



SILVERTOWN TUNNEL

DOCUMENT TITLE:

SILVERTOWN - LANDSCAPE REPORT

DOCUMENT NUMBER:

ST150030-ARU-FAE-17-ZZ-RPT-LA-0001

ASITE Task ID: STT-DCO-017.7.4.13

PURPOSE OF ISSUE	For Approval	DOCUMENT SUITABILITY	S4 - For Stage Approval	TOTAL PAGES (Including this page)	136
Details correct at time of upload to ASITE. Check ASITE for current document status.					

Prepared by	Checked by	Approved by	Date	Revision
[Redacted]	[Redacted]	[Redacted]	28/07/2023	P06

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Revision History			
Rev No	Date	Summary of Changes	Section or Page Number
P01	22/06/2021	For amended Developed Design Submission	
P02	29/06/2021	For amended Developed Design Submission	
P03	06/08/2021	For Detailed Design Submission	Whole document
P04	19/11/2021	For Detailed Design Submission	Whole document – inclusion Compound information
P05	17/05/2022	For Detailed Design Submission – SPV comments to clarify on maintenance corridors	Figure 47 and 124
C01	12/05/2023	Revision approved by TfL. Issued for Construction	
P06	28/07/2023	For Detailed Design Submission – Amendments to Swales, Inclusion of Gabions and additional infrastructure requirements	Pages 20,21,22,23,24, 25,26,28,29,33,34,35,36, 38,40,46,48,54,56,57,58, 103,104,105,109,110,111, 116,132,134,135 &136

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1 Executive summary

1.1 Report overview

1.1.1 Introduction

The Silvertown Tunnel (STT) scheme involves the construction of a twin bore road tunnel providing a new connection between the A102 Blackwall Tunnel Approach on the Greenwich Peninsula (Royal Borough of Greenwich - RBG) and the Tidal Basin Roundabout (TBR) junction on the A1020 Lower Lea Crossing / Silvertown Way (London Borough of Newham - LBN). The project was formally granted development consent through a Development Consent Order (DCO) issued by the Department of Transport (DfT) in May 2018.

The Silvertown Tunnel will be approximately 1.4km long and able to accommodate large vehicles including double-decker buses. It will include a dedicated bus, coach and goods vehicle lane, enabling Transport for London (TfL) to provide additional cross-river bus routes. The scheme will also include the construction of two portal building compounds, one at each end of the tunnel. The purpose of the portal building compounds is to house critical infrastructure and site personnel for the maintenance and operation of the tunnels.

TfL have entered into a Project Agreement with the Project Company Riverlinx CJV (Project Co) who are responsible for the detailed design, construction, financing and maintenance of the tunnel and supporting infrastructure. A 5 year period of design and construction will be followed by a further 25 years of operation and maintenance.

The Project Co has appointed Riverlinx CJV as the Design and Construction (D&C) Contractor responsible for undertaking the detailed design and construction of the STT scheme all in accordance with the constraints and parameters of the Development Consent Order (DCO), TfL specifications and other commitments made by TfL to stakeholders. Riverlinx CJV is a joint venture formed between Ferrovial Construction (UK) Ltd, BAM Nuttall and SK Engineering and Construction Co Ltd.

1.1.2 Key aims of the Scheme

The following are the 3 primary aims for the Scheme:

- **reduce congestion at the Blackwall Tunnel ;**
- **improve the reliability and resilience of the wider road network; and**
- **facilitate forecast growth in population and employment in east London.**

The Landscape Plan is established by the Design & Access Statement (DAS) (Appendix 7.3 Silvertown Tunnel - Design & Access Statement - Document Reference: ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0079).

The DAS sets out the Illustrative Design for the permanent spaces, above ground structures and access arrangements for both the north and south ends of the tunnel (portals, junctions & tunnel ancillary buildings) plus the replacement of the Boord Street pedestrian and cycle bridge across the A102 Blackwall Tunnel Approach road on the Greenwich Peninsula.

1.1.3 Purpose of the report

The project was formally granted development consent through a DCO issued by the DfT in May 2018.

This report provides a narrative to the landscape design (developed from the DCO), as part of the integrated design strategy for the Silvertown Tunnel, a collaboration between dRMM, Arup and RiverLinx. It provides illustrative information only on the landscape for the reader and is intended be read to support the following detailed design package (Doc Ref STT-DCO-017.7.4.13 with the following items considered to be of most relevance in demonstrating the Scheme proposals):

Drawings

- ST150030-ARU-FAE-17-ZZ-DRG-LA-0001
Site Plan
- ST150030-ARU-FAE-17-ZZ-DRG-LA-0028 to 0035
General Arrangement Plans
- ST150030-ARU-FAE-17-ZZ-DRG-LA-0044 to 0051
Planting Plans
- ST150030-ARU-FAE-17-ZZ-DRG-LA-0016 to 0017
Fencing and Boundary Plan

Schedule

- ST150030-ARU-FAE-17-ZZ-SCH-LA-0002
Planting Schedule

Reports / Specifications

- ST150030-ARU-FAE-17-ZZ-MAN-LA-0001
Landscape Maintenance Plan
- ST150030-ARU-FAE-ZZ-ZZ-REQ-LA-0001
Specification Series 3000 Landscape and Ecology

This landscape report outlines the development and application of landscape design as part of the integrated design strategy for the Scheme, providing complementary detail (to the drawing package as indicated on this page) in support of satisfying the DCO Requirement 6, the guidance set out in the Landscape Design Principles and in addressing key comments made by the LBN, the Design Review Panel (DRP) and Key Stakeholders (SDCG) through the design process.

Information in relation to the development process of the landscape design, and relevant comments surrounding the development of the design have been summarised and included in the accompanying section, in this report, that reviews the Design Principles.

DCO Requirement 6 states:

“(1) No part of the authorised development may commence until a written landscaping scheme for that part has been submitted to and approved by the local authority.

(2) A landscaping scheme prepared under sub-paragraph (1) must be in accordance with the landscaping plan and include details of hard and soft landscaping works, including—

(a) location, number, species, size and planting density of any proposed planting, including habitat creation in lieu of offsite biodiversity offsetting;

(b) cultivation, importing of materials and other operations to ensure plant establishment;

(c) the location and specification of routes for non-motorised users including provision of a bus stop to serve southbound buses in the re-aligned Tunnel avenue;

(d) proposed finished ground levels;

(e) hard surfacing materials;

(f) details of existing trees to be retained, with measures for their protection during the construction period; and

(g) implementation timetables for all landscaping works.

(3) Each part of the authorised development must be carried out in accordance with the relevant landscaping schemes approved under sub-paragraph (1).

(4) All landscaping works must be carried out to a reasonable standard in accordance with the relevant recommendations of appropriate British Standards or other recognised codes of good practice.

(5) Any tree or shrub planted as part of a landscaping scheme that, within a period of 5 years after planting, is removed, dies or becomes, in the opinion of the relevant planning authority, seriously damaged or diseased, must be replaced in the first available planting season with a specimen of the same species and size as that originally planted.

2 Project overview

2.1 Scheme vision

2.1.1 Introduction

The landscape design is to deliver on the design vision for the Scheme, which sets the high-level aspirations for the above ground elements. The vision is that the Scheme should incorporate:

- High quality and appropriate architecture.
- Built in reliability, robust materials and detailing.
- Integrative landscape design.
- Sustainability through design.
- Safe, secure and smart infrastructure.

The landscape design has drawn from this design vision for the Scheme, in particular:

Integrative landscape design.

- The landscape design associated with the Scheme including planting and public realm should enhance its use, its setting and mitigate the visual impact of the road, portal and buildings along with any impacts of the associated traffic.
- The landscape design should create a sense of place and enable the public realm to be accessed and used by all in a safe and meaningful way that supports the local area.
- It should support the creation of consistent and coherent pedestrian and cycle networks that are fit for today and the future.
- The planting should protect and enhance biodiversity, including the creation of spaces remote from human activity that can become valuable habitats for a wide range of flora and fauna.
- The planting should also humanise the infrastructure by softening its appearance and helping to integrate it into its context.

2.1.2 Client objectives

The landscape design has into account the following key client objectives:

- Project brand .
- Ensure complicity with DCO requirements and Design Principles.
- Project affordability and constructibility.



Figure 1. Key Silvertown Tunnel DCO Documents

2.1.3 Design Principles

The landscape design of the Scheme is guided by 'The Design Principles' (Appendix 7.4 Silvertown Tunnel - Design Principles - Document Reference: ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0080). These set out key performance (and technical) requirements which are to be considered in the design of the Scheme. Those of relevance to the landscape proposals include:

The Landscape Design Principles (LSCP) 01 to 15 and constitute the primary design guidance for the overall landscape design of the Scheme and are summarised opposite.

Additional guidelines considered are listed below and are reviewed (along with the LSCPs) in detail in the accompanying Section 5 of this report.

- Design Process;
- Integration of Permanent Structures;
- Sustainability and Environment;
- Public Art;
- Advertising and Commercial Activity;
- Signage & Wayfinding;
- Lighting; and
- Street Design Guidance - referred to under Landscape Design Principles LSCP15 and covered in Appendix C (Silvertown Tunnel - Design Principles - Document Reference: 7.4) (as part of LSCP15).

- LSCP01 The Scheme should adhere to TfL Streetscape Guidance and London Cycle Design Standards.
- LSCP02 The detailed design of the Scheme should be developed with reference to relevant guidance on safety and security.
- LSCP03 Create a legible street network that promotes walking and cycling, taking account of local community need.
- LSCP04 Footways should be an adequate width and achieve an appropriate Pedestrian Comfort Level.
- LSCP05 Materials should adhere to the highway authorities agreed local materials palette and be of a quality defined in the contract specification.
- LSCP06 The public realm design should promote interaction with existing and proposed developments.
- LSCP07 Any formal cycle or car parking spaces affected by the works should, where practicable, be re-provided to an equivalent standard.
- LSCP08 The placement of trees should help to reinforce public realm design elements.
- LSCP09 When locating the trees the various constraints have been looked at and considered.
- LSCP10 Tree planting should take account of standards and guidance presented in the Biodiversity Action Plan & Mitigation Strategy (BAPMS).
- LSCP11 The detailed design of the Scheme should ensure green infrastructure assets are properly planned and maintained.
- LSCP12 The landscape design should take account of the historic value and setting of the Blackwall Tunnel gatehouse and enhance.
- LSCP13 Where practical green infrastructure including green walls and roofs should be considered in the design.
- LSCP14 Replacement of the existing mature trees by the Boord Street bridge should be with semi-mature, broad leaf trees.
- LSCP15 All new and changed streets should be designed to satisfy the Street Design Guidance.

*Note LSCP12 and 14 are not applicable to the section of Scheme in the LBN.

2.1.4 Project objectives

The landscape design is to deliver on the design vision.

The basis for the landscape design is established in part by the DAS which sets out the following project objectives:

- To improve the resilience of the river crossings in the highway network in east and southeast London to cope with planned and unplanned events and incidents;
- To improve the road network performance of the Blackwall Tunnel and its approach roads;
- To support economic and population growth, in particular in east and southeast London by providing improved cross-river transport links;
- To integrate with local and strategic land use policies;
- To minimise any adverse impacts of any proposals on communities, health, safety and the environment;
- To ensure where possible that any proposals are acceptable in principle to key stakeholders, including affected boroughs; and
- To achieve value for money and, through road user charging, to manage congestion.

Alongside the benefits for motorists using the tunnel, the proposals would generate substantial benefits for public transport and non-motorised users. The area around each tunnel portal would be enhanced through new landscape and public realm, and enhanced routes for cycling and walking would be delivered. Overall, benefits from the design would include:

- Improved pedestrian and cycle links around the Royal Docks, and to the Emirates Air Line;
- Potential for the future regeneration of land required for construction, unlocked through the removal of the existent safeguarding, once the tunnel is completed;
- A replacement pedestrian / cycle bridge across the A102 Blackwall Tunnel Approach at Boord Street; and
- Enhanced landscape and public realm in the vicinity of the Silvertown Portal.

These objectives and benefits derived from the DAS, the DCO (its drawings and requirements) and the Design Principles have been used to generate a simplistic set of landscape aims to guide the design team. These landscape aims for the design are presented in Section 3.2.2 of this document.

2.1.5 Location

The plan below illustrates the approximate location and extent of intervention for the landscape design of the Scheme (as indicated in green).

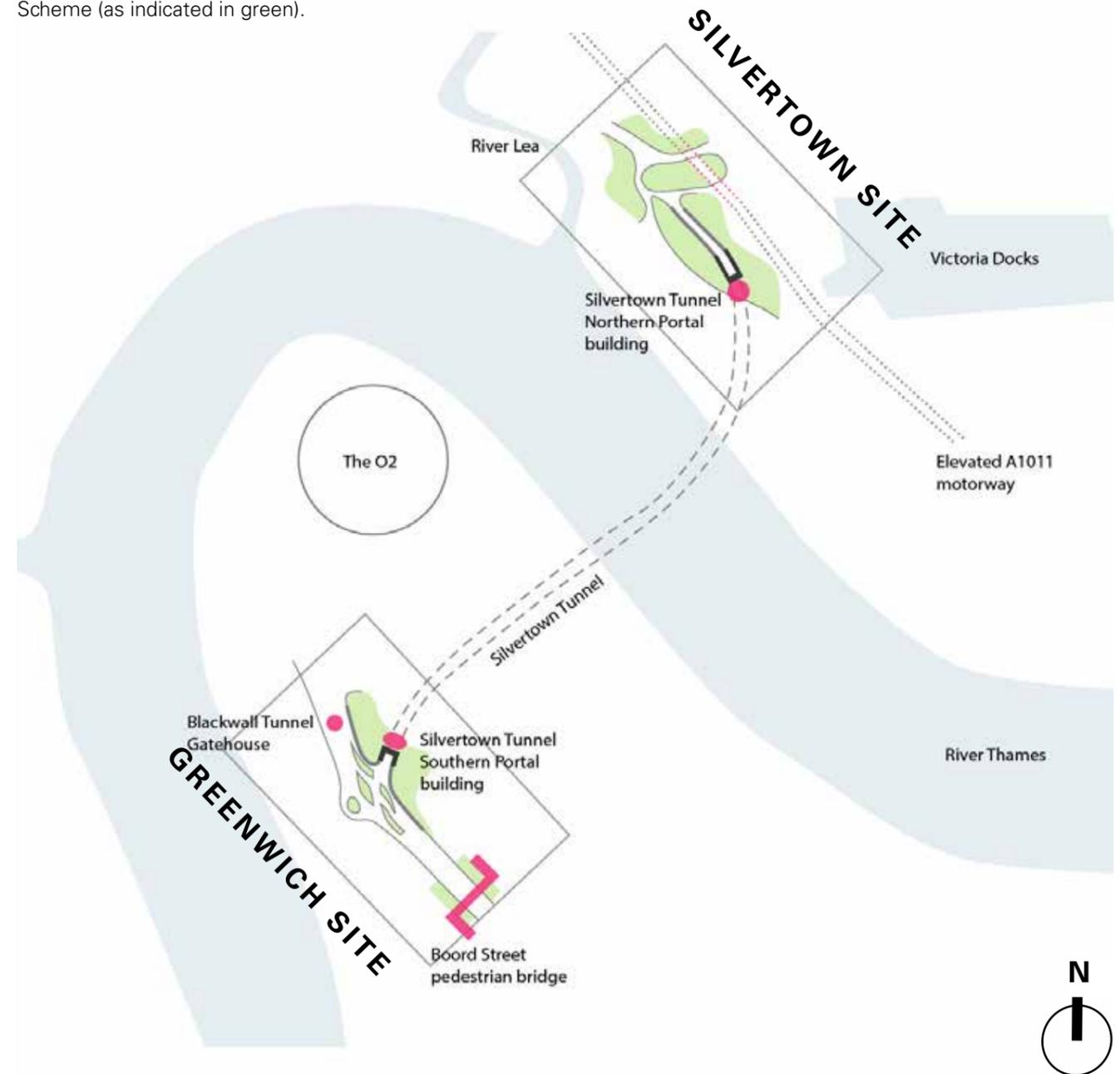


Figure 2. Silvertown Tunnel Location plan

3 Landscape proposals

3.1 Introduction

This section subdivided as follows, to address the LSCPs and the DCO requirements.

Landscape Report Section	Landscape Design Principles (LSCPs)*:	DCO Requirement 6**:
• The Scheme concept	• LSCP.02 and 09	
• Site constraints	• LSCP.03, 04 and 06 (and 14)	
• Site context	• LSCP.01, 03, 04, 05, 06 and 15	<i>2(c) the location and specification of routes for non-motorised users including provision of a bus stop to serve southbound buses in the re-aligned Tunnel Avenue;</i>
• Site connections	• LSCP.03	
• Site signage, wayfinding and public art	• LSCP.03 and 05, 15	
• Hard landscape	• LSCP.11 and 13	<i>2(e) hard surfacing materials;</i>
• Green infrastructure	• LSCP.02, 06, 08, 10, 11, 14	<i>2(a) location, number, species, size and planting density of any proposed planting, including habitat creation in lieu of offsite biodiversity offsetting;</i> <i>2(b) cultivation, importing of materials and other operations to ensure plant establishment; Addressed by the Specification Series 3000 - Landscape and Ecology, document reference: ST150030-ARU-FAE-ZZ-ZZ-REQ-LA-0001</i>
• Soft Landscape	• LSCP.10, 11, 13 and 14 (With references made to SUEN.02, 03 and 04)	<i>2(f) details of existing trees to be retained, with measures for their protection during the construction period;***</i>
• Ecology		
• Implementation	• LSCP.11	<i>2(g) implementation timetables for all landscaping works.</i>
• Maintenance		<i>(5) Any tree or shrub planted as part of a landscaping scheme that, within a period of 5 years after planting, is removed, dies or becomes in the opinion of the relevant planning authority, seriously damaged or diseased, must be replaced in the first available planting season with a specimen of the same species and size as that originally planted. Addressed by the Silvertown Landscape Maintenance Plan, document reference: ST150030-ARU-FAE-17-ZZ-MAN-LA-0001.</i> <i>(4) All landscaping works must be carried out to a reasonable standard in accordance with the relevant recommendations of appropriate BS or other recognised codes of good practice. Addressed by the Specification Series 3000 - Landscape and Ecology, document reference: ST150030-ARU-FAE-ZZ-ZZ-REQ-LA-0001.</i>

*Note LSCP.07 has not needed to be applied as no cycle stands are to be removed through the implementation of the Scheme.

** 2(d) proposed finished ground levels; - addressed by the General Arrangement Plans, document reference: ST150030-ARU-FAE-17-ZZ-DRG-LA-0028 to 0035.

*** For detail on tree retention/protection measures reference should be made to Arboricultural Impact Assessment, document reference ST150030-RLC-ZZZ-17-ZZ-ASM-LV-0001.

3.2 The Scheme concept

3.2.1 Introduction

A review of the DCO (tender) design proposal was undertaken at the commencement of the project to summarise all relevant information and define a set of landscape aims to drive forward the Scheme design. An initial set of objectives were generated as follows:

- Rationalisation and reduction of hard standing and streetscape clutters – simplification of the scheme;
- Cut and fill from construction retained on site for potential reuse to create landforms;
- Taking full advantage of existing assets to maximise existing views and enhance the user experience;
- Use of low maintenance planting, wildflower meadow aid the enhancement of biodiversity and adhere to the BAPMS;
- Rationalisation of the planting design, to create a meaningful aesthetic impact using swathes of soft landscape to create rhythm, with low maintenance wildflower seeding and structural tree planting at a scale appropriate for the scheme;
- Wider environmental / ecological benefits to enhance views, aid air purification, dampen noise pollution and attract wildlife;
- Rationalisation of portal buildings with careful integration into the landscape with green roofs; and
- Building structures and spaces to be made attractive and legible at night, their form highlighted and strengthened, by an intelligent lighting design.

