken 15m back from the give way line, unobstructed visibility shall be provided within this envelope (based on requirements within CD123 Rev 2). For bends within proposed roads, a composite visibility splay of distance 25m has been checked (based on requirements from Manual for Streets 2).

18.7 The Digital Map obtained through Enviro check was used to review the location with utilities. It is assumed that any utilities located within the existing public highway will have a minimum level of cover as defined within current guidance. Current proposals associated with improvements to the public highway do not intend to reduce existing levels. Introduction of cycle infrastructure will be provided by relocation of existing road space. Based upon these assumptions, there will be minimal requirements for diversionary works, but the raising or lowering of service covers to finished surface levels and replacement of existing gully gratings to 'cycle friendly' gratings should be included. If an existing utility currently within the carriageway is beneath a kerb line as a result of changes in carriageway width, this may necessitate diversionary works (utilities running parallel to kerb line not crossing). Any diversionary/protection works and any required special measures should be in accordance with the C2 responses provided by the identified utility companies.

18.8 As well as existing utilities that need to be diverted, the cost of this intervention takes account of the need for this new street to incorporate the running of strategic telecoms, gas, electricity and Sustainable Drainage Systems (SuDS).

18.9 The cost estimates for the new 'all modes' street is provided in table 38, and the assumptions and exclusions are indicated in table 39. The assumptions made and the contingency amounts included are reflective of the preliminary stage of design.

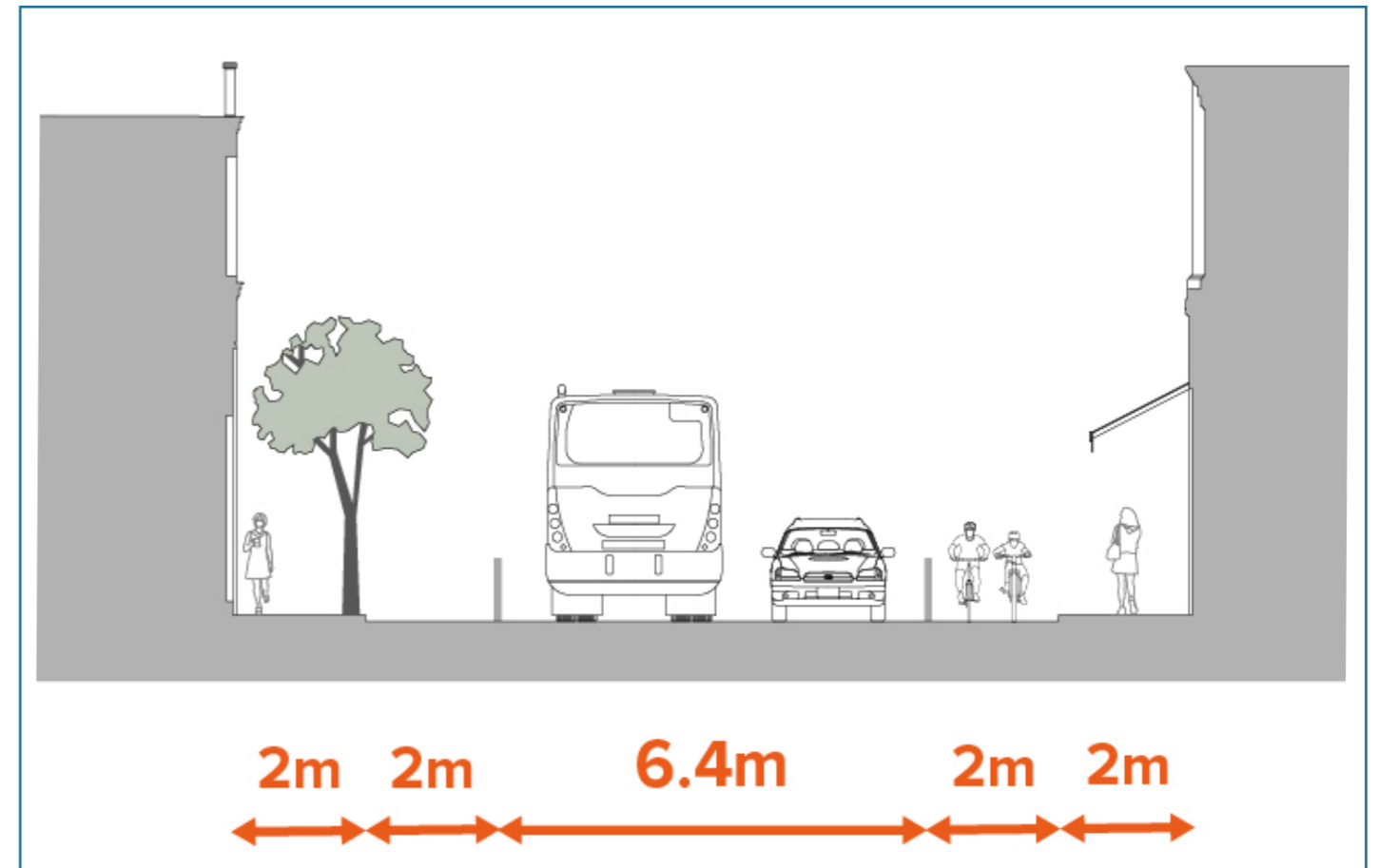


Figure 63: Proposed cross section of 'all modes' street from Scrubs Lane to Mitre Way