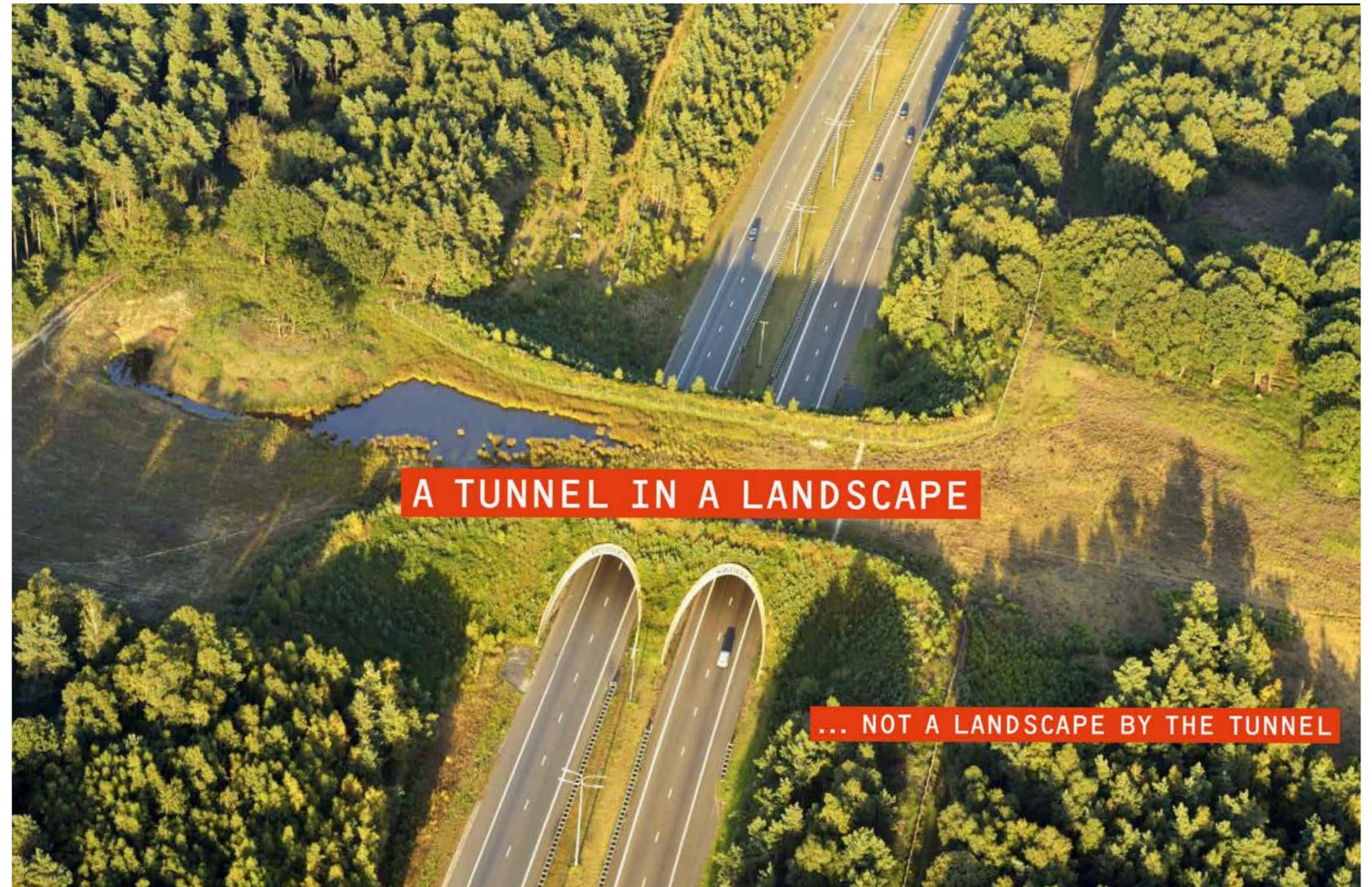


Figure 3. Silvertown Tunnel concept proposal at Tender Stage

3.2.2 Concept development - Part of the City

Following the review of the Scheme, the initial objectives collated for the Scheme (as per Section 2) were summarised into three key aims (outlined below) that best reflected and encapsulated the Scheme vision, Client Objectives and the LSCPs.

These three key aims underpin the primary landscape design objective to ensure the Scheme is detailed as being 'Part of the City':

i.e facilitating the improved movement and connection of people through a well designed and integrated piece of urban fabric/realms.

CONNECTIVITY

- Create a sense of identity and place
- Link people and places
- Create safe and active routes
- Easy and de-cluttered way-finding
- Links to the river
- Integration: past+future

COMMUNITY

- Coherent identity between the portal sites and their neighbourhood context
- Maximise activity
- Curate degraded spaces
- Multi-functional
- Transform perceptions
- Inclusive design
- Improve well-being

CONSIDERATE DESIGN

- Recycle and reuse materials
- Minimise environmental impact
- Simple, clean design and materiality
- Value generation
- High impact from Green and Blue Infrastructure
- Protect and encourage ecological habitats

The three key aims are referenced through this report to reflect the guidance provided by the DRP in which to see these three key aims clearly run through the design of the Scheme.

For the LBN this concept resulted in placing a heightened importance on the landscape interventions being part of a sequence, connecting journeys from east to west and north to south rather than a public realm destination.

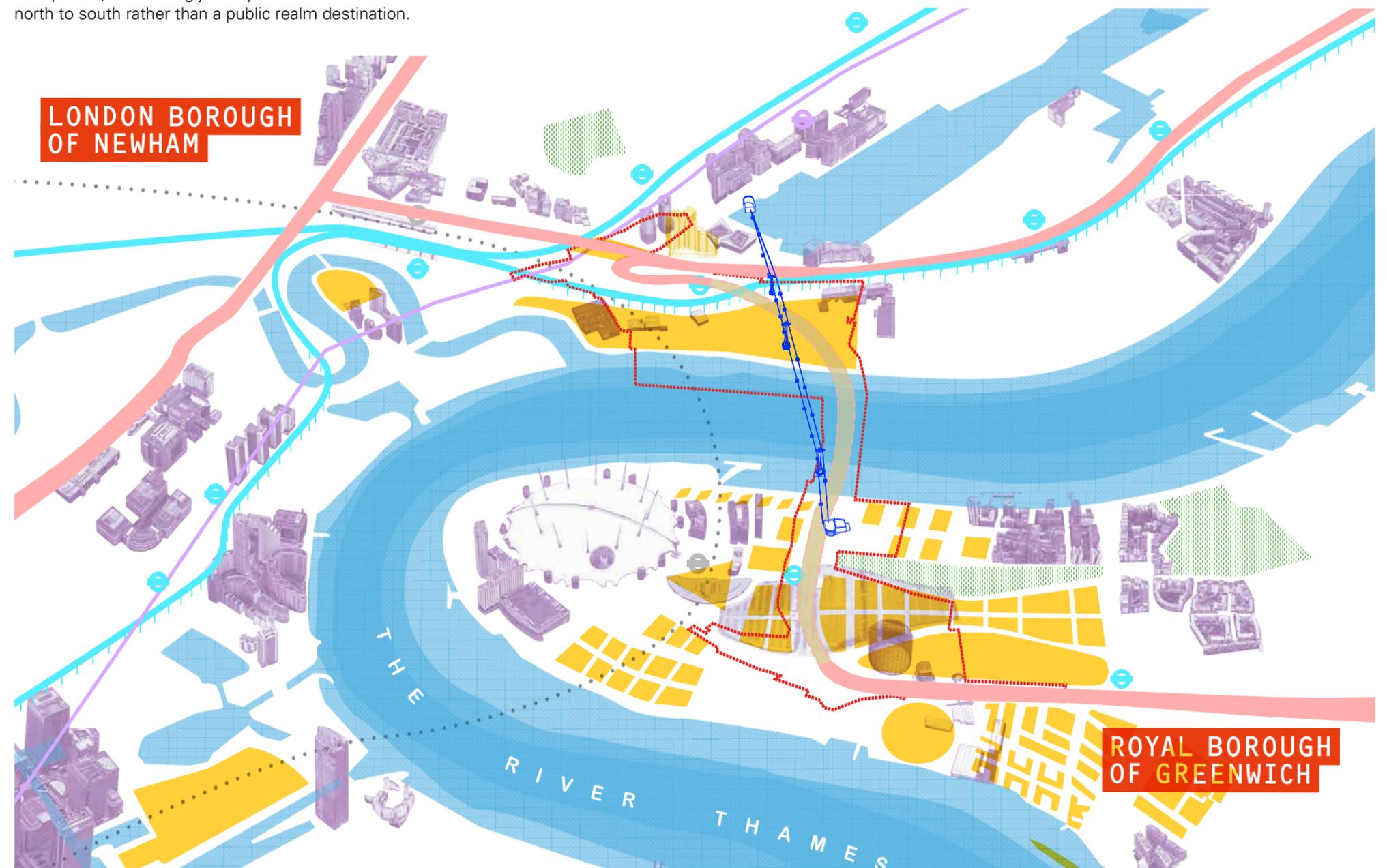


Figure 4. Silvertown Tunnel concept development - Part of the City (showing the Scheme in relation to the developed and emerging developments in the area)

3.3 Site constraints

The landscape proposals have been developed to respond to the various constraints such as below ground utilities and visibility splays as whilst still fulfilling the Scheme concept (refer to section 3.2).

The figure opposite provides a brief overview of the established technical requirements constraints, influence of related disciplines and their impact on the landscape design, in particular establishing the baseline to allow for the development of design in respect of LSCP02 and 09.

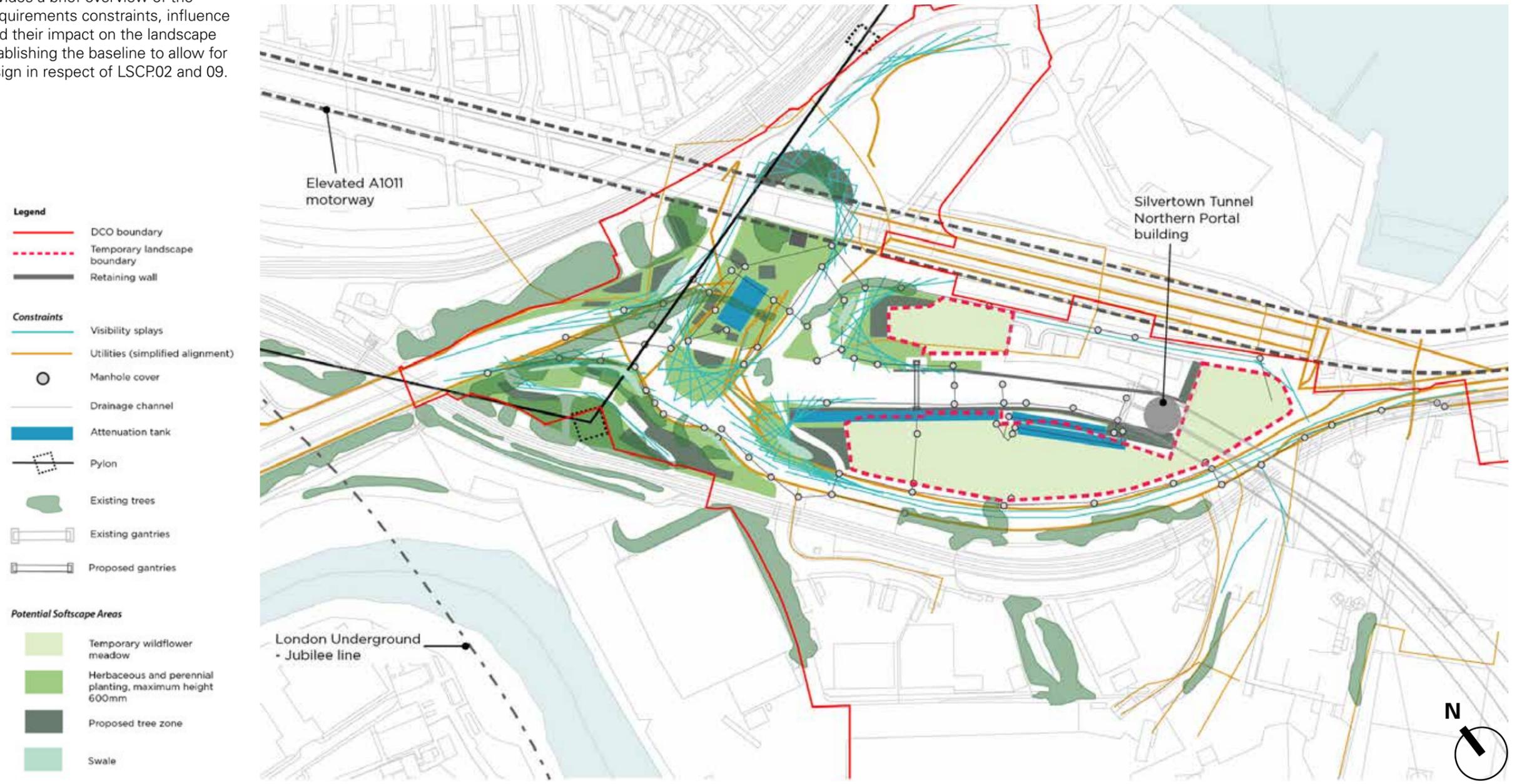


Figure 5. Combined site constraints diagram

3.4 Site context

3.4.1 Site photos

The images provide a visual synopsis of the key features and existing state of disrepair and neglect suffered in the site context.

These images reflect and reinforce the necessity of the LSCPs and their application in the development of the landscape design proposals.



Existing National Cycle Route 13



Access steps to flyover and bus stop



Existing road side vegetation



Existing overgrown landscape (with invasive species)



"Public Art" beneath flyover



Overhead power cables



Existing substation



Pedestrian bridge over DLR



Existing Dock Road

Figure 6. Site images

3.4.2 Future developments

The plan opposite demonstrates the known developments proposed directly adjacent the Scheme.

The extent to which the landscape design proposals respond to the 2020 approved Masterplan (hybrid planning application) have been considered along with emerging contextual information in relation to key developments surrounding the River Lea and the Royal Docks.



Figure 7. Emerging development - rendered plan

3.4.3 Stakeholder meetings

Meetings have been held with the Newham Stakeholder Design Consultation Group (SDCG), the London Borough of Newham (LBN) and the Design Review Panel (DRP) to present the development of the landscape proposals for comment.

Relevant feedback from DRP and SDCG meetings are included in Section 5.

Meeting	Date	Meeting	Date
Landscape workshop with LBN	23/09/2020	Cycleway/footway workshop with LBN	22/01/2021
Buildings workshop with LBN	29/09/2020	Silvertown Tunnel Design Principles (meeting to explain the design principles to TfL's SLT)	13/01/2021
Newham SDCG	20/05/2020	Silvertown Tunnel Greenwich Community Liaison Group	09/03/2021
Newham SDCG	12/10/2020	Newham SDCG	28/06/2021
DRP meeting	24/02/2020	DRP meeting	02/07/2021
DRP meeting	25/09/2020		
DRP Chair meeting	19/01/2021		

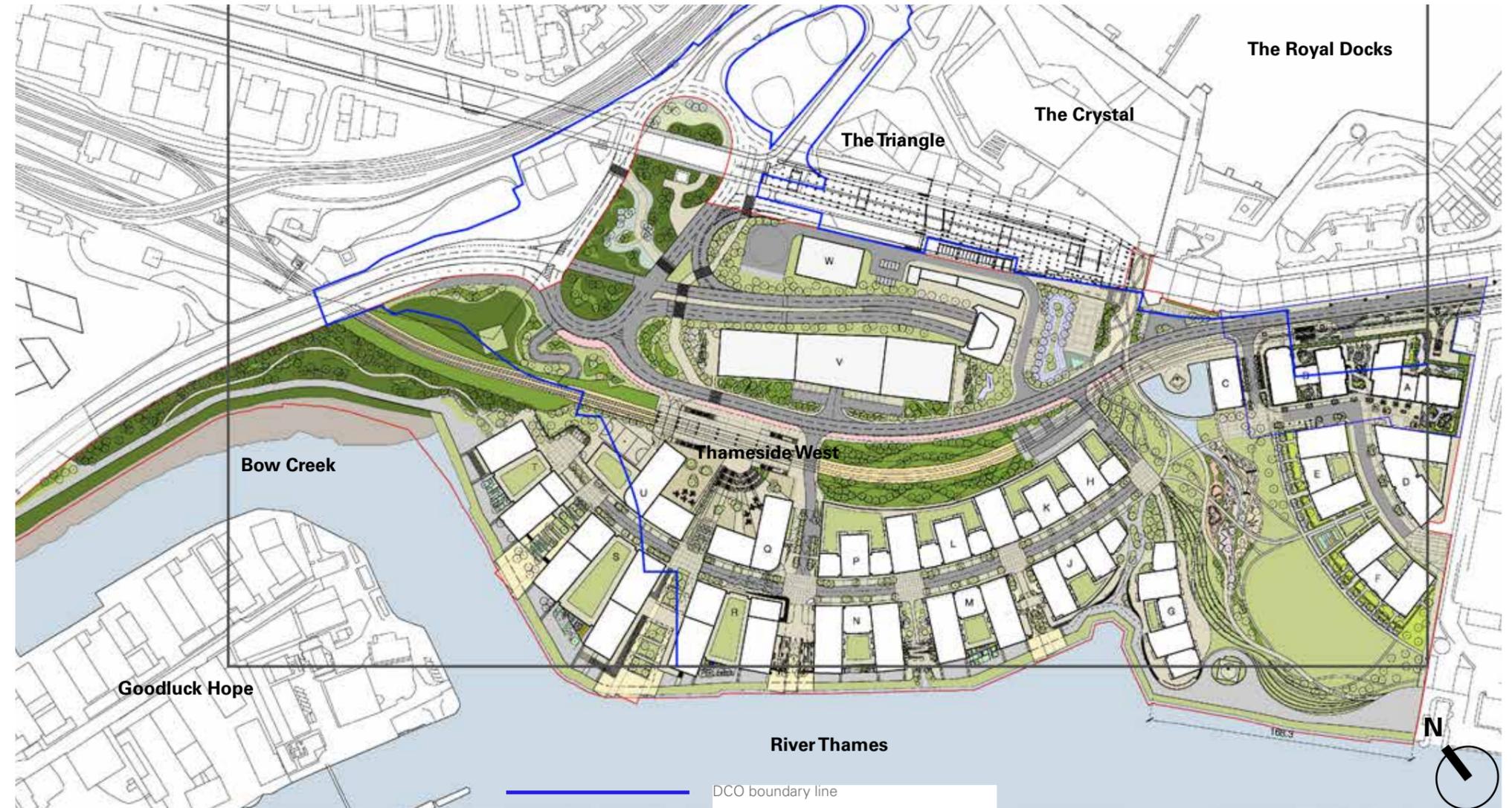


Figure 8. Emerging development and Scheme plan (Concept Design)

3.5 Site connections

3.5.1 Transport links

The regeneration adjacent to the River Thames frontage, through the Thameside West Masterplan will establish a new street network, connecting the Scheme through to the riverside. The proposed masterplan for the area has been utilised to fully demonstrate the emerging context and the future integration of the Scheme and ensure connections consider future demands.

The concept of the Scheme (Section 3.2.2) is to act as 'part of the city', with a primary aim of CONNECTIVITY. To be successful, the Scheme should be a facilitator for journeys across this area of London. The promotion of wayfinding is explored in this section.

The plan opposite demonstrates a number of key Active Travel links (meaning routes for Non-motorised Users - NMUs such as Pedestrians noted in blue and Cyclists noted in green) across the peninsula (the diagram is not intended to be exhaustive). These were identified and established at the concept design stage and developed through into the final detailed design proposals.

The plan demonstrates the distance and routes from the Thameside West DLR (identified in the DCO as Thames Wharf DLR Station) to primary transport nodes Royal Victoria DLR and the Emirates Air Line (Cable Car); and key public realm and destinations such as the Royal Docks, the new Thames Path and Parkland proposed.