Intervention 14: 'All modes' street from Scrubs Lane to Mitre Way					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for general site clearance; including disposal	650	m2	£5.00	£3,250.00
1.2	Allowance for removal of existing railway track; assume no longer in use	1	item	£10,000.00	£10,000.00
<b>2.0</b>	<b>Hard Landscaping</b>				
2.1	Carriageway construction; excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	400	m2	£150.00	£60,000.00
2.2	Footpath construction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving	250	m2	£220.00	£55,000.00
<b>3.0</b>	<b>Soft Landscaping</b>				
3.1	Allowance for street greening to pedestrian footpath areas; assumed trees planted to tree pits	1	item	£5,000.00	£5,000.00
<b>4.0</b>	<b>Installation of New Structures and Street Furniture</b>				
4.1	Allowance for installation of site and street furniture; railings, litter bins, bus shelters etc.	1	item	£5,000.00	£5,000.00
<b>5.0</b>	<b>MEP</b>				
5.1	Allowance for installation of new external street lighting; includes associated cables	1	item	£20,000.00	£20,000.00
5.2	Allowance for installation of new drainage system	1	item	£20,000.00	£20,000.00
	<b>Sub Total</b>				<b>£178,250.00</b>
<b>6.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
6.1	Main Contractor's Preliminaries	12.5	%	£178,250.00	£22,281.25
6.2	Main Contractor's OH&P	5.0	%	£178,250.00	£8,912.50
	<b>Rounded Total (carried forward to summary)</b>				<b>£210,000.00</b>
<b>7.0</b>	<b>Professional Fees</b>				
7.1	Professional Fees	15.0	%	£210,000.00	£31,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£241,500.00</b>
<b>8.0</b>	<b>Contingency</b>				
8.1	Contingency	10.0	%	£241,500.00	£24,150.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£265,650.00</b>

Table 38: Costs for Intervention 14

Intervention 14: 'All modes' street from Scrubs Lane to Mitre Way	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated
Works are completed within normal working hours.	Works beyond boundary of the site
All rates for hard landscaping include for associated excavation and sub-base layers.	Special equipment (unless stated)
Street greening generally allows for planting of trees in tree pits at roughly 20m centres.	Utilities charges
The site has access to existing power supplies.	Disconnections of existing electrical equipment to be removed
No junctions require signalised lights.	Main contractor pre-construction fee
No diversions to existing utilities are required for these works.	No allowances have been made for temporary accommodation whilst works are carried out
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 39: Assumptions and exclusions for Intervention 14

# 15 | Wormwood Scrubs Street

19.1 Intervention 15 is the formalisation of an existing informal road along the southern boundary of the North Pole Depot site into an 'all modes' street which will join with Mitre Way to the west and Ladbrooke Grove to the east. The proposed design is indicated in Figure 64. Note that the street has only been designed and costed to the extent of the OPDC boundary.

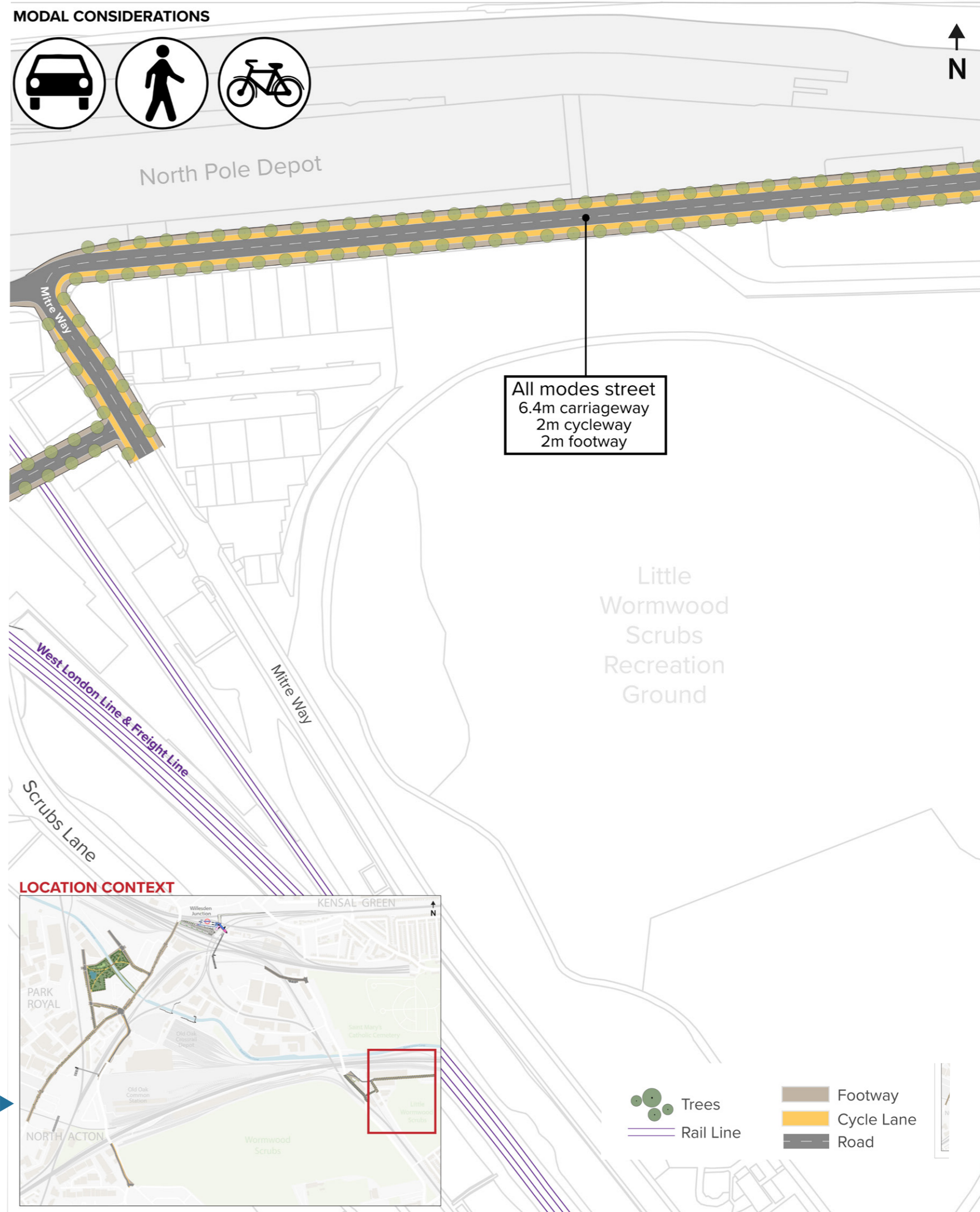


Figure 64: Intervention 15, Wormwood Scrubs Street

19.2 The proposed cross-section, seen in Figure 65, has been developed in accordance with Manual for Streets (MfS), Transport for London (TfL) Streetscape, the London Cycling Design Standards (LCDS) guidance and Local Transport Note (LTN) 1/20. The carriageway consists of two 3.2m lanes, a 2m wide segregated cycleway in each direction, and a 2m minimum footway on either side. Please note that more detailed work to design the location of required signage, lighting and street furniture has not been undertaken but there is sufficient space for these items to be provided within the space available.

19.3 Where widening or reinstating of pavement construction is required, the build-up is proposed to be in accordance with LTN 1/20 and Streetscape Guidance. For the carriageway and on-street parking, an asphalt construction is assumed to have a total construction depth of 620mm based on a 3% CBR with an assumed Million Standard Axles (MSA) value of 1.0. The structural design of this pavement is in accordance with DMRB CD 266. Cycleway construction has been specified from LTN 1/20 Section 15.2.13, where the base course is recommended to be a 60mm layer of asphalt concrete with a coarse stone size, overlain by a 20mm smooth asphalt riding surface. For the footpath construction, TfL Streetscape Guidance recommends 900x600x50mm concrete slabs. Please note that no road safety audit has been undertaken on the proposed layouts/ design.

19.4 Visibility splays on junctions are taken 2.4m back, spanning 25m left and right in accordance with the proposed design speed of 20mph (based on requirements from Manual for Streets 2), unobstructed visibility shall be provided within this envelope. The visibility on the approach to the junction is taken 15m back from the give way line, unobstructed visibility shall be provided within this envelope (based on requirements within CD123 Rev 2). For bends within proposed roads, a composite visibility splay of distance 25m has been checked (based on requirements from Manual for Streets 2).

19.5 The Digital Map obtained through Enviro check was used to review clashes the location of existing utilities. It is assumed that any utilities located within the existing public highway will have a minimum level of cover as defined within current guidance. Current proposals associated with improvements to the public highway do not intend to reduce existing levels. Introduction of cycle infrastructure will be provided by relocation of existing road space. Based upon these assumptions, there will be minimal requirements for diversionary works, but the raising or lowering of service covers to finished surface levels and replacement of existing gully gratings to 'cycle friendly' gratings should be included. If an existing utility currently within the carriageway is beneath a kerbline as a result of changes in carriageway width, this may necessitate diversionary works (utilities running parallel to kerbline not crossing). Any diversionary/protection works, and any required special measures should be in accordance with the C2 responses provided by the identified utility companies.

19.6 As well as existing utilities that need to be diverted, the cost of this intervention takes account of the need for this new street to incorporate the running of strategic telecoms, gas, electricity and Sustainable Drainage Systems (SuDS).

19.7 The cost estimates for the new 'all modes' street is provided in table 40, and the assumptions and exclusions are indicated in table 41. The assumptions made and the contingency amounts included are reflective of the preliminary stage of design.