Vehicular routes intrinsic to the scheme have been noted in red for reference.

In reviewing these existing and future developments the landscape design proposal of the Schemes contribution to the emerging street network has been considered to positively reinforce connections - improving on the existing level and quality of infrastructure; responding to LSCP:01, 03, 04, 05, 06 and 15.

Note: The Silvertown Flyover is to be altered under the LBN vision (Royal Docks Corridor) and is noted in LSCP03 (Section 5). This route will be accessed from the existing connections with the Scheme - and will provide for further improvements in promoting safe active travel and the reach of these networks across the borough.

Reference should be made to Section 3.4.2 for future development locations and the landscape drawings as noted in Section 1, for further details of NMU routes and exact locations.

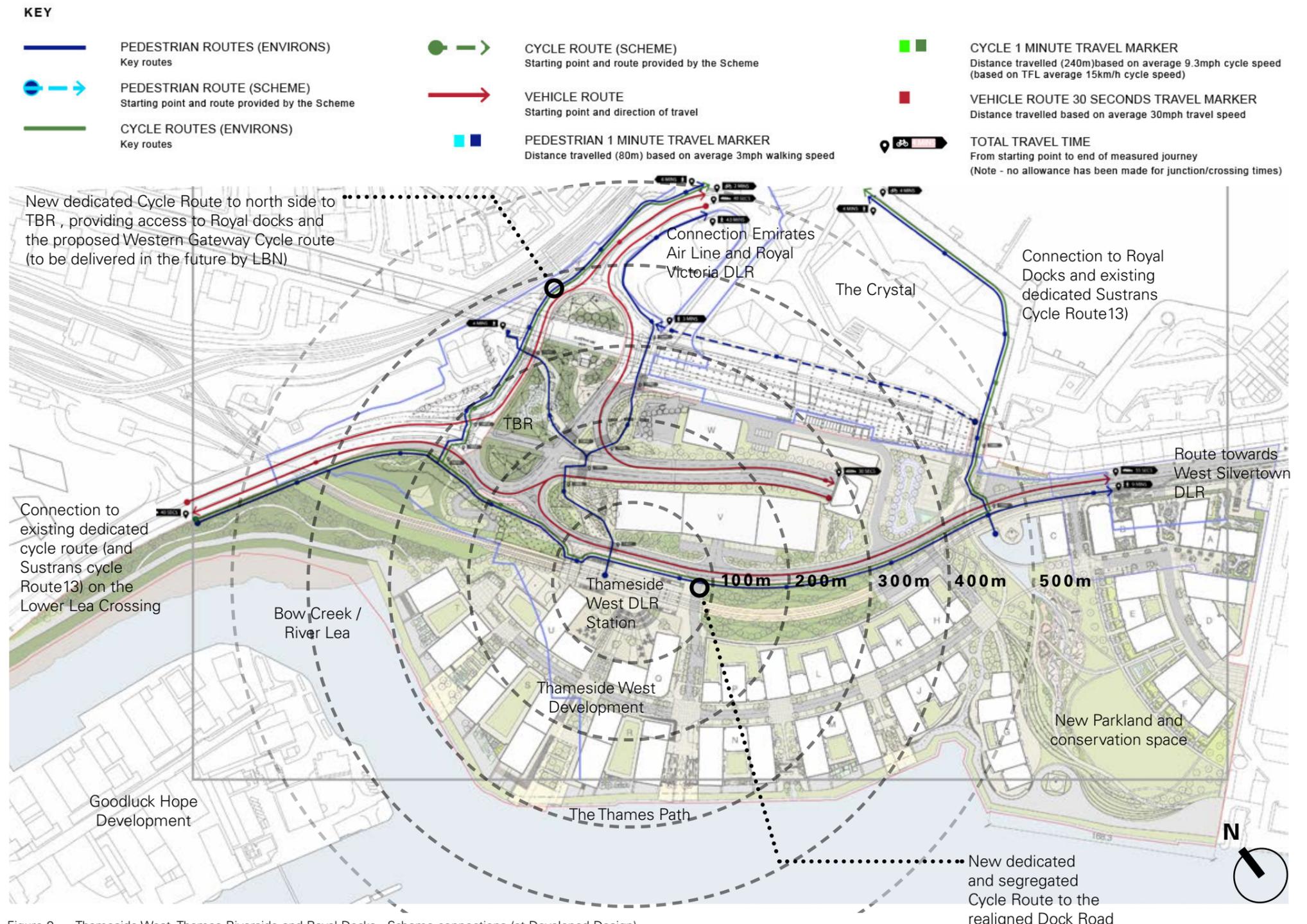


Figure 9. Thameside West, Thames Riverside and Royal Docks - Scheme connections (at Developed Design)

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3.5.2 Transport routes

As part of the Silvertown Tunnel DCO application a series of 'General Arrangement Plans' (ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0093) and 'Rights of Way and Access Plans' (ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0097) were produced. These plans illustrate areas identified to provide for Non-Motorised User (NMU) routes.

The plan opposite provides an overview of the dedicated routes through the Scheme for NMUs. Key dimensions and pinch points have been highlighted for the routes

Note: This section provides an overview of the location of routes, dimensions, crossing points and should be read in conjunction with the set of Landscape Plans (as referenced in the Section 1 of this report) for further detail and their exact location.

Reference should be made to Section 5, LSCP03, where a review of the General Arrangement Plans' (ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0093) and LSCP.15 is provided to demonstrate how the proposed Scheme adheres to and applies the NMU routes (and their detailed requirements).

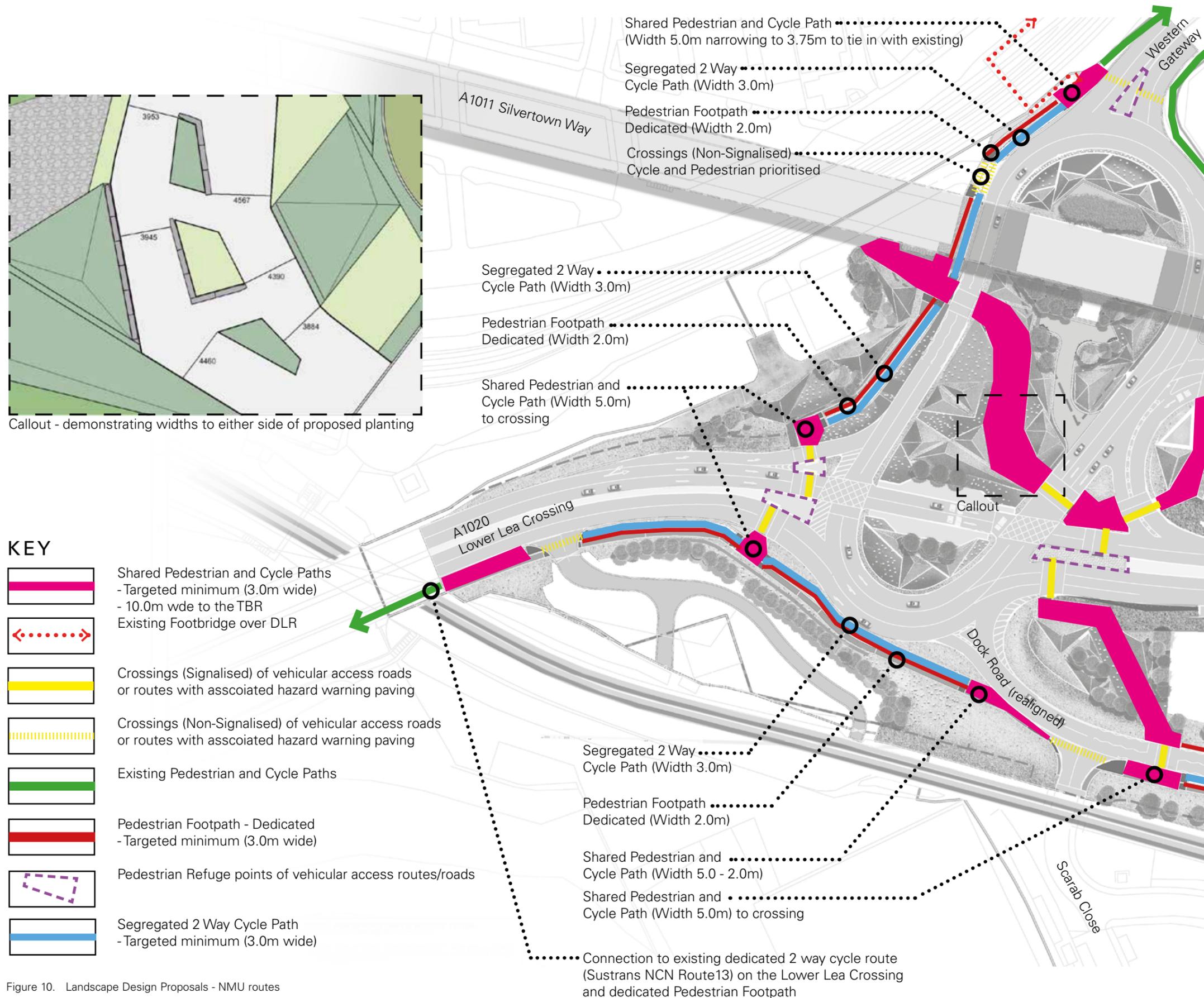


Figure 10. Landscape Design Proposals - NMU routes

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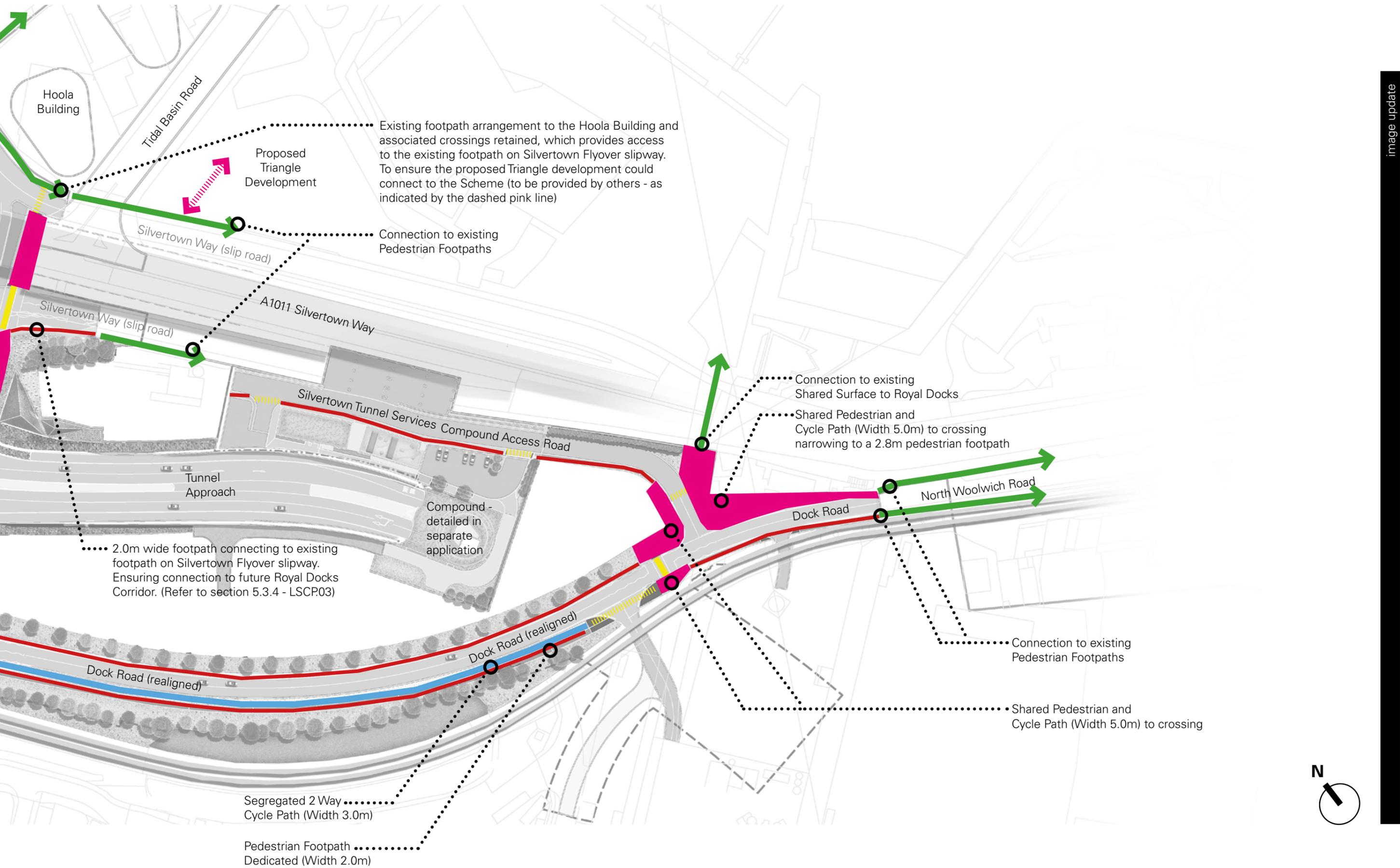


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3.6 Site signage, wayfinding and public art

3.6.1 Signage and wayfinding

In the landscape concept 'Part of the City', directional and instructional signage is combined with 'CONSIDERATE DESIGN' to contribute to the Schemes 'CONNECTIVITY'; physically integrating into its surrounding context and the promotion of a legible network (LSCP.03).

The TBR will form a key node in the wider east/west pedestrian and cycle journeys through this area of London. The revised TBR generates a highly visible wayfinding element with the DCO boundary facilitating pedestrians/cyclists moving east/west across the area (from the Royal Docks to the City) and also north/south (from Canning Town and to Silvertown), through improved dedicated and segregated cycle lanes (including the improvement to the existing Sustrans Route 13).

The landscape design proposals demonstrate the approach of reinforcing wayfinding in using hard materials that reflect the intent of the Royal Docks (LSCP.05) and the bold use of soft landscaping, to create seasonal colour coupled with the replacement of the lost trees (LSCP.14) as a key green node. The LBN Royal Docks: Landscape Design guide (2020) promotes the use of Legible London signage which has been reinforced in the Scheme proposals.

The design supports wayfinding through the placement of Legible London Totems (to support the application of LSCP.01 and 03). The location of these physical wayfinding elements is provided for in Section 3.9 Site Furniture. The plan opposite demonstrate the approximate locations for Totems in proximity to the TBR (finger post signage is also proposed to be sighted along Dock Road and the Western Gateway, to ensure clear guidance for users of the area).

Note: Signage has been considered and implemented within the Scheme in coordination with the highway designer, refer to highways package and in particular Newham Traffic Signs and Road Marking Plans T150030-ARU-TRS-17-ZZ-DRG-HE-0001 and 002.

Reference should be made to the Section 3.8 Site Furniture and landscape drawings as noted in Section 1, for further details and exact locations of pedestrian focused signage.

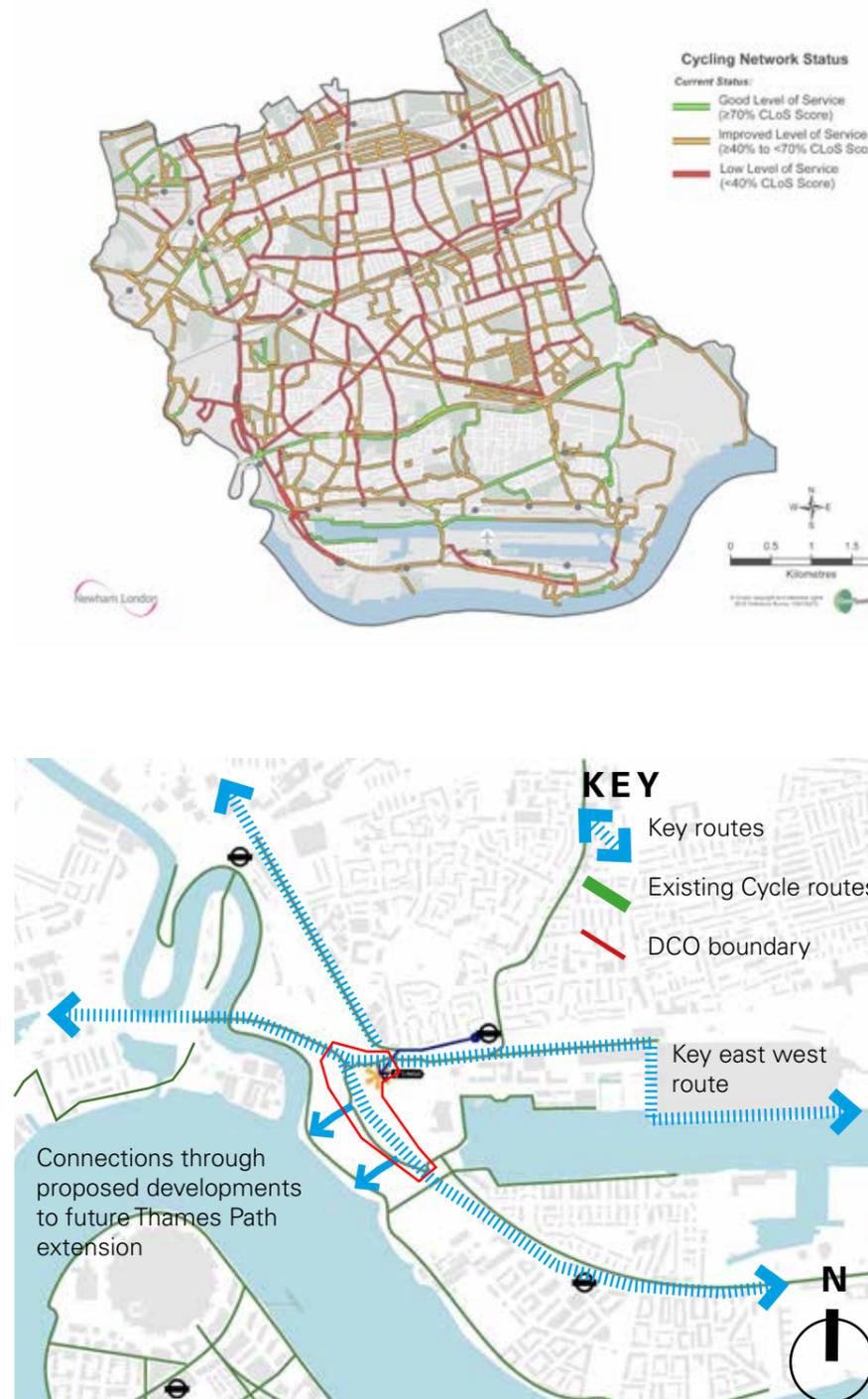


Figure 12. Key connections through and beyond the DCO boundary

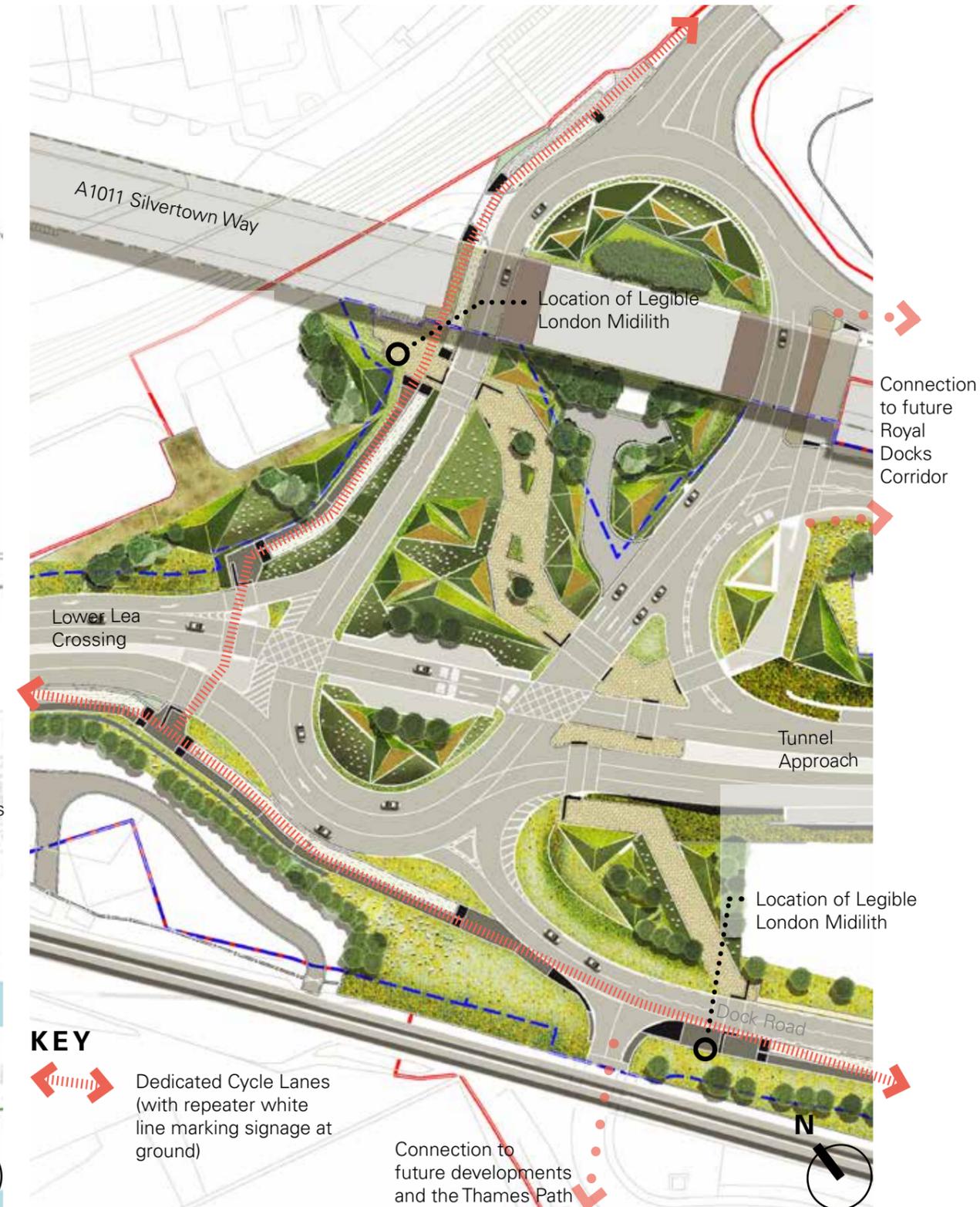


Figure 11. Rendered Plan showing the Tidal Basin Roundabout and wayfinding/signage locations

3.6.2 Public art

Through the development of the detailed landscape design suitable locations for art have been identified and safeguarded (to support the application of Public Art Design Principles). For further details, please refer to Section 5 of this report (and the relevant design principles) and the following document:

- Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002).