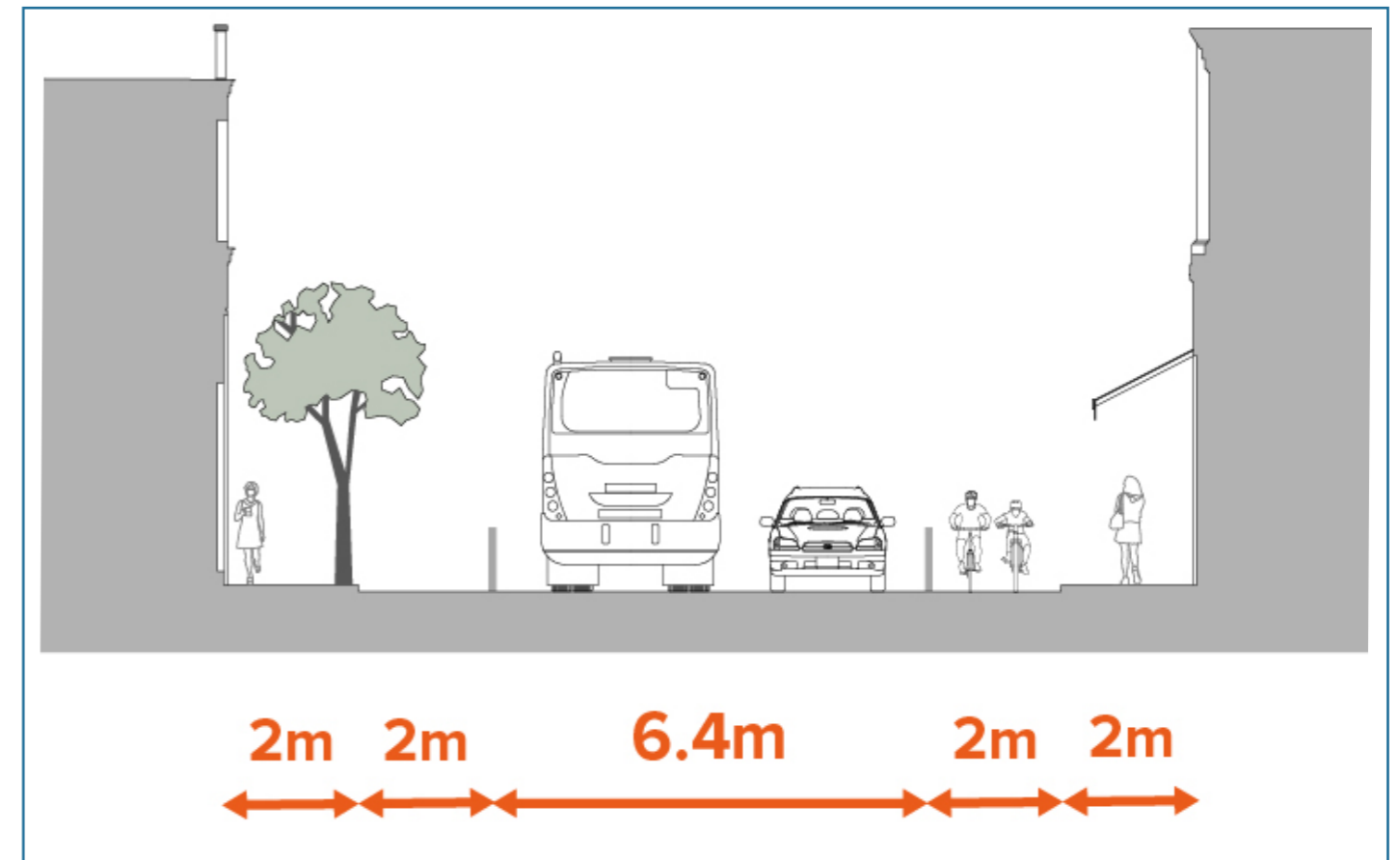


Figure 65: Proposed cross section of Wormwood Scrubs Street

Intervention 15: Wormwood Scrubs Street					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Hard Landscaping</b>				
1.1	Carriageway reconstruction; excavate 650mm; includes all sub-bases; includes kerbs to both sides; macadam surface finish	3,060	m2	£150.00	£459,000.00
1.2	Footpath reconstruction; excavate to reduce ground level; includes all sub-bases; assume concrete block paving	2,050	m2	£220.00	£451,000.00
1.3	Cycleway reconstruction; excavate to reduce ground level; includes all sub-bases; assume coloured asphalt surface finish	1,510	m2	£150.00	£226,500.00
<b>2.0</b>	<b>Soft Landscaping</b>				
2.1	Allowance for street greening to pedestrian footpath areas; assumed trees planted to tree pits	1	item	£41,000.00	£41,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for installation of site and street furniture; railings, litter bins, bus shelters etc. to replace existing	1	item	£30,000.00	£30,000.00
<b>4.0</b>	<b>MEP</b>				
4.1	Allowance for alterations to external street lighting	1	item	£70,000.00	£70,000.00
4.2	Allowance for alterations to existing drainage to carriageways/footways/ cycleways	1	item	£70,000.00	£70,000.00
	<b>Sub Total</b>				<b>£1,347,500.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	12.5	%	£1,347,500.00	£168,437.50
5.2	Main Contractor's OH&P	5.0	%	£1,347,500.00	£67,375.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,580,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£1,580,000.00	£237,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,817,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	10.0	%	£1,817,000.00	£181,700.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,998,700.00</b>

Table 40: Costs for Intervention 15

Intervention 15: Wormwood Scrubs Street	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 12.5 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no works to be demolished on the existing site.	Surveys and subsequent works required as a result including: <ul style="list-style-type: none"> <li>• Existing building site investigation</li> <li>• Services</li> <li>• Drainage / CCTV</li> <li>• TPOs</li> <li>• Asbestos</li> </ul>
There is adequate access to site.	Services diversions/upgrades, unless where clearly stated
Works are completed within normal working hours.	Works beyond boundary of the site
All rates for hard landscaping include for associated excavation and sub-base layers.	Special equipment (unless stated)
Street greening generally allows for planting of trees in tree pits at roughly 20m centres.	Utilities charges
Replacement of site/street furniture will be done on a like for like basis.	Disconnections of existing electrical equipment to be removed
The site has access to existing power supplies.	Main contractor pre-construction fee
No junctions require signalised lights.	No allowances have been made for temporary accommodation whilst works are carried out
No diversions to existing utilities are required unless stated.	Spoil disposed as contaminated (unless stated)
Alterations to existing street lighting may be required due to footpath/carriageway realignment.	Hostile vehicle mitigation furniture
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Adoption Costs

Table 41: Assumptions and exclusions for Intervention 15



## Geotechnical and Geo Environmental study

20.1 An initial assessment has been undertaken of the geotechnical and geo-environmental risks associated with the delivery of the interventions explored based on a high-level desk study utilising the freely available information that is that exists for the site. The study provided the following conclusions which have been considered for the costing of the interventions.

### 20.2 Geotechnical

- A 3ha area of Worked Ground is recorded within the western area of the site. Evidence from the BGS boreholes indicate that it is likely to be of significant thickness, ranging from 1-3m thick at its edges and up to 7-10m in areas near its centre.
- Made Ground is also likely to form an almost continuous layer across the majority of the remainder of the site and will probably range from 0.5m to 2.0m thick, there are also likely to be localised areas up to 4m thick. The engineering descriptions of Made Ground indicate the unit is significantly variable in its make-up, with a mixture of cohesive and granular materials recorded, together with a variety of minor constituents.
- The London Clay Formation underlies the entire site and has a minimum thickness of at least 30.00m. It is typically described as very stiff thinly laminated closely to extremely closely fissured clay that is likely to have a weathered zone at its top that is of variable thickness and contain layers and lenses of mudstone/ siltstone or pyritised nodules.
- Groundwater information was limited but does indicate that shallow perched water could be present in the Made Ground and that there is also likely to be localised areas of groundwater within the London Clay associated with areas of relatively higher permeability, such as siltstone bands.
- With the exception of the area of Worked Ground it is likely that shallow foundations will be appropriate for most lightly loaded structures and low-rise buildings (< 3 storeys in height). It is suggested that 1m thick square pad foundations between 2m x 2m and 4m x 4m, constructed from appropriately reinforced concrete with a minimum embedment depth of 1m or below the base of Made Ground should cover most requirements. Within the area of Worked Ground it is likely that even lightly loaded structures could require piled foundations, with piles up to 15-20m in length with diameters between 600mm and 900mm likely to be appropriate for most structures
- Infrastructure structures such a bridges and building structures over 3 storeys in height are likely to require piled foundations. It would be possible to erect the piled foundations in the London Clay, with piles up to 20-30m of diameters between 600mm and 900mm likely to be appropriate for most structures. Foundations for significant structures or structures without the ordinary load cases will require further consideration and have not been looked at as part of this report.
- The construction of basements in this area is feasible, though careful consideration would have to be given to the surrounding infrastructure and structures that could be affected by their construction and the permissions that may need to be gained by other stakeholders to allow their construction. Thickness of Made Ground, groundwater levels as well as the effect of heave from both the London Clay and potentially the Made Ground will also need to be taken in to account.

- Subgrade for pavements and areas of hard standing, it is likely that the Made Ground will be present at this level for the majority of cases with London Clay present elsewhere. This will could lead to a highly variable mix of properties across areas with a suggested California Bearing Ratio (CBR) value of 5% if granular or 2.5% if cohesive. Should larger zones of poor-quality material these may require ground improvement or local excavation and replacement. Localised or spots would require remediation as well.