Due to the ongoing nature of the developments to the area, in particular the Thameside development and across the River Lea (at London City Island and Trinity Buoy Wharf).

Wider plans and initiatives have been proposed for the Bow Creek/River Lea; and it is considered that a holistic approach to the delivery of a public art programme should be approached and the integration of the Scheme with existing initiatives - such as the Line, or LBN's proposals for greening of the Silvertown Way.

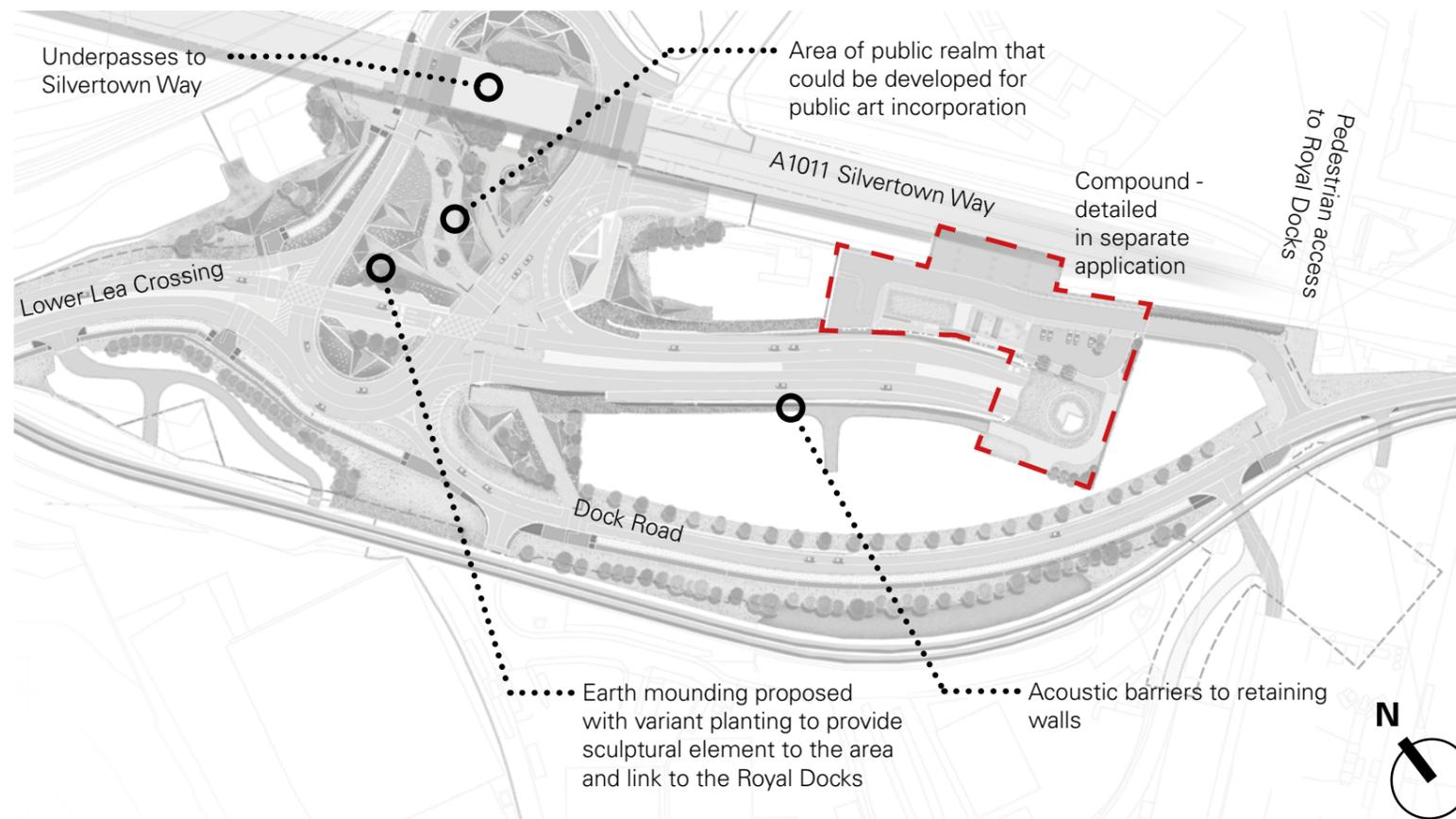


Figure 14. Rendered Plan demonstrating the sitting of green installations and locations for public art

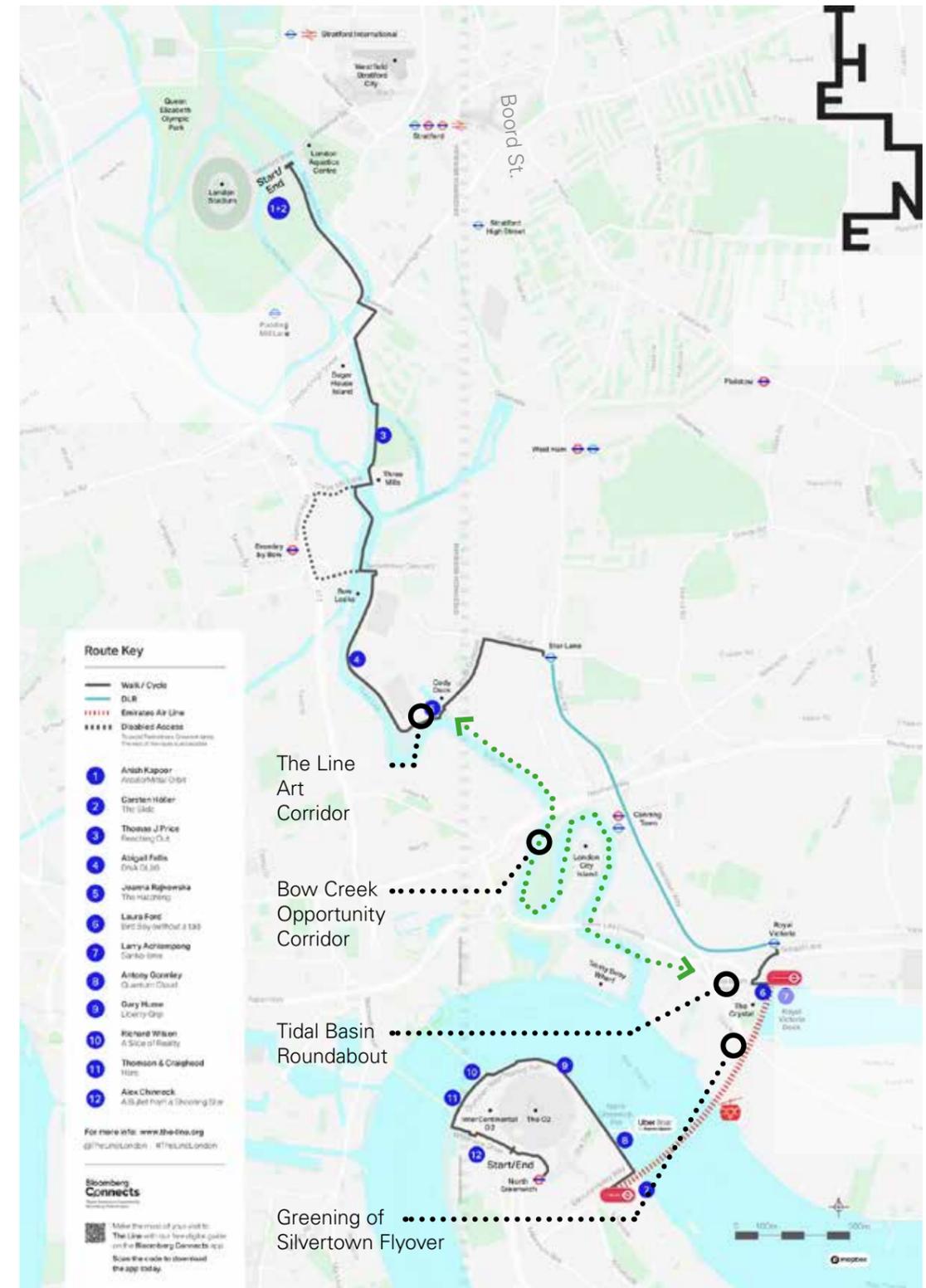


Figure 13. Opportunity - The Line (London's first dedicated public art walk)

3.7 Hard landscape

3.7.1 Introduction

The material proposals strive to enhance both the pedestrian and vehicular experience through the creation of an attractive roadside environment. The palette directly responds to its surroundings and the application of LSCP:01, 02, 04, 05, 06 and 15.

The palette reflects on discussions with the LBN, TfL and SDCGs and the DRP and as set out in the DCO information. Precedent material images of the palette are provided in this Section and the plan opposite demonstrating their application in the Scheme.

3.7.2 Materials

The materials referenced in this section reflect the public realm and those areas that will be used by pedestrians and cyclists. The review of and application of the LSCPs and relevant guidance has been considered (reference should be made to these Section 5 of this document) in the detailed design of the landscape proposals.

The design proposals seek to reflect the location and notion of Scheme as 'Part of the City'. This has resulted in a CONSIDERATE DESIGN that is simplistic and functional in its approach to use materials that promote CONNECTIVITY, prioritising the movement of the COMMUNITY across the Scheme.

Note: This section provides an aesthetic overview of materials and their location, and should be read in conjunction with the set of Landscape Plans (as referenced in the Section 1 of this report) for further detail and their exact location.

Reference should also be made to the highway and lighting drawings for further information relating to the road network.

Section 3.8 provides details on 'Site Furniture'.

KEY

	Road Surfacing
	Access Routes (Maintenance)
	Shared Surface Resin bound aggregate
	Cycleways - Dedicated Asphalt
	Pedestrian Footpaths - Dedicated Concrete Paving
	Shared Pedestrian / Cycleway Resin bound aggregate
	Hazard Cycleway Ending Warning
	Blister Road crossing warning

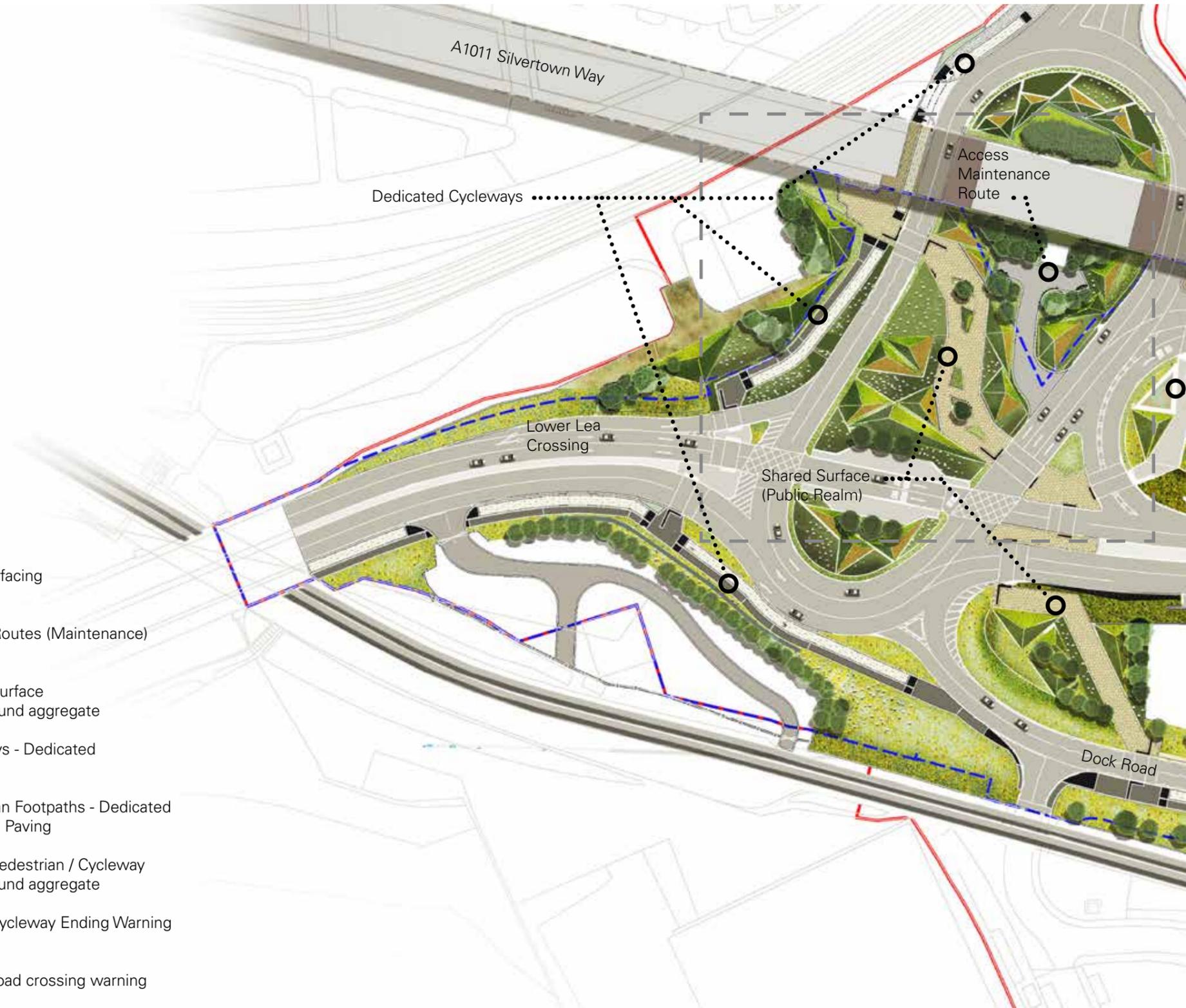


Figure 15. Landscape Design Proposals - Hard Materials

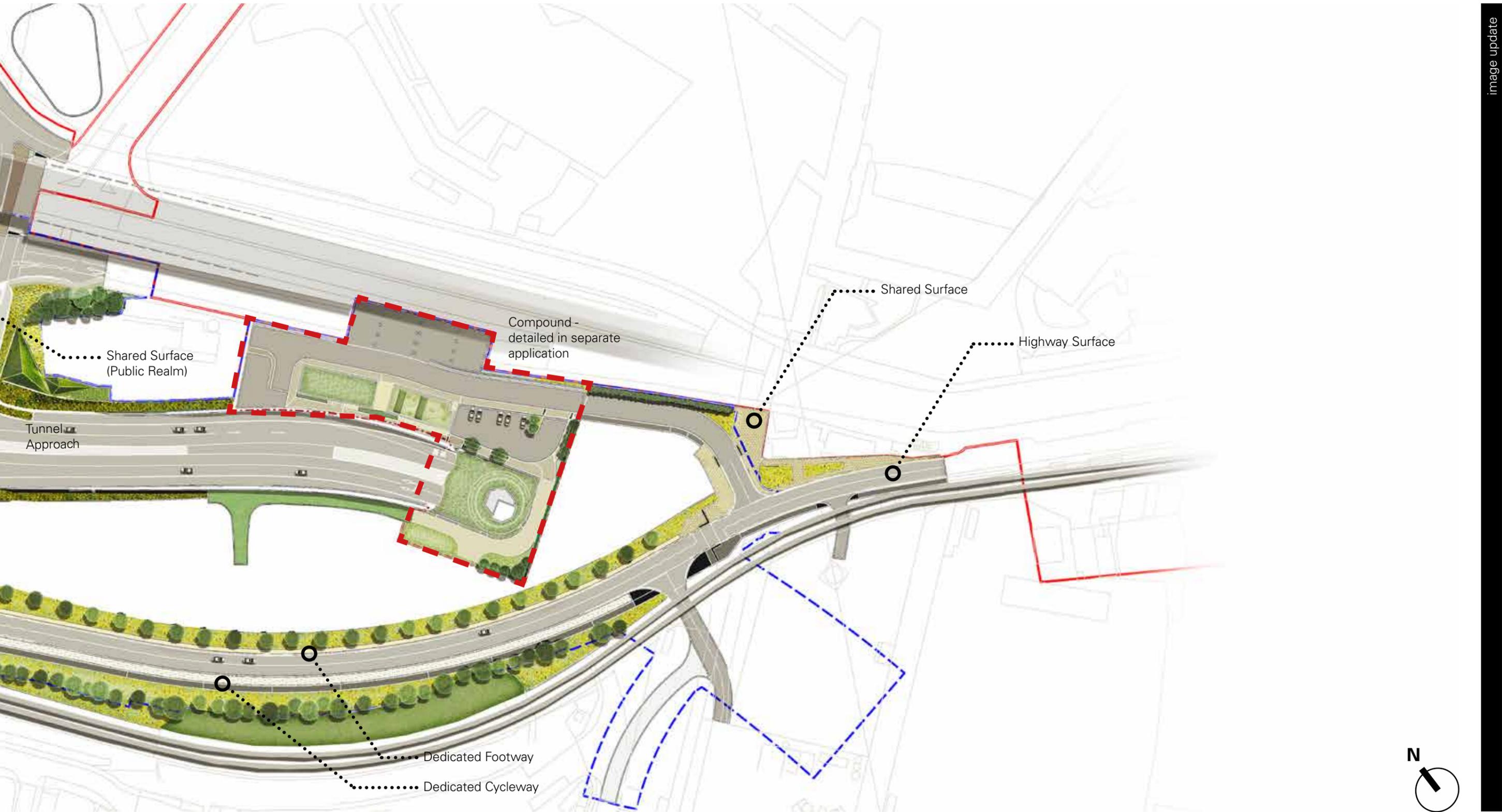


image update

3.7.3 Tidal Basin Roundabout (TBR)

The TBR forms a key nodal point of the wider east west and north south pedestrian and cycle journeys through the area.