### 20.3 Contaminated Land

- Risk from contamination has been initially assessed as medium to high for the entire site. This is due to the significant amount of Made Ground likely to be present on site as well as the land uses identified within the site boundary and the immediate surrounding area. These include various heavy industrial land uses, such as railway yards, depots and metal works within the proposed site boundary as well as a gas works present close by. The presence of these land uses may have resulted in contamination of the underlying ground. Contamination may include, but not be limited to, heavy metals, hydrocarbons, volatile organic compounds, cyanide and asbestos.
- The main anticipated risks relate to potential presence of ground gas and vapours and soil based contamination which could pose a risk to end users (residential, commercial and users of the park) and surface waters.
- Asbestos was encountered at one exploratory hole location in the north west area of the site, it is therefore possible to be encountered elsewhere at the site.

# 3

## Generalised Costs

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21.1 As well as the designs and costs for the specific interventions outlined in section 2, this section provides a number of generalised costs for interventions. This includes high level costs for providing new streets or major street upgrades, new pedestrian and cycle streets, modest interventions to existing streets, major junction upgrades, modest junction improvements, new cycle lanes on existing carriageways, upgraded footways and cycle paths and hard and soft landscaping.

21.2 Mott MacDonald has experience designing and delivering new and enhanced infrastructure and the costs shown have been derived from this experience. Tables 42- 47 indicate the generalised costs that have been provided with a description of the elements that have been considered for each generalised cost item. Figures 66-75 illustrate some of these interventions. Table 48 indicates the assumptions and exclusions that have been made. The generalised costs provided will be applied to a number of the infrastructure items within OPDC's Infrastructure Delivery Plan.

Generalised Costs		
Elemental Contents	Unit	Price
<b>Major junction upgrades / realignment</b>	<b>per item</b>	<b>£650,000.00</b>
Relocation of signal heads and associated infrastructure to reflect revised arrangement		
Introduction of new cycle specific kerb to delineate carriageway edge		
Realignment of existing kerb to delineate footway edge		
Relocation of street furniture to reflect revised kerb line		
Resurfacing of retained carriageway		
Break out and reinstate surfacing to hybrid/stepped cycle lane		
Mitigation of existing utilities		
Resurfacing of retained footway.		
Relocation and introduction of surface water gullies and associated connection to existing drainage network		
Traffic signs & road markings to reflect revised arrangement		
Signalised crossing provision for pedestrians and cyclists		
<b>Modest junction improvements including ped / cycle interventions</b>	<b>per item</b>	<b>£400,000.00</b>
Relocation of signal heads and associated infrastructure to reflect revised arrangement		
Introduction of new cycle specific kerb to delineate carriageway edge		
Realignment of existing kerb to delineate footway edge		
Relocation of street furniture to reflect revised kerb line		
Resurfacing of retained carriageway		
Break out and reinstate surfacing to hybrid/stepped cycle lane		
Mitigation of existing utilities		
Resurfacing of retained footway.		
Relocation and introduction of surface water gullies and associated connection to existing drainage network		
Traffic signs & road markings to reflect revised arrangement		
Signalised crossing provision for pedestrians and cyclists		

Table 42: Generalised costs related to major and modest junction upgrades and improvements

Generalised Costs			
Elemental Contents	Unit	Price	
<b>Modest interventions to existing streets</b>	<b>per m2</b>	<b>£160.00</b>	
Reduction in carriageway width			
Provision of new hybrid/stepped cycle lane to either edge of carriageway			
Introduction of new cycle specific kerb to delineate carriageway edge			
Realignment of existing kerb to delineate footway edge			
Relocation of street furniture to reflect revised kerb line			
Resurfacing of retained carriageway			
Break out and reinstate surfacing to hybrid/stepped cycle lane			
Mitigation of existing utilities			
Resurfacing of retained footway			
Relocation and introduction of surface water gullies and associated connection to existing drainage network			
Traffic signs & road markings to reflect revised arrangement			

Table 43: Generalised costs related to modest intervention to existing streets



Figure 66: Rendering illustrating an existing street



Figure 67: Rendering illustrating modest interventions to an existing street.

Generalised Costs			
Elemental Contents	Unit	Price	
<b>New streets or major street upgrades, including:</b>	<b>per m2</b>	<b>£320.00</b>	
General site clearance			
Disposal of unacceptable material			
Excavation & disposal of material approx. 1.0m deep			
Carriageway construction including capping, sub-base, base, binder course & surface course			
Kerb construction			
Provision of new and mitigation of existing utilities			
Lighting			
Street Furniture			
Traffic signs and road markings			
Introduction of surface water gullies and associated connecting to existing drainage network			
<b>New pedestrian / cycle street</b>	<b>per m2</b>	<b>£280.00</b>	
General site clearance			
Disposal of unacceptable material			
Excavation & disposal of material approx. 1.0m deep			
Ped / cycle street construction including capping, sub-base, base, binder course & surface course			
Provision of new and mitigation of existing utilities			
Signs and marking			
Introduction of surface water gullies and associated connection to existing drainage network			

Table 44: Generalised costs related to new 'all modes' streets or major street upgrades as well as new pedestrian and cycle streets



Figure 68: Rendering illustrating a new street

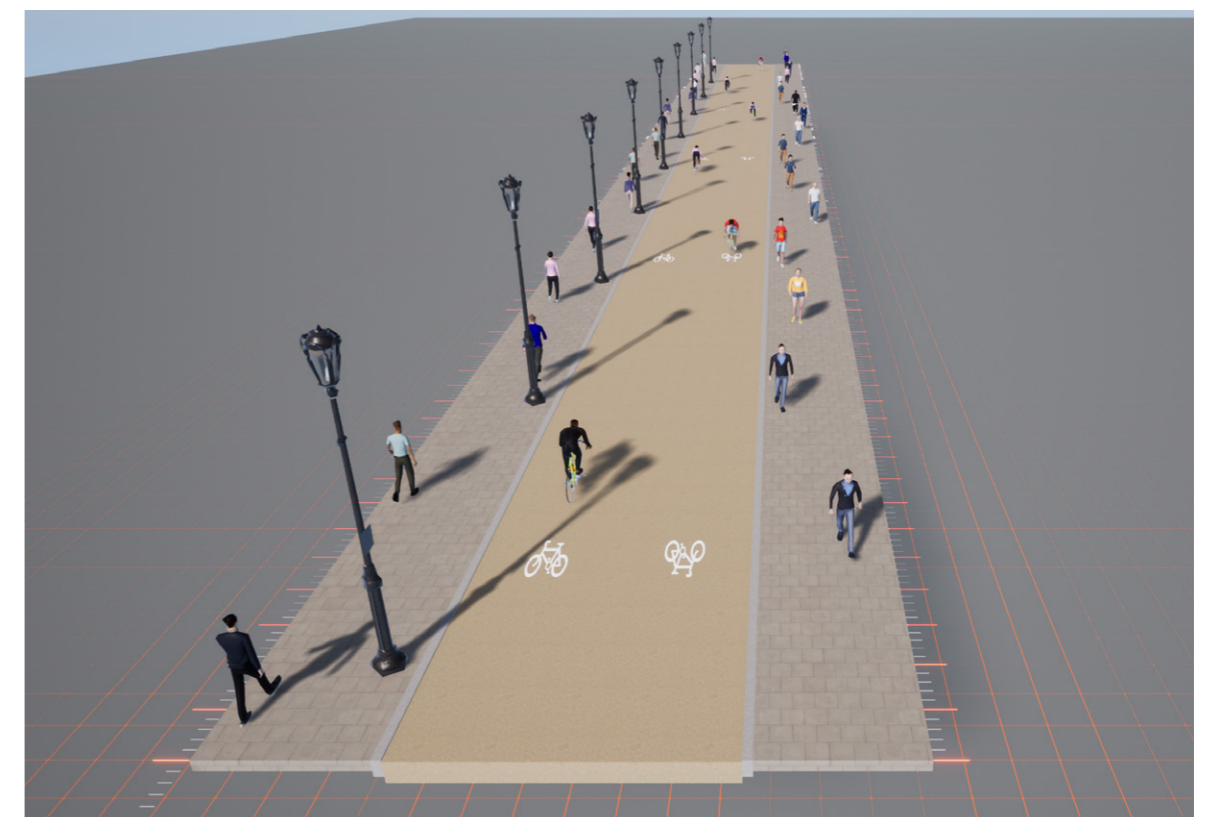


Figure 69: Rendering illustrating of a new pedestrian and cycle street

Generalised Costs			
Elemental Contents	Unit	Price	
<b>Segregated cycle lane to existing carriageways</b>	<b>per 1m</b>	<b>£40.00</b>	
Mitigation of existing utilities			
Alterations to existing surfacing e.g coloured asphalt			
Alterations to existing surface water gullies			
Traffic signs & road markings to reflect revised arrangement			

Table 45: Generalised costs related to addition of segregated cycle lanes on existing streets



Figure 70: Rendering illustrating an existing street with no cycle infrastructure



Figure 71: Rendering illustrating of an existing street retrofitted to include cycle lanes

Generalised Costs		
Elemental Contents	Unit	Price
<b>New open space/ public realm</b>	<b>per m2</b>	<b>£630.00</b>
General site clearance		
Disposal of unacceptable material		
Excavation & disposal of material approx. 1.0m deep		
Public realm construction including sub-base, base & natural stone paving		
Kerb construction		
Lighting		
Street Furniture		
Traffic signs and road markings		
Introduction of surface water gullies and associated connecting to existing drainage network		
<b>Upgrade to existing open space/ public realm</b>	<b>per m2</b>	<b>£340.00</b>
Removal of existing surfacing		
Public realm construction including sub-base, base & natural stone paving		
Kerb construction		
Lighting		
Street Furniture		
Traffic signs and road markings		
Introduction of surface water gullies and associated connecting to existing drainage network		

Table 46: Generalised costs related to upgrading or creation of new open space / public realm.



Figure 72: Rendering illustrating an existing street with no public realm improvements



Figure 73: Rendering illustrating an existing street upgraded to include public realm improvements

Generalised Costs		
Elemental Contents	Unit	Price
<b>Soft landscaping</b>	<b>per m2</b>	<b>£100.00</b>
General Site clearance		
Disposal of non-contaminated material		
Excavation and disposal of material approx. 1.0m deep		
Installation of topsoil		
Planting		

Table 47: Generalised costs related to soft landscaping



Figure 74: Rendering illustrating an existing street with no landscaping



Figure 75: Rendering illustrating of an existing street upgraded with soft landscaping



Generalised Costs	
Assumptions	Exclusions
<p>The base date of this estimate is 1Q 2021 and no inflation is included.</p> <p>Construction begins in 2021.</p> <p>Main Contractor's Prelims have been assumed at 15.0 %.</p> <p>Main Contractor's overheads and profit have been assumed at 5%.</p> <p>There are no abnormal ground conditions on site.</p> <p>There are no contaminated materials on site.</p> <p>There are no building works to be demolished on the existing site.</p> <p>Site is located on brown field site.</p> <p>Any residential/commercial space required will be costed separately.</p> <p>Works are completed within normal working hours.</p> <p>There is adequate access to site.</p> <p>Existing utility connections are adequate for new development.</p> <p>Fit out costs include for FF&amp;E and MEP</p> <p>This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.</p>	<p>Value Added Tax</p> <p>Client costs / design fees</p> <p>Legal fees</p> <p>Planning fees</p> <p>Statutory fees</p> <p>Finance charges</p> <p>Surveys and subsequent works required as a result including:</p> <ul style="list-style-type: none"> <li>-existing building site investigation</li> <li>-services</li> <li>-drainage/CCTV</li> <li>-TPOs</li> <li>-asbestos</li> </ul> <p>Services diversions/upgrades, unless where clearly stated</p> <p>Works beyond boundary of the site</p> <p>Special equipment (unless stated)</p> <p>Out of hours working</p> <p>Utilities charges</p> <p>Disconnections of existing electrical equipment to be removed</p> <p>Main contractor pre-construction fee</p> <p>No allowances have been made for temporary accommodation whilst works are carried out</p> <p>Spoil disposed as contaminated (unless stated)</p> <p>Hostile vehicle mitigation furniture</p> <p>Costs associated with collocated residential or commercial developments</p>

Table 48: Assumptions and exclusions for generalised costs

# 4

## Social Infrastructure Costs

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22.1 The social infrastructure interventions detailed in Tables 49-60 have been taken from the Social Infrastructure Needs Study (2021) produced by AECOM. Mott MacDonald has provided generalised costs for the social infrastructure interventions based on our practical experience in this field. After each cost table for each intervention, a table of our assumptions and exclusions is provided.