The careful selection of materials in this area aims to enhance this pedestrian and cycling journey in creating a key orientation point in Silvertown.

3.7.4 Materials

The approach to the creation of a public realm setting to the TBR is through the promotion of a shared surface approach coupled with a landscape strategy to provide an element of enclosure and distinctiveness through zoning.

The approach to this space implements LSCP08 and 14, to reinforce the application of the hard materials and its relevant Landscape Design Principles. Balanced against the competing servicing and technical requirements of the Scheme.



Figure 16. TBR Landscape Design Proposals - Hard Materials

3.7.5 Material overview

Materials selected implement Landscape Design Principles LSCP05 and 15; and also reflect discussions held with the LBN, TfL, SDCGs and the DRP; and the comments received.

Additional reference has been made to relevant design Guidance as set out in LSCP.01 and ultimately in reference to Project Agreement Schedule 10 (which prescribes standards and specifications for the design and construction of the works) to ensure material selected are fit for purpose and meet the technical requirements necessary the Scheme.

Footways (A, B and C)

A restricted selection of materials has been adopted to provide a simple and robust pedestrian network.

Materials proposed have drawn on LSCP.15, relevant guidance and comments received from LBN and the SDCG.

In line with LSCP.15 a shared surface (A) (for pedestrians and cyclists) approach has been implemented to the Tidal Basin Pathway - this has been extended to the north to marry with the foot of the Silvertown flyover (steps which connect to the bus route above) and to the south to meet with the location of the future Docklands Light Railway (DLR) station.

Robust concrete paving (B) us to be used in line with the LBN guidance to the footways.

Blister (C) paving is to be used to demote crossing points for pedestrians to footways. Relevant colours will be utilised, in respect of relevant guidance, dependant upon signalisation of crossings.

**Note: The NMU routes through the TBR provides for a shared surface to be used for both pedestrians and cyclists in line with LSCP.15.*

Cycleways (D and E)

For the dedicated cycleway a simple and robust asphalt (D) was prozed initially coloured as indicted in the precedent images opposite - the LBN requested for this asphalt to be simply black.

A simple set of signage akin to the precedent shown (D) will be used to shared routes (cycles and pedestrians) - as per guidance set out in LSCP.15.

Hazard paving (E), as shown, is proposed in line with relevant TfL guidance to indicated the beginning and end of each section of segregated cycleway.

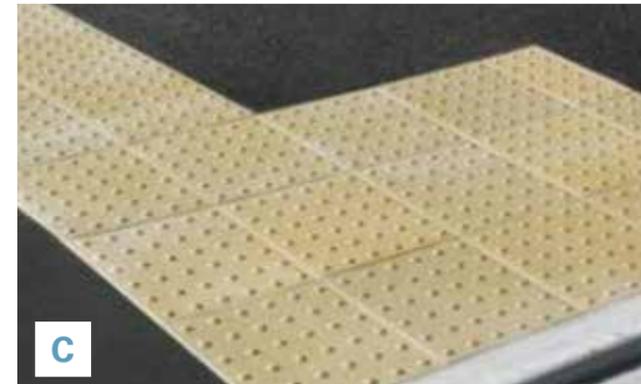


Figure 17. Precedent images - Hard Material

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3.8 Site furniture

3.8.1 Introduction

The plan opposite illustrates the location of key site furniture, signage, seating and boundary treatments within the Scheme and the requirements as set out in the DCO information including the replacement of existing or modified boundaries.

New boundary treatments (fencings and Noise/Acoustic barriers) have been incorporated in the Scheme as required and appropriate to tie into the existing setting.

The palette of site furniture has been developed in discussion with the DRP and LBN. With proposals accepted in the developed design stage with their DRP to ensure a robust palette which aligns to the general intentions of the LBN Royal Docks Landscape Design Guide and the Scheme Design Principles.

Note: This section provides an aesthetic overview of site furniture and their location, and should be read in conjunction with the set of Landscape Plans (as referenced in the Section 1 of this report) for further detail and their exact location.

KEY

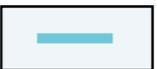
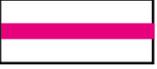
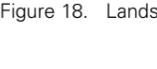
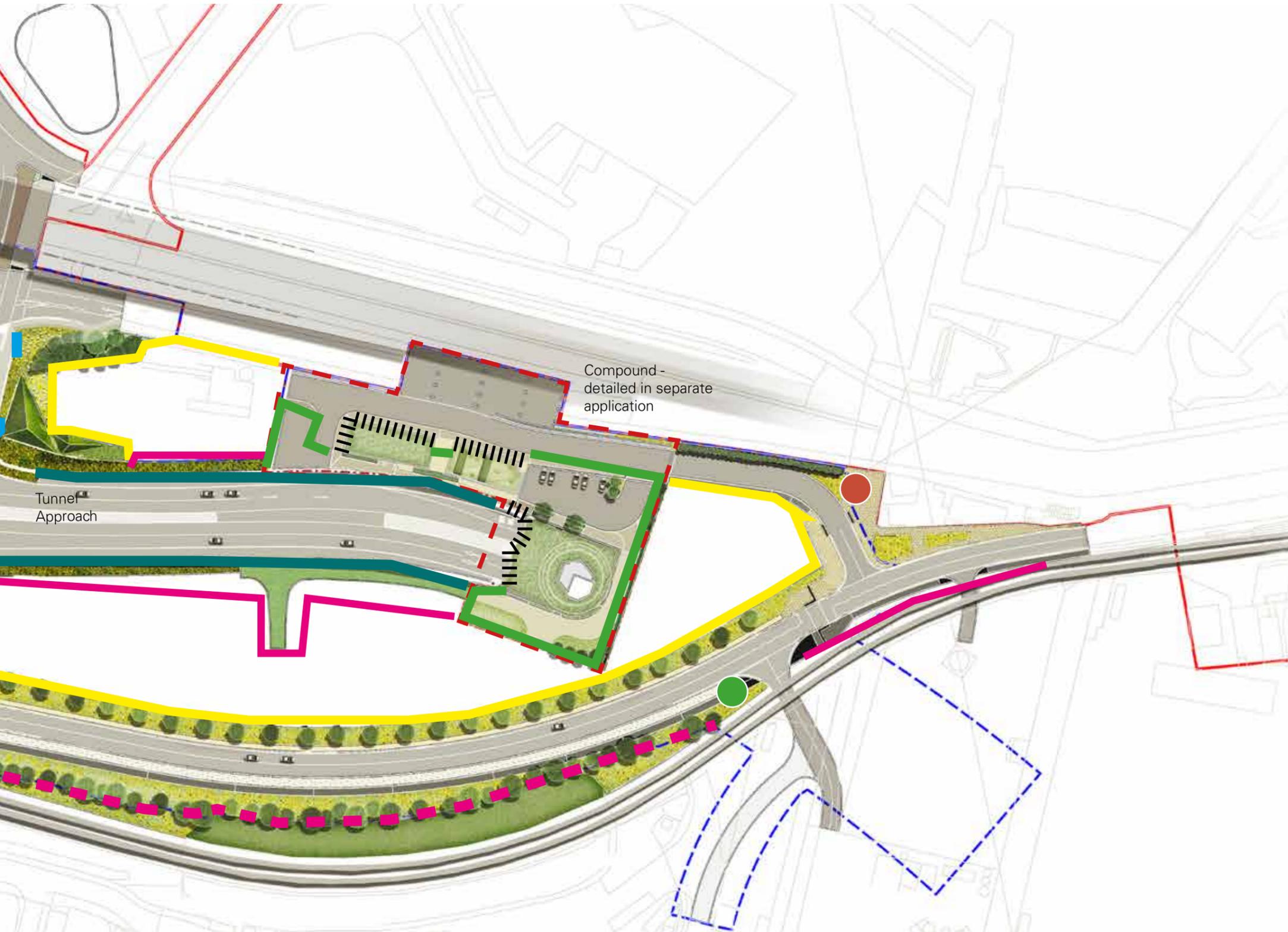
	Legible London Midliths (A)
	Legible London Finger Posts (A)
	Seating (B)
	Boundary Treatment (Weldmesh fencing 2.0m in height)
	Boundary Treatment - To Development Plots (Hoarding 2.0m in height)
	Boundary Treatment - To Compound (SR2 Weldmesh fencing min 2.4m in height)
	Boundary Treatment - To DLR (New Galvanised Steel Palisade Fencing - installed by CJV though approved under a separate planning approval - to DLR standards)
	Boundary Treatment - To DLR (Existing Weldmesh fencing - to be retained)
	Noise Barriers (Approximate locations)
	Building Facade - To Compound (Forming secure boundary)
	Compound - Site Boundary
	Gabion Wall

Figure 18. Landscape Design Proposals - Site Furniture Plan (Illustrative locations)





Compound -
detailed in separate
application

Tunnel
Approach

image update

3.8.2 Seating and litter bins

These are components utilised within area of public realm, designed in conjunction with ground floor materials (i.e. paving/surfacing and soft planting).

Litter Bins (A) - have been selected from the same range and supplier as that of the seating to ensure a consistency with the design aesthetic approach.

Seating (B) - provides opportunities for the user to enjoy their surroundings and deliver respite for certain users.

The furniture proposed has been commented on by the DRP/LBN and selected reflecting local guidance, TfL guidance and that set out in the DCO. Simple robust reconstituted stone material been selected (to be both vandal and graffiti resistant) - simplistic in shape and appearance to best integrate with the public realm setting. Their positioning to areas of anticipated increased footfall, with high levels of lighting, clear near and distant sight lines and in close proximity to signage maximises natural surveillance to deter anti-social behaviour.*

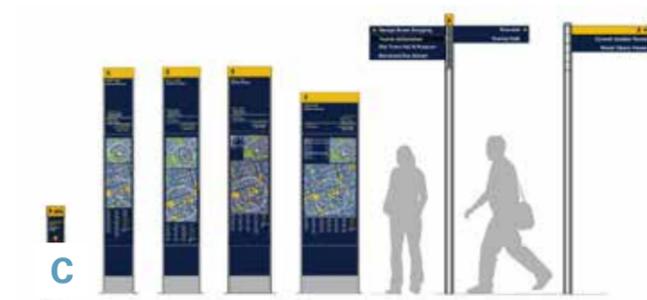


*All site furniture will be proprietary fixed to ensure they are secured to a fixed base and have been positioned to remove opportunities for assisting climbing especially in close proximity to the compounds.

3.8.3 Signage

Wayfinding is highlighted in an earlier section with approximate locations noted. Signage that is appropriate for pedestrian (and cycle) users has been considered as part of its integration in to the landscape proposals and as noted Legible London (C) has been utilised to fulfil these requirements. Where practicable seating has been located in close proximity to wayfinding, monoliths to further support their usage. Where cycle and shared routes are proposed repeater signage will be marked on the ground (D) to reduce vertical elements/street clutter.

Reference has been made throughout the design process to the Highway Design to ensure the vehicular signage and signalling is appropriately located. and considered within the street network to ensure clutter is reduced as far a practicable with posts located to avoid unnecessary obstruction to pedestrian and cycle users. All signage has been designed adhering to relevant technical guidance and Design Principles (in particular SWGF.01-05 and LSCP.02 & 04).



3.8.4 Lighting

The approach to lighting has been developed in response to the relevant Design Principles and in conjunction with relevant disciplines (e.g Architecture Landscape, Ecology and Highways). This approach has ensured its suitable placement, aesthetic and levels to positively impact on the Scheme; facilitating legible, safe and secure wayfinding for all users and is integral to the successful delivery of the Scheme.

The lighting of the Scheme** has been developed through the design stages, considering the existing levels of provision and in respect of the varying transport modes, to ensure effective CCTV, promoting the reduction of accidents or personal injuries, reducing fear of crime. Reference should be made to the Landscape drawings (as listed in Section 1) and the following:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001. This report sets out the lighting class selection (lighting intensity) for public realm lighting and lighting column heights; and
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001. This report ensure the proposals for the Scheme are reviewed to ensure lighting levels are adjusted to meet guidance and the safe requirements of users.

Lighting levels and unit selection has adhered to the relevant TfL Streetscape Guidance and specifications derived from industry standards, complemented through:

- the application of a uniformity parameter in adherence to BS 5489-1 to reduce and remove areas of high contrast; and
- a risk assessment across the Scheme to step lighting levels either up or down to address fear of crime and/or promote biodiversity.

The design has been undertaken by a team of competent street lighting engineers who have collectively over 40 years' experience in functional exterior lighting design including a Chartered Engineer (CEng) and member of the Institute of Lighting Professional (MILP) that holds an ILP Exterior Lighting Diploma. Lighting Professional Level 4 is considered to be met by the lighting team and the team are fully conversant with BS 5489/EN 12301 and are able to derive appropriate lighting levels to apply to the lighting design that ensure adequate illumination whilst giving consideration to mitigating environmental impact.

**Based on Secured by Design for commercial developments, the overall uniformity of light is expected to achieve a level above 15% for P classes or BS 5489:2013 compliant.

3.8.5 Boundary treatments

Boundaries varies across the site, due to the various land holdings and differing approaches taken over time. The Scheme will ensure existing boundaries are retained to form part of the Works, with any existing gaps in-filled to match to ensure the promotion of contiguous boundary treatment.

During the construction of the Scheme suitable hoarding (E and F) will be utilised - precedents demonstrated below (which are tbc with the project sponsor TfL).

Proposed fencing has considered the sensitive nature of the Scheme, existing context and future developments to select boundary treatments that will be simplistic in form and provide suitable security requirements as established in the Project Requirements Schedule 10 and positively address guidance set out in LSCP02.

The proposals are for a neutral boundary treatment (precedent image G - 2.4m high SR2 rated weldmesh fencing system - to reflect guidance provided by the security consultant) that will be sympathetic and transparent to allow for natural surveillance, lighting to penetrate and opportunistic views through to existing and proposed urban greening. In discussion with the LBN and review of the LBN Royal Docks: Landscape Design guide (2020) fencing is to be a Zinc primed RAL7016 Anthracite Grey colour (to match existing cranes).

Note: The location of permanent existing, replacement or proposed fencing is provided on the previous plan for illustrative purposes only.

Reference should be made to the Landscape drawings (as listed in Section 1) to further understand their location and setting.



3.8.6 Highways protection

Vehicle Restraints Systems (VRS) are a necessary requirements of the Scheme, to absorb and decrease the force of a errant vehicle. Their requirement is predicated by the nature of the project and compliance with Project Agreement Schedule 10, DMRB and with BS EN1317. They are reinstated to provide a continuation of protection to the Lower Lea Crossing.

Reference should be made to both the Highways Design information and the Landscape drawings (as listed in Section 1) to further understand their location and setting.

VRS with appropriate setback and working widths with have been located to notable features and hazards to decrease risk to all users.

3.8.7 Noise barriers

Noise barriers have been designed in compliance with Project Agreement Schedule 10 and located to mitigate increments in noise levels beyond permissible limits, in respect of document 6.1 Environmental Statement (ST150030-PLN-ZZZ-DSD-ZZ-0066).

The opportunity to utilise the noise barriers as a feature is explored through the opportunity to Public Art (J), that will generate a high quality visual appearance and feature for the tunnel.

For further information on their visual appearance reference should be made to the Newham - Silvertown Tunnel - Urban Design Principles (Document Reference: ST150030 DRM PRM 17 Z13 RPT AR 0002).

Reference should be made to both the Highways Design information and the Landscape drawings (as listed in Section 1) to further understand their location and setting.

Their location is provided on the previous plan for illustrative purposes only.

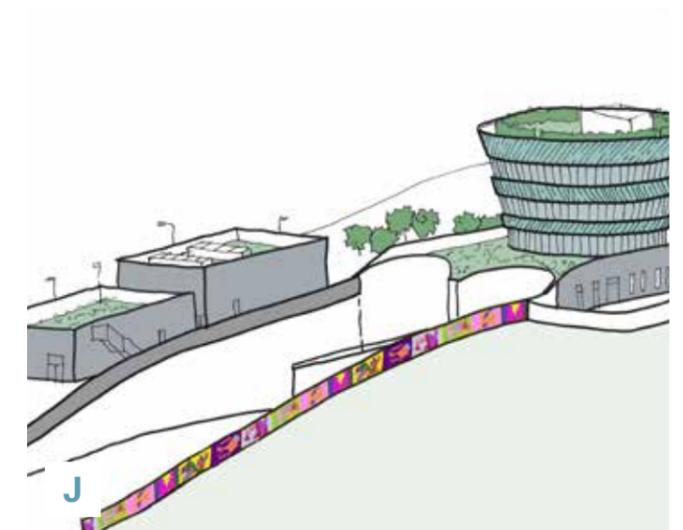


Figure 19. Illustrative Design Proposals to noise barriers

3.9 Green infrastructure

3.9.1 Introduction

Green infrastructure (GI) is a network of multi-functional green space and other green features, urban and rural, to deliver quality of life improvements and environmental benefits for neighbouring communities. GI is not simply an alternative description for conventional open space. The implementation of GI on the Scheme reinforces the key aims of CONSIDERATE DESIGN, CONNECTIVITY and COMMUNITY, to positively intergate the landscape proposals with its surroundings.

The planting proposals for the Scheme enhance both the non-vehicular and vehicular users experience through the creation of an attractive roadside environment. The palette responds to the project Biodiversity Action Plan and Mitigation Strategy (BAPMS), and generates a series of GI components, to support the wider GI network for the area, its interconnectedness and the application of LSCP.11 and 13.

The planting proposals generates a series of GI components, to engage and connect to the surrounding GI network, adjacent to the Scheme, promoting its interconnectedness and the application of key design principles LSCP.11 and 13. This interconnectedness being of paramount importance for integrating the Scheme back in to the area and reinforce the concept of 'Part of the City'.

A number of initiatives and plans have been generated for the area - in particular the Bow Creek (as demonstrated opposite) and the LBN Royal Docks: Landscape Design Guide. Which have been reviewed and considered in the development of the Scheme.

As noted the intention of the works surrounding the implementation of the Scheme will be to reintroduce listed habitats (as identified in the BAPMS) and reinstate/improve the GI network. This approach has been balanced with a review of the relevant GI material/policy within LBN and directly the information contained within the LBN Royal Docks: Landscape Design Guide - in particular the section on Green Moves and the introduction of Open Mosaic Habitat.



Figure 20. Bow Creek - The River Lea Green Infrastructure Proposals

3.9.2 Approach

The approach to planting, including trees (which are components of green infrastructure) have considered utilities as a primary constraint (reflecting the application of LSCP.09 and as noted earlier in this section), in particular the impact of necessary easements and offsets from utilities. Engagement with these providers has been undertaken and approvals provided.

A key aspect is the impact utilities and hard standing materials can have in the restricting the extent of soil volumes for trees resulting in negativity impacting their long term growth. The location and selection of species has been married with these site constraints to ensure the maximisation of soil volumes, to allow for the future growth of the trees (and reflect the application of LSCP.10).

Soil volumes are also noted in the LBN Royal Docks: Landscape Design guide (2020) - the approach has been to prioritise tree planting in soft to maximise soil volumes and provide volumes in line with this guidance and to target 2/3 of future canopy (as derived from the Urban Greening Factor from the GLA).

This approach has been coupled with the development and submission of a Management and Maintenance Strategy (the Silvertown Landscape Maintenance Plan ST150030-ARU-FAE-17-ZZ-MAN-LA-0001) for the Scheme, to ensure GI assets are properly maintained (to ensure application of LSCP.11). This Strategy includes guidance on the inspection of planting material and requirement to replace seriously damaged, diseased or dead elements, in the first available planting season (reflecting the DCO).