Community Hub 1 - Co-located (2,600 sqm)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for clearance of existing site; assumed brown-field site	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Shell &amp; Core</b>				
2.1	Construction of new community hub; shell & core	2,600	m2	£1,400.00	£3,640,000.00
2.2	Extra over Allowance for additional support for residential/commercial buildings above community hub; assumed no more than 2 storeys	2,600	m2	£100.00	£260,000.00
<b>3.0</b>	<b>Installation of New Structures and Street Furniture</b>				
3.1	Allowance for fit out of community hub; area usage unknown; excludes loose furniture	2,600	m2	£800.00	£2,080,000.00
<b>4.0</b>	<b>External Works</b>				
4.1	Allowance for provision of soft/hard landscaping to external areas; assumed quantity	500	m2	£200.00	£100,000.00
	<b>Sub Total</b>				<b>£6,130,000.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	15.0	%	£6,130,000.00	£919,500.00
5.2	Main Contractor's OH&P	5.0	%	£6,130,000.00	£306,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£7,360,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£7,360,000.00	£1,104,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,464,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	10.0	%	£8,464,000.00	£846,400.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£9,310,400.00</b>

Table 49: Generalised costs related to the Community Hub 1

Community Hub 1 - Co-located (2,600 sqm)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 15.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no building works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
Site is located on brown field site.	-existing building site investigation
Any residential/commercial space required will be costed separately.	-services
Works are completed within normal working hours.	-drainage/CCTV
There is adequate access to site.	-TPOs
Existing utility connections are adequate for new development.	-asbestos
Fit out costs include for FF&E and MEP	Services diversions/upgrades, unless where clearly stated
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Works beyond boundary of the site
	Special equipment (unless stated)
	Out of hours working
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with collocated residential or commercial developments

Table 50: Assumptions and exclusions for Community Hub 1

Community Hub 2 - Stand alone (2,600 sqm)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for clearance of existing site; assumed brown-field site	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Shell &amp; Core</b>				
2.1	Construction of new community hub	2,600	m2	£1,400.00	£3,640,000.00
<b>3.0</b>	<b>Fit Out</b>				
3.1	Fit out of community hub	2,600	m2	£800.00	£2,080,000.00
<b>4.0</b>	<b>External Works</b>				
4.1	Allowance for provision of soft/hard landscaping to external areas	500	m2	£200.00	£100,000.00
	<b>Sub Total</b>				<b>£5,870,000.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	15.0	%	£5,870,000.00	£880,500.00
5.2	Main Contractor's OH&P	5.0	%	£5,870,000.00	£293,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£7,040,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£7,040,000.00	£1,056,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,096,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	10.0	%	£8,096,000.00	£809,600.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£8,905,600.00</b>

Table 51: Generalised costs related to the Community Hub 2

Community Hub 2 - Stand alone (2,600 sqm)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 15.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no building works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
Site is located on brown field site.	-existing building site investigation
Works are completed within normal working hours.	-services
There is adequate access to site.	-drainage/CCTV
Existing utility connections are adequate for new development.	-TPOs
Fit out costs include for FF&E and MEP	-asbestos
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Services diversions/upgrades, unless where clearly stated
	Works beyond boundary of the site
	Special equipment (unless stated)
	Out of hours working
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 52: Assumptions and exclusions for Community Hub 2

3FE Primary School - Co-located (3,275 sqm)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for clearance of existing site; assumed brown-field site	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Main Works</b>				
2.1	Construction of new primary school; inclusive of new loose fittings, furniture and equipment	3,275	m2	£2,400.00	£7,860,000.00
2.2	Extra over Allowance for additional support for residential/commercial buildings above primary school; assumed no more than 2 storeys	3,275	m2	£100.00	£327,500.00
<b>3.0</b>	<b>External Works</b>				
3.1	Allowance for provision of soft/hard landscaping to external areas; area assumed	2,000	m2	£200.00	£400,000.00
	<b>Sub Total</b>				<b>£8,637,500.00</b>
<b>4.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
4.1	Main Contractor's Preliminaries	15.0	%	£8,637,500.00	£1,295,625.00
4.2	Main Contractor's OH&P	5.0	%	£8,637,500.00	£431,875.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£10,370,000.00</b>
<b>5.0</b>	<b>Professional Fees</b>				
5.1	Professional Fees	15.0	%	£10,370,000.00	£1,555,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£11,925,500.00</b>
<b>6.0</b>	<b>Contingency</b>				
6.1	Contingency	10.0	%	£11,925,500.00	£1,192,550.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£13,118,050.00</b>

Table 53: Generalised costs related to the Primary School

3FE Primary School - Co-located (3,275 sqm)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 15.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no building works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
Site is located on brown field site.	-existing building site investigation
Any residential/commercial space required will be costed separately.	-services
Works are completed within normal working hours.	-drainage/CCTV
There is adequate access to site.	-TPOs
Existing utility connections are adequate for new development.	-asbestos
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Services diversions/upgrades, unless where clearly stated
	Works beyond boundary of the site
	Special equipment (unless stated)
	Out of hours working
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with collocated residential or commercial developments