In conjunction with ecologists the application of the LSCP.13 (green walls and roofs) has been explored. Green walls were proposed to the retaining structures through the design development, though on review, are considered impractical and a maintenance risk, a view supported by TfL. Green roofs have been included in the Scheme, applied to the portal buildings.

Note: Reference should be made to Section 5 of this report for further details in respect of the above. In particular LSCP.09 - Placement of Trees.

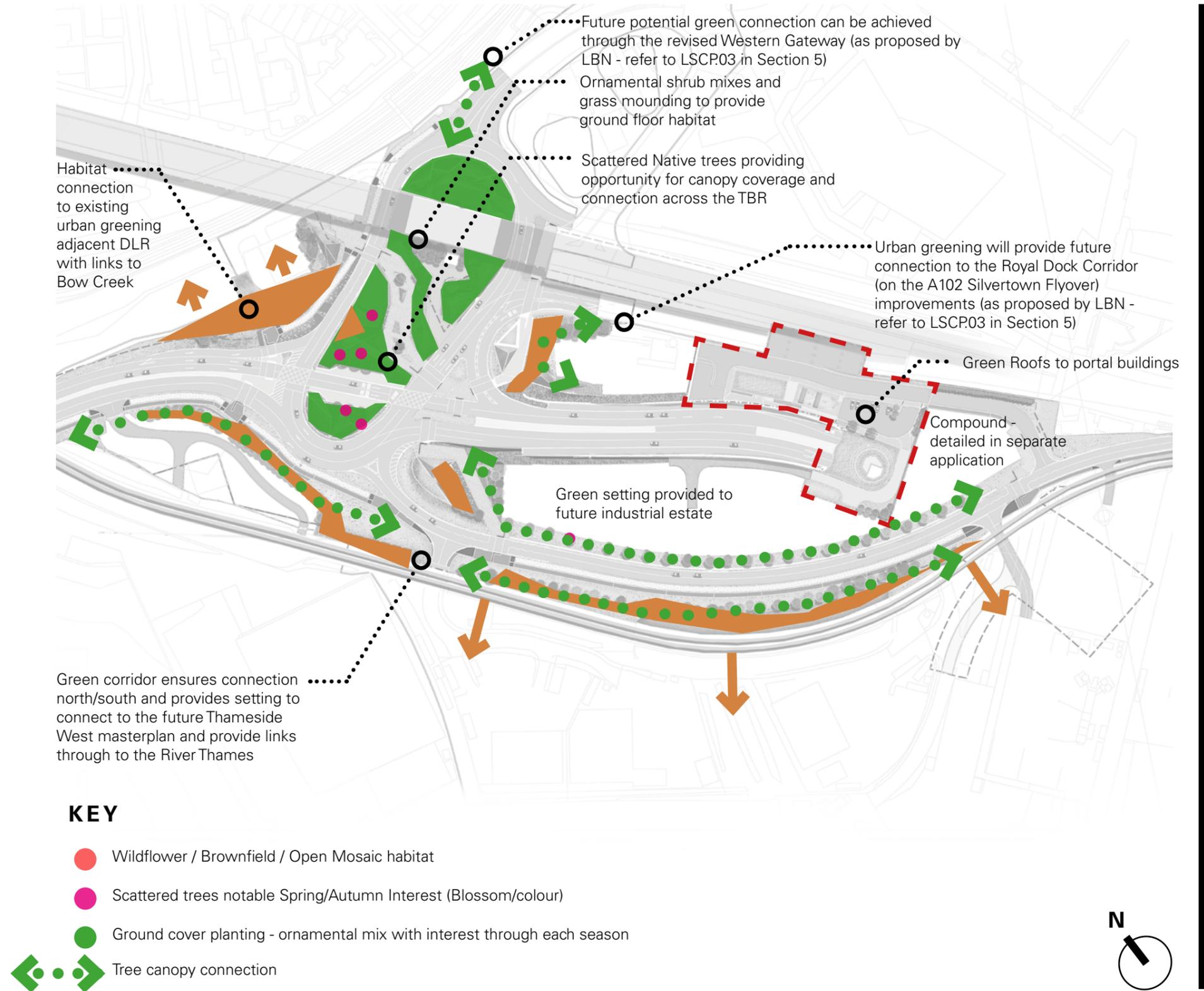


Figure 21. Green Infrastructure Components

image update



3.10 Soft landscape

3.10.1 Introduction

The planting proposals aim to create distinctive character areas through the use of various plant mixes. Trees and planting species selected adhere to species proposed in the BAPMS, LSCP.11 and with reference to guidance from the LBN Royal Docks: Landscape Design Guide. Where additional species have been selected these have been reviewed and agreed with the ecologist.

The planting proposals have sought to reinforce CONSIDERATE DESIGN and provides interest and amenity for the COMMUNITY, particularly at key points along the east to west journey, such as the TBR. The selected palette references species found to Bow Creek, LBN Royal Docks: Landscape Design Guide and to the east of the Scheme, in the Royal Docks, to provide continuity along this journey.

These mixes are typically more formal within the central core of the TBR, which has more of a designed public realm feel, and becomes naturalistic towards the edge areas of the scheme. The contrast between more formal and more naturalistic planting is achieved by the selection and layout of plants but can be enhanced further by how these areas are managed over time.

All plant mixes aim to be rich in biodiversity, particularly with regard to the species identified in the project BAPMS. Plant species in this area provide valuable habitats for bees, butterfly's, bats and insects, tailoring this information to ensure species selected are primarily resilient to climate change and comments/requests received in design development for plants to be - 'right plant in the right place'.

The approach to planting of the scheme has been subdivide (and explained in this section) these two areas are as follows:

The Core (A) - The TBR designed to generate a distinctive form and public realm setting; and

The Edges (B) - The areas to the edge of the Scheme, are designed to consider the baseline context and use stitch palettes (from the LBN Royal Docks Landscape Design Guide) to integrate with the surroundings.

The DCO reference design provided substandard lane widths, and the proposed design has sought to improve on this where possible to improve safety for all users this has been implemented in conjunction with curve widening to allow for suitable swept path turning envelopes of both buses and HGVs. These design requirements have been considered in the progression of the landscape design, seeking to accommodate and reinstate areas of last green space due to the required changed of the grey infrastructure.

Planting alongside the street network includes for long, linear wildflower verges and brownfield habitat along the roadside. These are complemented by areas of ornamental planting (predominantly on the TBR) each of these areas has a biodiversity value by aiding ecological connectivity, providing habitat for wildlife and opportunities for pollinators. Together these areas promote the application of the BAPMS and Landscape Design Principles LSCP.10.

The large areas of wildflower and brownfield habitat meet lower maintenance requirements of a busy transport corridor whilst providing a high biodiversity value and contributing to the creation of open mosaic habitat across the Scheme.

Note: This section provides an aesthetic overview of the planting proposals (including species and habitat) and their location, and should be read in conjunction with the set of Landscape Plans (as referenced in Section 1 of this report) for further detail and their exact location.

Reference should also be made to the specification document which supports the landscape plans which provides detailed information in relation to the relevant and suitable build up and typology of growing medium for each planting typology, to ensure the right plant has the right support across the Scheme.

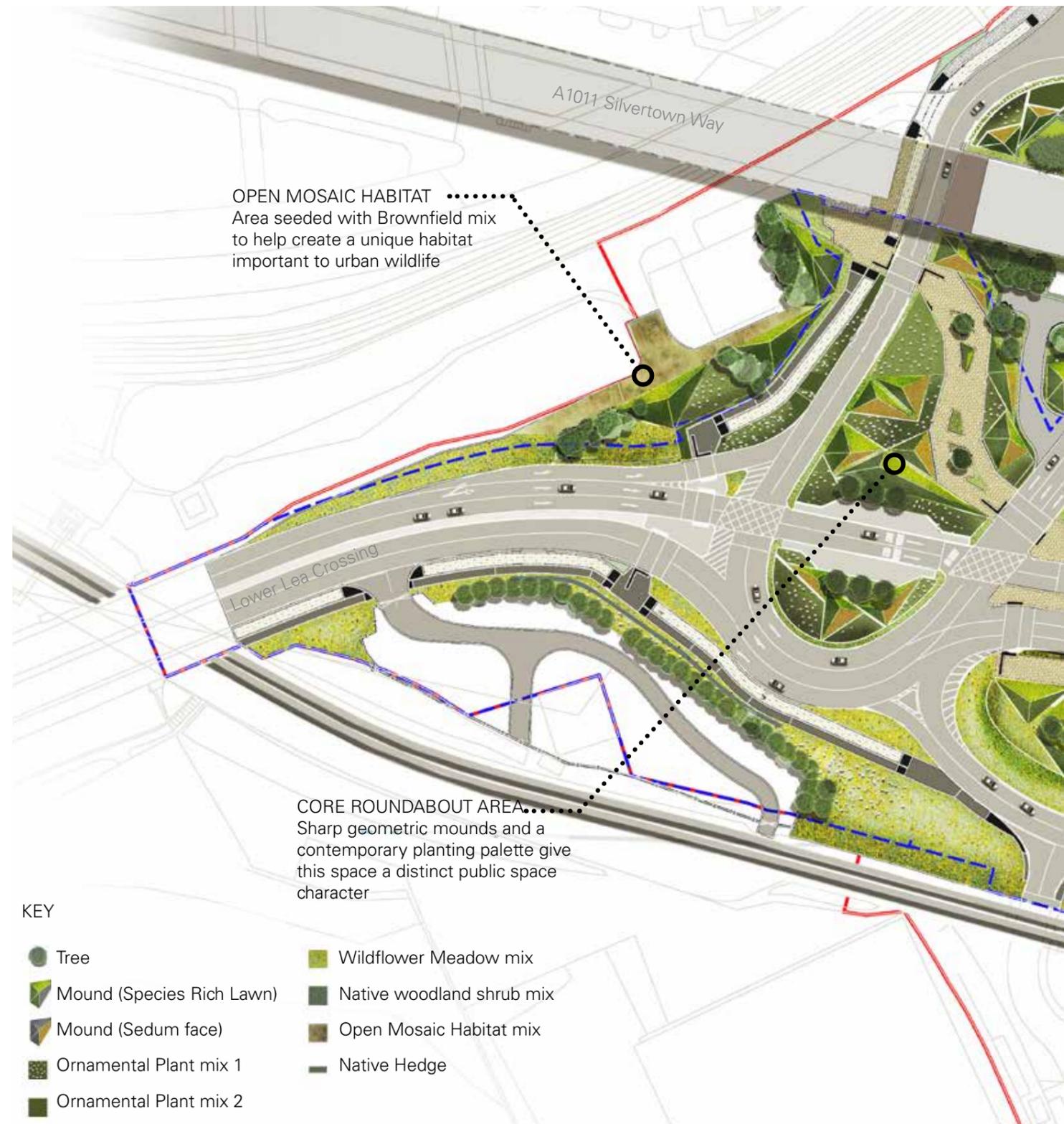


Figure 22. Scheme wide Landscape Planting Proposals

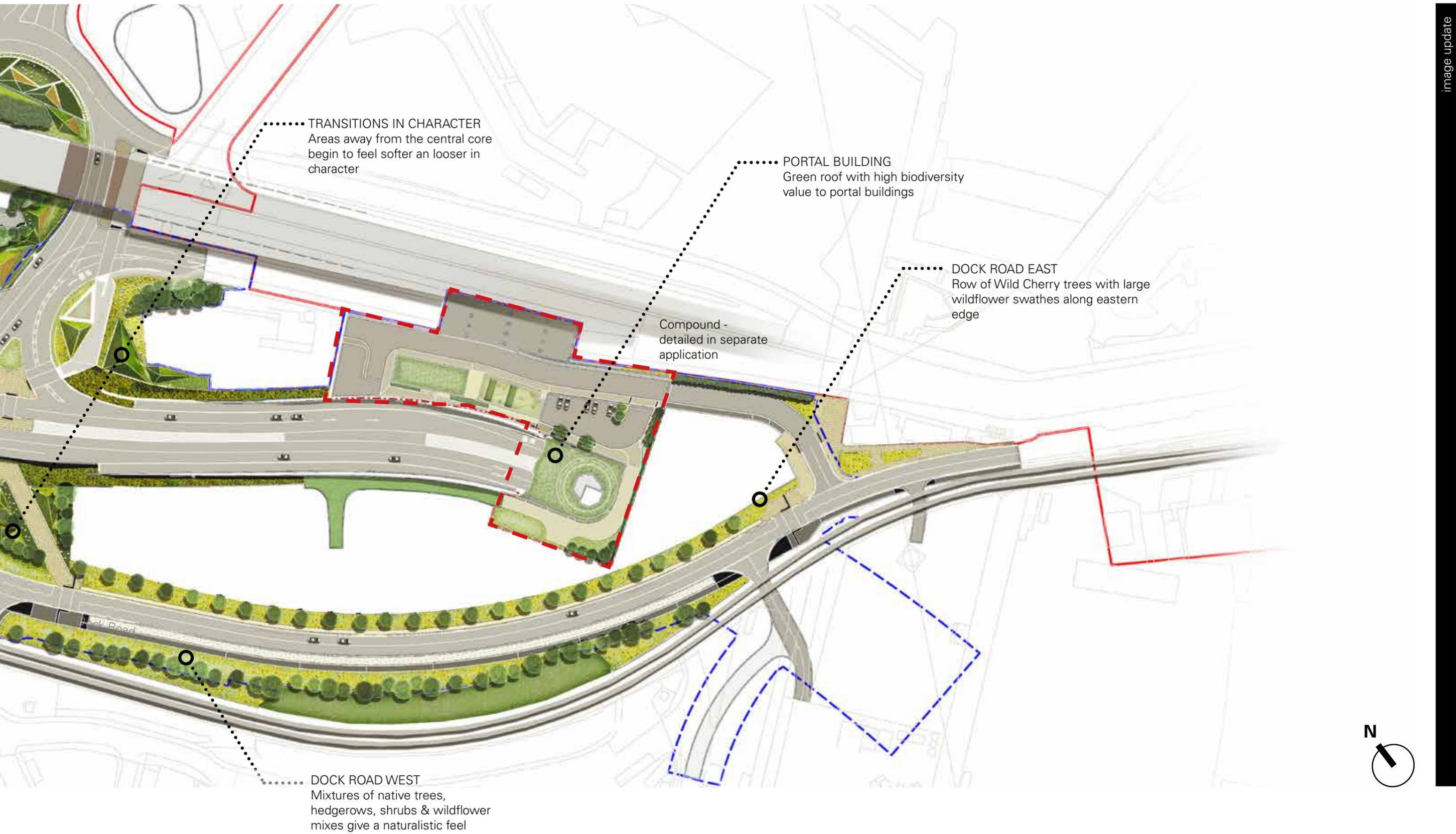


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3.10.2 The Core (A)

The TBR acts as a bridging point between the naturalistic Bow Creek in the west and the sharper public realm around the Crystal building in the east (and its wider hard industrial setting of the Royal Docks).

Raised angular mounds, each with a different scale and geometry, form prominent features in the core area. The mounds vary in height from 400 - 1000mm, to provide a gentle undulation across the TBR and a step from in landscape scale from west to east. The outward facing mounds are of a larger scale to ensure the design is easily understood by those travelling through the site at higher speeds. This includes both cyclists and motorists. Repetitive and rhythmic changes in the block planting convey movement.

The palette within the centre of the TBR focuses on slower moving pedestrians or cyclists that have dismounted. The central path through the roundabout is partly enclosed by the angular mounds and the mixes used are generally more ornamental. This creates a more intimate space that encourages people to stop and dwell in the seating areas provided. The public realm interspersed with tree planting (within the constraints as noted in Section 3.9) - a selection of key signature species of tree planting from the LBN Royal Docks: Landscape Design Guide including - *Betula pendula*, *Prunus avium*, *Pyrus calleryana* and *Sorbus aucuparia* has been taken to mix with those proposed in the BAPMS.

Areas of more natural planting are provided either side of the overpass. This includes more densely planted areas (with a significant proportion of existing trees retained reflecting comments to the initial design - these trees will provide a maturity to the landscape proposed and allow for a step down to new trees and planting proposed) complemented by native hedgerows and areas of woodland edge and woodland understory planting.

Note: species selection from the LBN Royal Docks: Landscape Design Guide has focused on those suggested in the areas defined as Suburban Marshes and Urbanised Hollow - which predominately cover the Scheme and ensure the promotion of connecting to its surroundings; the signature tree - Birch - has been selected and utilised as defined in Stitch 01 in the LBN document.

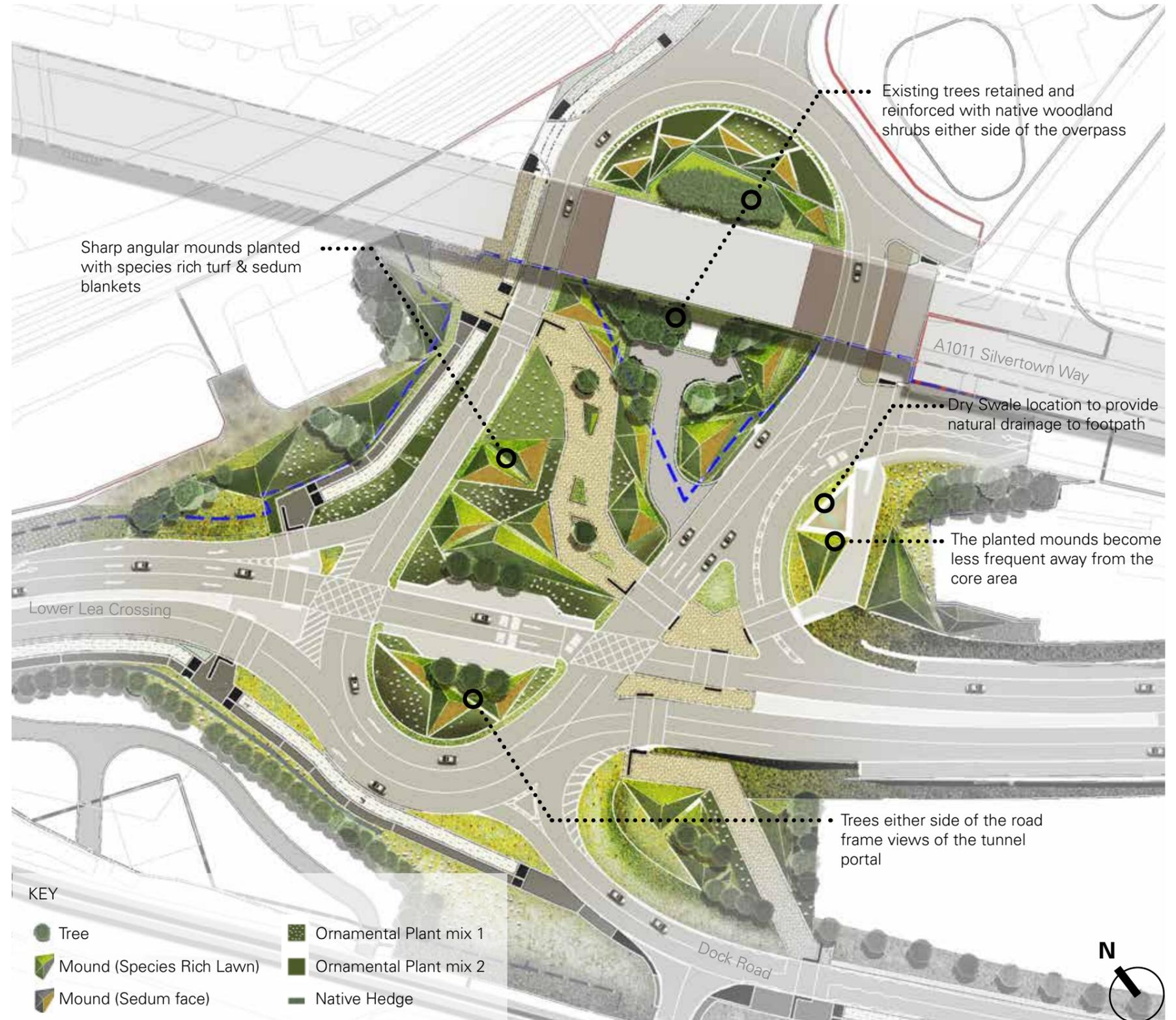


Figure 23. Tidal Basin Roundabout Landscape Planting Proposals

3.10.2.1 Planting proposals

TREE PLANTING

Pyrus calleryana 'Chanticleer' (Avenues to laybys)
Pinus sylvestris (Cental pedestrian route)
Prunus subhirtella 'Autumnalis',
Betula pendula *Acer campestre* 'Elsrijk'
Sorbus aucuparia *Prunus avium* (near overpass)

LOW MIX 1 Clump forming grasses:

Carex morrowii 'Ice Dance' *Festuca glauca* 'Elijah Blue'
Ophiopogon planiscapus (green) *Sesleria nitida*

LOW MIX 2 Rounded soft texture shrubs (to 600mm):

Hebe 'Green Globe' *Hebe pinguifolia* 'Sutherlandii'
Lavandula angustifolia 'Thumbelina Leigh'
Pinus mugo 'Benjamin' *Santolina chamaecyparissus* 'Nana'
Stachys byzantina 'Big Ears'

NATIVE WOODLAND SHRUBS near overpass:

Cornus sanguinea *Corylus avellana*
Crataegus monogyna *Lonicera periclymenum*
Rosa canina *Ruscus aculeatus*
Ulex europaeus *Viburnum opulus*

TALL MIX 1 Add height to central areas (over 600mm):

Festuca mareii *Hebe topiaria*
Helichotrichon sempervirens
Lavandula angustifolia *Pennisetum alopecuroides* 'Hameln'
Pinus mugo *Sesleria nitida*

BLOCK SHRUB PLANTING repeated to edges:

Pachysandra terminalis (Groundcover under trees)
Euonymus japonicus 'Green Rocket'
Lonicera nitida 'May Green'

SWALE MIX:

Carex elata *Carex flacca*
Carex muskingumensis *Deschampsia cespitosa*
Euphorbia palustris *Iris sibirica* 'Tropic Night'
Molinia caerulea *Symphotrichum* 'Little Carlow'

SPECIES RICH LAWN & SEDUM To mounds:

WFG20 Eco Species Rich Lawn
 Supplier: Germinal (or equal and approved)
 Lindum Sedum Mat

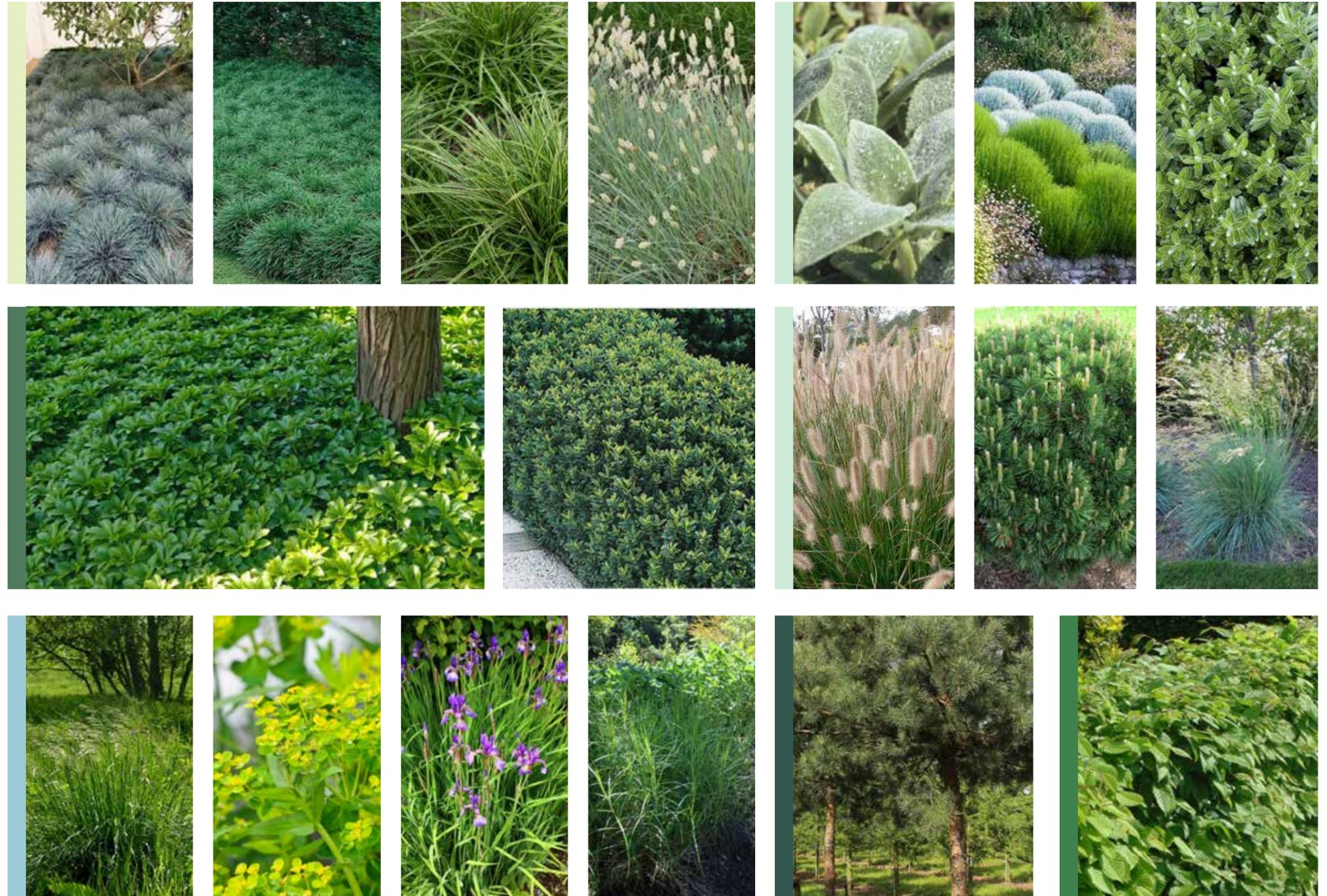


Figure 24. Tidal Basin Roundabout Landscape Planting Typologies

3.10.2.2 Interest and variety

The angular mounds are designed to provide a variety of shifting views as people pass through the core area. The height of the mounds creates moments of intimacy and enclosure, particularly whilst sat down, whilst also allowing clear views to the tunnel portal and DLR station.

Low height planting on the mounds alternates between species rich grass land, blankets and low ornamental planting found within the Scheme.

These changing faces of the mounds reinforce the changing nature of views in and around the core area - providing variety to users as they approach the TBR from different directions.



Figure 25. Tidal Basin Roundabout Landscape Planting Proposals - Interest and Variety

Eastern TBR Approach

Those approaching from the east will initially see the eastern island, separated from the rest of the roundabout by the Silvertown Flyover (A1011).

The planting palette helps tie the island back to the rest of the roundabout, giving the viewer the impression of one coherent scheme.

Western TBR Approach

Those approaching from the west will initially see the western island, separated from the rest of the roundabout by two traffic lanes. The planting on this separate island is a microcosm of the wider scheme and includes areas of wildflower, shrubs and species rich grassland and matting to the mounds. The planting palette helps tie the island back to the rest of the roundabout, giving the viewer the impression of one coherent scheme.

Northern TBR Approach

Those approaching from the north, including motorists heading to the tunnel portal, will focus on the northern faces of the angular mounds which are typically planted with species rich grassland. The planting is well suited to the north facing aspect and gives those using the tunnel a different display compared to the view from the south as motorists emerge from the tunnel. Rows of *Pyrus calleryana* 'Chanticleer' frame the views along the road to the tunnel portal.

Southern TBR Approach

Those approaching from the south, including motorists emerging from the tunnel portal, will have views of the southern aspect of the geometric mounds, typically planted with colourful blankets of Sedum.

The planting will include subtle colour changes through the seasons to add interest throughout the year.

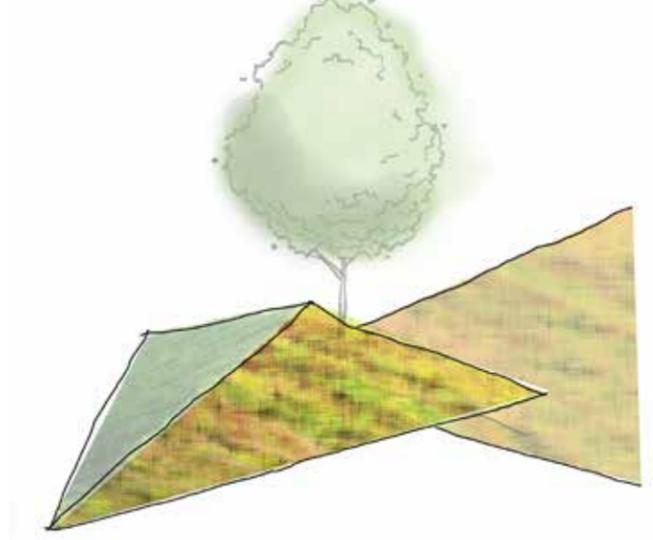
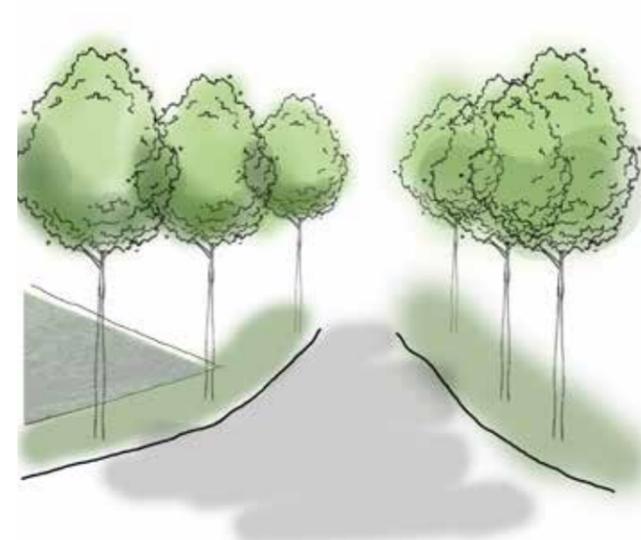
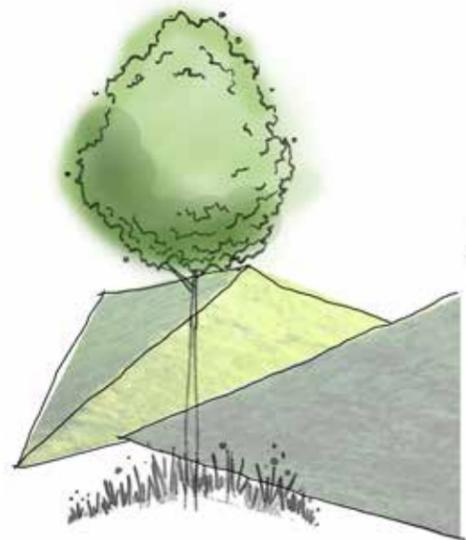


Figure 26. Tidal Basin Roundabout Landscape Approach Typologies

3.10.2.3 Seasonal planting

Seasonal changes create yearlong interest reinforcing the project vision of a strong public realm at the heart of the Scheme.

Spring

The white blossom of the wild cherry trees are key features in spring. Abundant clusters of white flowers on the formal row of *Pyrus calleryana* 'Chanticleer' enhance the framed views of the tunnel portal. Flowers on the *Euphorbia palustris* and *Iris sibirica* bring vibrant colours to the planting areas.

Summer

Shrubs such as the *Hebe pinguifolia* 'Sutherlandii' and *Santolina chamaecyparissus* 'nana' provide flowers from early summer. English Lavender provides colour and an unmistakable aroma late in the summer months.

Autumn/Winter

Autumn marks a change in colour to yellows and rich orange and reds for many of the deciduous trees. The colours of these bright foliage are complemented by the *Prunus x subhirtella* 'Autumnalis', a winter-flowering cherry that provides white flowers and some edible fruits important for wildlife in winter.

Scots pines, planted within the central walkway, provide year round colour and texture. *Carex morrowii* 'ice dance', *Festuca glauca* 'Elijah Blue' and *Pachysandra terminalis* 'Green Carpet' provide green and blue hues through the winter.

Note: Existing trees have been retained through the detailed design process, in close proximity to the Silvertown flyover, these provide an aspirational scale and maturity for the tree/planting proposals.

Trees proposed vary in scale from 18-20cm to 30-35cm in girth, with a predominance for the latter semi-mature trees, to ensure an immediate impact for the Scheme. Smaller species have been selected to ensure variety and interest to the proposals and support as wide a biodiversity as possible.

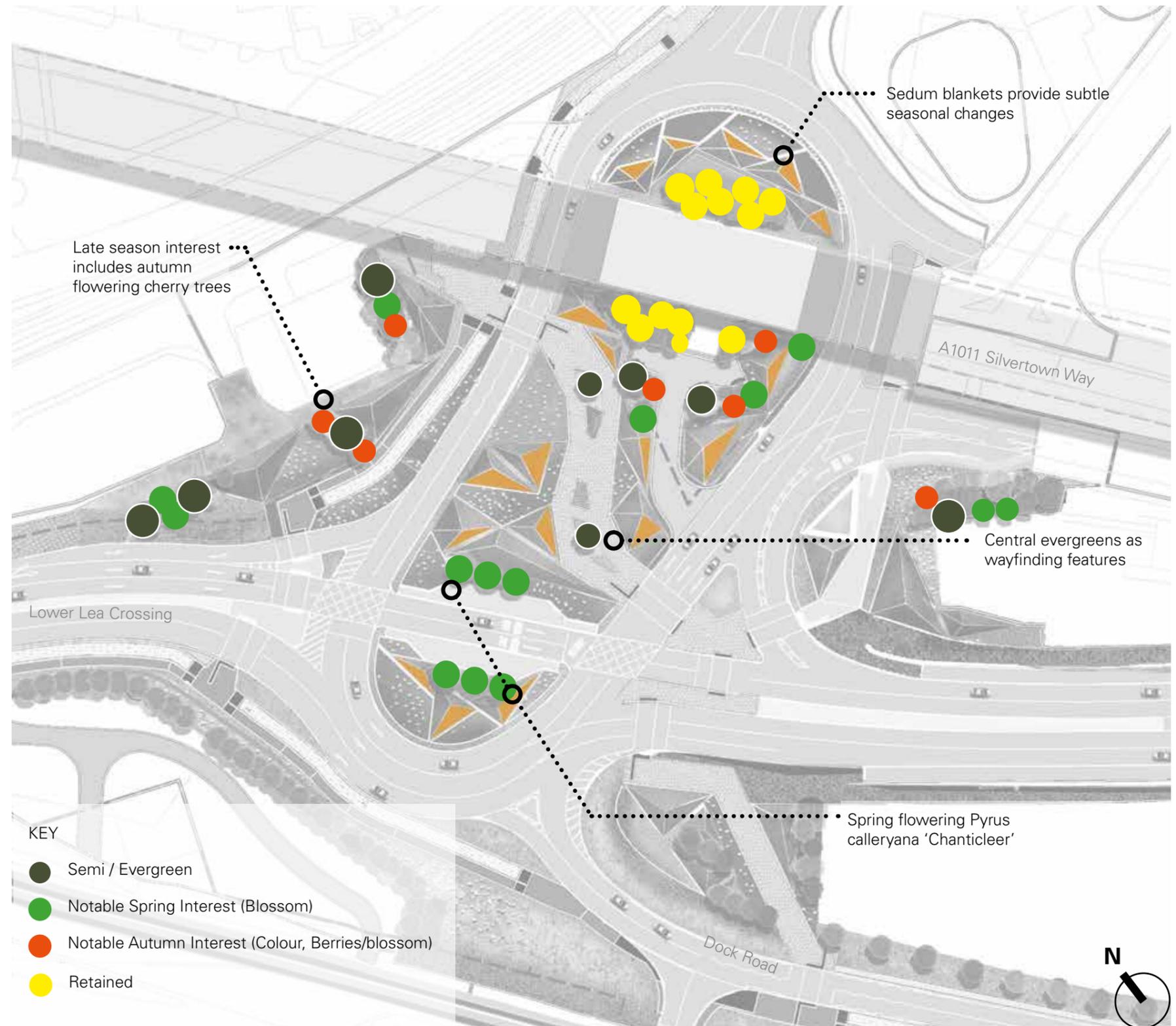


Figure 27. Tidal Basin Roundabout - Illustrative Key Tree Planting Features

3.10.2.4 Planting proposals

SPRING

- Prunus avium
- Ulex europaeus
- Pyrus calleryana 'Chanticleer'
- Iris sibirica
- Euphorbia palustris



SUMMER

- Lonicera periclymenum
- Hebe pinguifolia 'Sutherlandii'
- Lavandula angustifolia
- Santolina chamaecyparissus 'nana'
- Stachys byzantina



AUTUMN (WINTER)

- Pinus sylvestris
- Carex morrowii 'ice dance'
- Prunus x subhirtella 'Autumnalis'
- Festuca glauca 'Elijah Blue'
- Sorbus aucuparia



Figure 28. Tidal Basin Roundabout Landscape Planting Typologies

3.10.2.5 Views of the TBR

A selection of views have been developed following meeting with the LBN to provide an illustrative view of how the various landscape proposals combine to form the public realm on the TBR.

These views are illustrative, based on the developed working model of the Scheme. They are to provide an indication of the scale of landscape proposed.



Figure 29. Tidal Basin Roundabout - View point location plan



Figure 30. Illustrative view A - across Tidal Basin Roundabout

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Figure 31. Illustrative view B - across Tidal Basin Roundabout to the flyover

UNCONTROLLED WHEN PRINTED



Figure 32. Illustrative view C - across Tidal Basin Roundabout

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3.10.3 The Edges (B)

The planting away from the core area transitions to a more naturalistic look and feel whilst still providing an attractive landscape for both people and wildlife. The planting palette includes many night-scented pollinators for bat species, along with semi-improved grassland and Open mosaic species as listed in the project BAPMS. Many of the same species rich grassland or meadow mixes are used but these can be allowed to grow taller to exacerbate this contrast between the formal central roundabout (TBR) and the more naturalistic edges of the scheme.

A selection of key signature species of tree planting from the LBN Royal Docks: Landscape Design Guide including - *Acer campestre*, *Alnus glutinosa*, *Betula pendula*, *Betula pubescens*, *Prunus avium*, and *Sorbus aucuparia* has been taken to mix with those proposed in the BAPMS.

A large area to the north of the TBR will be left to colonise as a Open Mosaic habitat. This planting reinforces to stitch into the existing ecological corridors extending to the wild landscapes to the River Lea (to the west) This should be combined with signage and interpretation to ensure the public are aware of the benefits of this approach.

A continuous row of cherry (*Prunus avium*) trees along the eastern side of Dock Road provides a partial air of formality and makes for an attractive transport corridor. The planting to the west edge of Dock Road includes more mixed tree species, woodland understory planting and a vegetated swale mix.

Note: species selection from the LBN Royal Docks: Landscape Design Guide has focused on those suggested in the areas defined as Suburban Marshes and Urbanised Hollow - which predominately cover the Scheme and ensure the promotion of connecting to its surroundings. The signature tree - Birch - has been selected and utilised as defined in Stitch 01.