Table 54: Assumptions and exclusions for the Primary school

Health Facility - Co-located (1,564 sqm)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for clearance of existing site; assumed brown-field site	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Shell &amp; Core</b>				
2.1	Construction of new health facility; shell & core only	1,564	m2	£1,400.00	£2,189,600.00
2.2	Extra over Allowance for additional support for residential/commercial buildings above health facility; assumed no more than 2 storeys	1,564	m2	£100.00	£156,400.00
<b>3.0</b>	<b>Fit Out</b>				
3.1	Fit out of health facility; inclusive of FF&E	1,564	m2	£900.00	£1,407,600.00
<b>4.0</b>	<b>External Works</b>				
4.1	Allowance for provision of soft/hard landscaping to external areas	500	m2	£200.00	£100,000.00
	<b>Sub Total</b>				<b>£3,903,600.00</b>
<b>5.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
5.1	Main Contractor's Preliminaries	15.0	%	£3,903,600.00	£585,540.00
5.2	Main Contractor's OH&P	5.0	%	£3,903,600.00	£195,180.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£4,680,000.00</b>
<b>6.0</b>	<b>Professional Fees</b>				
6.1	Professional Fees	15.0	%	£4,680,000.00	£702,000.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£5,382,000.00</b>
<b>7.0</b>	<b>Contingency</b>				
7.1	Contingency	10.0	%	£5,382,000.00	£538,200.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£5,920,200.00</b>

Table 55: Generalised costs related to the Health Facility

Health Facility - Co-located (1,564 sqm)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 15.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no building works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
Site is located on brown field site.	-existing building site investigation
Any residential/commercial space required will be costed separately.	-services
Works are completed within normal working hours.	-drainage/CCTV
There is adequate access to site.	-TPOs
Existing utility connections are adequate for new development.	-asbestos
Fit out costs include for FF&E and MEP	Services diversions/upgrades, unless where clearly stated
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Works beyond boundary of the site
	Special equipment (unless stated)
	Out of hours working
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with collocated residential or commercial developments

Table 56: Assumptions and exclusions for the Health Facility

Police Ward Offices - Co-located (50 sqm each)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for clearance of existing site; assumed brown-field site	1	item	£25,000.00	£25,000.00
<b>2.0</b>	<b>Main Works</b>				
2.1	Construction of new police ward offices; 3 nr x 50m2; assumed to be Cat-A fit out; basic M&E provided, alongside basic internal finishes	150	m2	£2,000.00	£300,000.00
<b>3.0</b>	<b>External Works</b>				
3.1	Allowance for provision of soft/hard landscaping to external areas	1	item	£50,000.00	£50,000.00
	<b>Sub Total</b>				<b>£375,000.00</b>
<b>4.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
4.1	Main Contractor's Preliminaries	15.0	%	£375,000.00	£56,250.00
4.2	Main Contractor's OH&P	5.0	%	£375,000.00	£18,750.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£450,000.00</b>
<b>5.0</b>	<b>Professional Fees</b>				
5.1	Professional Fees	15.0	%	£450,000.00	£67,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£517,500.00</b>
<b>6.0</b>	<b>Contingency</b>				
6.1	Contingency	10.0	%	£517,500.00	£51,750.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£569,250.00</b>

Table 57: Generalised costs related to the Police Ward Offices

Police Ward Offices - Co-located (50 sqm each)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 15.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no building works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
Site is located on brown field site.	-existing building site investigation
Any residential/commercial space required will be costed separately.	-services
Works are completed within normal working hours.	-drainage/CCTV
There is adequate access to site.	-TPOs
Existing utility connections are adequate for new development.	-asbestos
Building will be fit out to a Cat A standard. (basic finishes and basic MEP)	Services diversions/upgrades, unless where clearly stated
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	Works beyond boundary of the site
	Special equipment (unless stated)
	Out of hours working
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture
	Costs associated with collocated residential or commercial developments

Table 58: Assumptions and exclusions for the Police Ward Offices

Ambulance Station - Extension to existing (625 sqm)					
Item / N°	Elemental Contents	Quantity	Unit	Rate	Total
<b>1.0</b>	<b>Enabling Works</b>				
1.1	Allowance for clearance of existing site; assumed brown-field site	1	item	£50,000.00	£50,000.00
<b>2.0</b>	<b>Main Works</b>				
2.1	Construction of new ambulance station	625	m2	£1,750.00	£1,093,750.00
<b>3.0</b>	<b>External Works</b>				
3.1	Allowance for provision of soft/hard landscaping to external areas	250	m2	£200.00	£50,000.00
	<b>Sub Total</b>				<b>£1,193,750.00</b>
<b>4.0</b>	<b>Preliminaries, Overheads &amp; Profit</b>				
4.1	Main Contractor's Preliminaries	15.0	%	£1,193,750.00	£179,062.50
4.2	Main Contractor's OH&P	5.0	%	£1,193,750.00	£59,687.50
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,430,000.00</b>
<b>5.0</b>	<b>Professional Fees</b>				
5.1	Professional Fees	15.0	%	£1,430,000.00	£214,500.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,644,500.00</b>
<b>6.0</b>	<b>Contingency</b>				
6.1	Contingency	10.0	%	£1,644,500.00	£164,450.00
	<b>Rounded Total (carried forward to summary)</b>				<b>£1,808,950.00</b>

Table 59: Generalised costs related to the Ambulance Station

Ambulance Station - Extension to existing (625 sqm)	
Assumptions	Exclusions
The base date of this estimate is 1Q 2021 and no inflation is included.	Value Added Tax
Construction begins in 2021.	Client costs / design fees
Main Contractor's Prelims have been assumed at 15.0 %.	Legal fees
Main Contractor's overheads and profit have been assumed at 5%.	Planning fees
There are no abnormal ground conditions on site.	Statutory fees
There are no contaminated materials on site.	Finance charges
There are no building works to be demolished on the existing site.	Surveys and subsequent works required as a result including:
Site is located on brown field site.	-existing building site investigation
Works are completed within normal working hours.	-services
There is adequate access to site.	-drainage/CCTV
Existing utility connections are adequate for new development.	-TPOs
This estimate should be viewed with an estimating tolerance of +/- 10% due to the high level nature of information it is based upon.	-asbestos
	Services diversions/upgrades, unless where clearly stated
	Works beyond boundary of the site
	Special equipment (unless stated)
	Out of hours working
	Utilities charges
	Disconnections of existing electrical equipment to be removed
	Main contractor pre-construction fee
	No allowances have been made for temporary accommodation whilst works are carried out
	Spoil disposed as contaminated (unless stated)
	Hostile vehicle mitigation furniture

Table 60: Assumptions and exclusions for the Ambulance Station