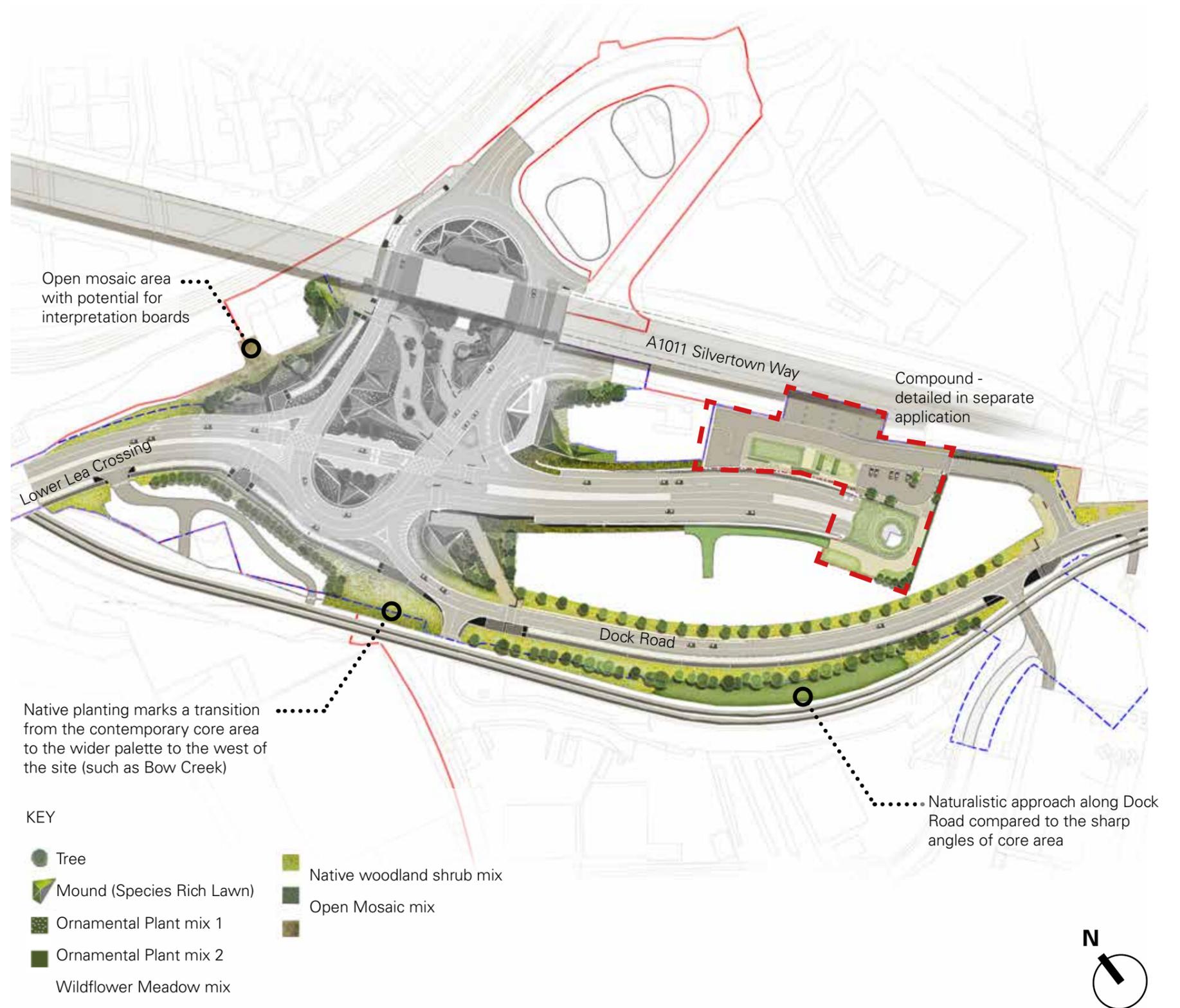


Figure 33. Edges and approaches to the Tidal Basin Roundabout - Landscape Planting Proposals

3.10.3.1 Planting proposals

TREE PLANTING

Acer campestre	Alnus glutinosa
Betula pendula	Betula pubescens
Carpinus betulus	
Pinus sylvestris (Central pedestrian route)	
Prunus avium	Prunus padus
Pyrus communis	Sorbus aucuparia
Tilia cordata	

WOODLAND UNDERSTORY MIX

Cornus sanguinea	Corylus avellana
Crataegus laevigata	Crataegus monogyna
Frangula alnus	Ilex aquifolium
Lonicera periclymenum	Malus sylvestris
Prunus spinosa	Rosa canina
Ruscus aculeatus	Ulex europaeus
Viburnum opulus	

BLOCK SHRUB PLANTING:

Used in transitional areas between Core to edges:
Pachysandra terminalis (Groundcover under trees)

BROWNFIELD (OPEN MOSAIC HABITAT) SEED MIX

Custom mix as per detailed planting schedule
Supplier: Emorsgate (or equal and approved)

SEMI-IMPROVED GRASSLAND MIX

Custom mix as per detailed planting schedule
Supplier: Emorsgate (or equal and approved)

WOODLAND EDGE SEED MIX

Custom mix as per detailed planting schedule
Supplier: Emorsgate (or equal and approved)

WILDFLOWER SEED MIX

EM3 - Special General Purpose Meadow Mixture
Supplier: Emorsgate (or equal and approved)

SWALE SEED MIX

EM7 – meadow mixture for sandy soils
Supplier: Emorsgate (or equal and approved)

SPECIES RICH AMENITY LAWN (To outer mounds)

WFG20 - Eco Species Rich Lawn
Supplier: Germinal (or equal and approved)



Figure 34. Edges and approaches to the Tidal Basin Roundabout - Landscape Planting Typologies

3.10.3.2 Seasonal planting

The more naturalistic edges of the scheme also provide interest and variety throughout the seasons.

Spring

The formal row of *Prunus avium* along the eastern side of Dock Road provide a spectacular spring display and ensure pedestrians and cyclists have an attractive connection through the site. The more informal layout of trees to the west of Dock Road includes *Pyrus communis* and more *Prunus avium* to repeat areas of blossom along the western side.

Summer

Large areas of wildflower will put on a colourful display through the summer with a variety of mixes selected depending on location and site conditions. These include many wildflower species that are beneficial to bees and butterflies so the visible wildlife along Dock Road will form part of the summer aesthetic. The selection of trees provide contrasts in colours and textures throughout the summer months.

Autumn/Winter

Trees along Dock Road and outside of the core area of the design will provide autumnal colours throughout these edge areas. The textured white bark of the birch trees will add interest into the winter month and will be complemented by the vibrant red stems of *Cornus sanguinea*. Native evergreens such as *Ilex aquifolium* provide areas of green throughout the year.

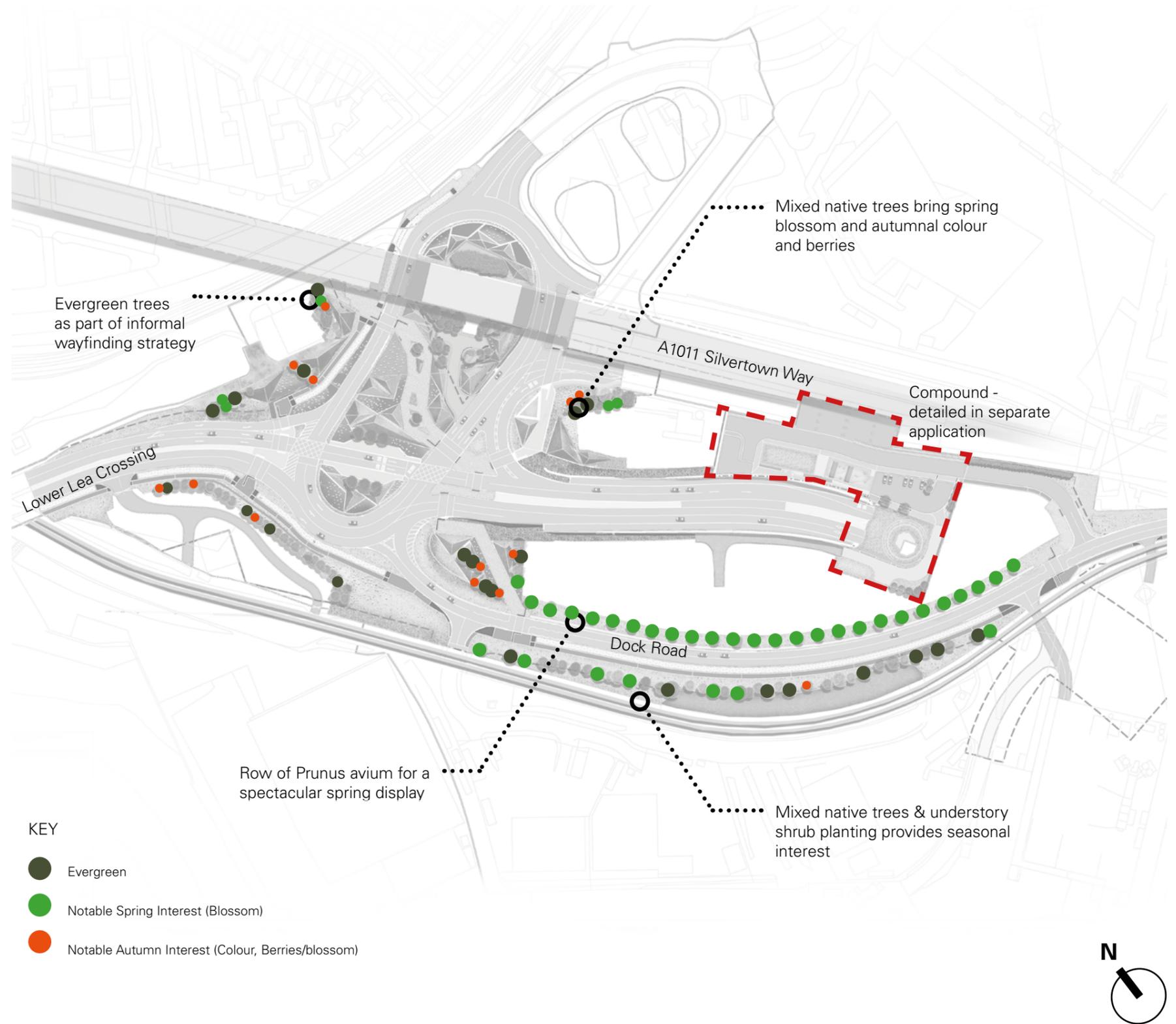


Figure 35. Edges and approaches to the Tidal Basin Roundabout - Key Planting Features (note not all trees are highlighted)

3.10.3.3 Planting proposals

SPRING

- Prunus avium
- Pachysandra terminalis 'Green Carpet'
- Pyrus communis
- Ulex europaeus
- Malus sylvestris



SUMMER

- Lotus corniculatus
- Knautia arvensis
- Silene dioica
- Leucanthemum vulgare
- Centaurea nigra



AUTUMN (WINTER)

- Sorbus aucuparia
- Acer campestre
- Betula pendula
- Ilex aquifolium
- Cornus sanguinea



Figure 36. Precedent images of proposed planting

3.11 Ecology

3.11.1 Introduction

The planting outlined as part of the landscape proposals have been informed primarily by the BAPMS, this document provided an approach for biodiversity, to ensure a net gain is delivered for the Scheme. This includes for detailed reviews of the proposals between the landscape architect and the ecologists, considering stakeholder feedback to ensure species are selected to consider the BAPMS requirements, climate change, current best practice/research, and location (echoing the approach promoted by TfL 'Right Plant, Right Place').

The planting proposals also take into account the habitats and species identified in the Extended Phase 1 Habitat surveys conducted in 2016 for the Environmental Statement (Appendix 9A (6.3.9.1)) and recently in 2020.

Key existing and priority habitats defined within Section 4 of the BAPMS are as follows:

- Open Mosaic Habitats (Brownfield)*
- Plantation Woodland and Scattered Trees*
- Dense Scrub
- Grassland*
- Standing Water**

Key species defined within the BAPMS:

- Black Redstart*
- Notable Invertebrates

Section 5 of the BAPMS identifies habitat design parameters (including enhancement measures) that must be considered for the following list of habitats and species that will be utilised or taken into account at the detailed design stage where opportunities allow.

*These items are described in detail in the BAPMS and hence have been considered in the development of the soft landscape proposals. Reference should be made to the Review of the Design Principles in Technical Appendix of this report.

**Standing water present (is to be lost , with no suitable location identified that would positively support the introduction of such habitat.

3.11.2 Summary of Natural Capital Valuation (NCV) completed for the Environmental Statement

Biodiversity net gain has been considered through the use of NCV at the Environmental Statement (ES) stage to calculate the total value of habitat lost in m2 as a result of the Scheme. Details of this assessment and its outcomes are provided in the BAPMS.

The total area of habitat to be lost within the Order Limits (i.e. Greenwich and Silvertown combined) was estimated at the ES stage to be 24,326 sq m.

As presented in the ES, a permanent habitat creation of 18,958 sq m, within the Order Limits, is to be incorporated into the Scheme design and be secured through the Landscaping Plan in the DCO.

The DCO established a net gain of 1,275 sq m in Silvertown (and a loss of 6,345 sq m in Greenwich). This loss, at the DCO stage, has been offset and accounted for through a financial payment with the RBG.

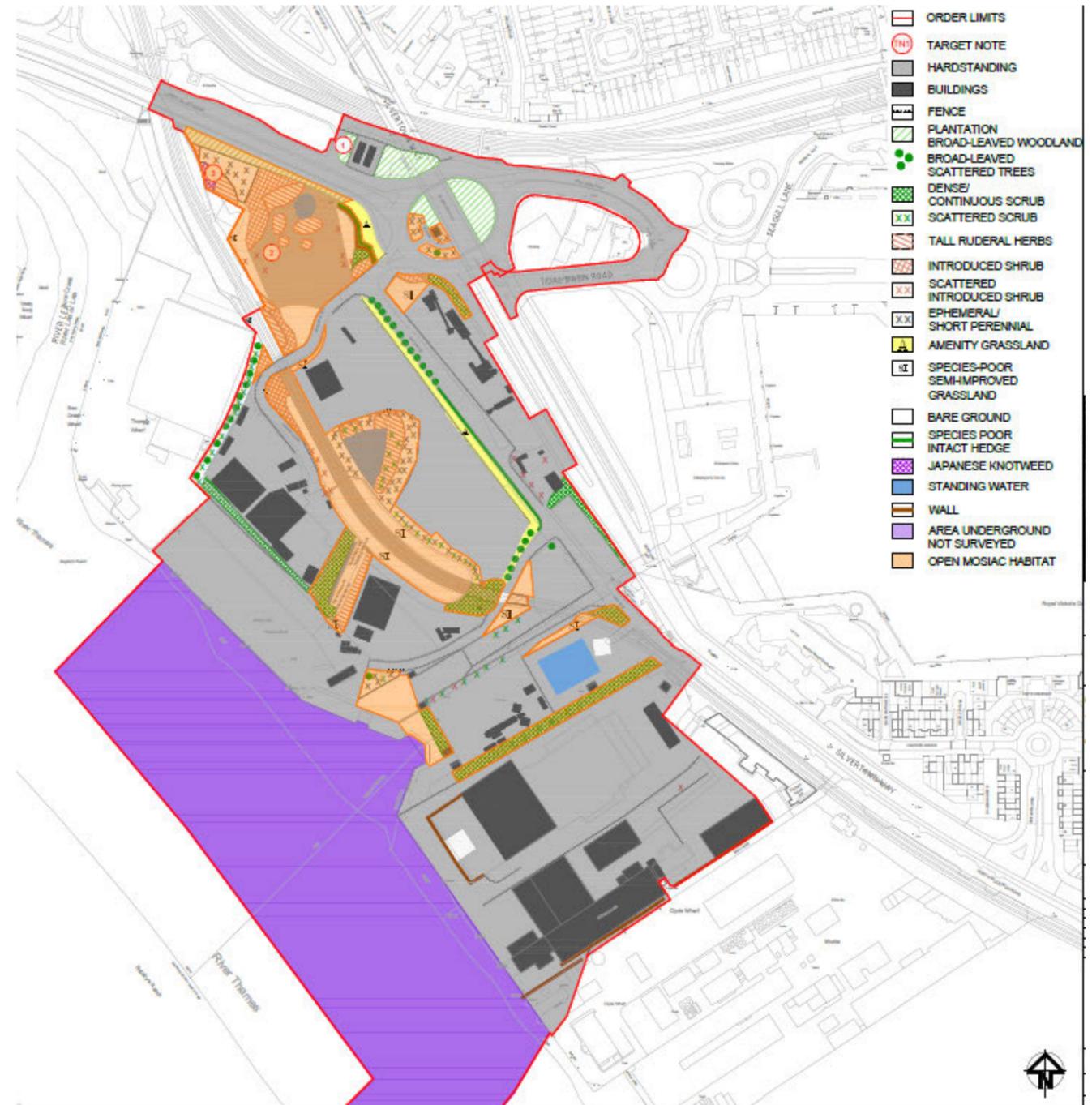


Figure 37. Phase 1 Habitats Present within the Silvertown Scheme Study Area (with brownfield habitat overlay) for Silvertown taken from the BAPMS (Environmental Statement (ES) Appendix 9H (6.3.9.8) to demonstrate the habitats prior the Scheme (This survey information is dated 2016)

3.11.3 Natural Capital Valuation (DCO)

Despite replacement landscaping within the Order Limits, the Scheme demonstrated at Environmental Statement stage an overall loss of 24,326 sq m, though with a defined net gain in as below to Silvertown:

- Permanent habitat loss 9,209 sq m
- Proposed habitat replacement 10,484 sq m
- Residual habitat gain 1,275 sq m

The current design aims to improve on the numbers reported in the Environmental Statement and, if possible, increase the previously calculated residual habitat gain for Silvertown.

Following completion of detailed design, the residual habitat gain will be recalculated via an updated NCV to confirm the resultant net gain status of the project and allow for any required adjustments.

The adjacent tables detail the overall loss of habitat areas within the Order Limits, and also within Greenwich and Silvertown, as shown in the BAPMS.

Habitat	Area within Order Limits (sq m)	Area within Greenwich Order Limits (sq m)	Area within Silvertown Order Limits (sq m)	Area to be permanently lost within Order Limits (sq m)
Plantation Broadleaved Woodland	4,912	1,485	3,427	1,808
Dense Scrub	12,261	8,978	3,284	5,984
Scattered Scrub	68	40	28	160
Scattered Broadleaved Trees	580	114	31	136
Species-poor Semi-improved Grassland	6,548	2,692	3,856	2,769
Standing Water	1,268	0	1,268	1,103
Tall Ruderal Vegetation	2,961	496	2,466	1,022
Amenity Grassland	15,575	10,800	795	5,022
Ephemeral/short Perennial Vegetation	6,713	4,597	2,116	3,638
Introduced Shrub	2,536	15	2,536	1,075
Japanese Knotweed	157	2	157	2
Bare Ground	3,977	0	3,977	1,606
Total	57,556 sq m			24,326 sq m

Natural Capital Value of Habitats To be Lost Within Order Limits taken from the BAPMS (Environmental

Natural Capital Value of Habitats Within Order Limits (for each Site - i.e. Greenwich and Silvertown) taken from the Extended Phase 1 Habitat Survey (2015) (Environmental Statement (ES) Appendix 9A (6.3.9.1)

Natural Capital Value of Habitats To be Lost Within Order Limits taken from the BAPMS (Environmental

Figure 38. Presents a segment from Table 6-1: Natural Capital Value of Habitats To be Lost Within Order Limits taken from the BAPMS (Environmental Statement (ES) Appendix 9H (6.3.9.8) and the Extended Phase 1 Habitat Survey (2015) (Environmental Statement (ES) Appendix 9A (6.3.9.1)

Order Limits	Greenwich (sq m)	Silvertown (sq m)
Permanent Loss	14,819	9,209
Permanent Replacement with the Scheme	8,474	10,484
Residual Habitat Loss / Gain	- 6,345	+1,275

Figure 39. Presents a Table 6-2: Total Areas of Habitats to be lost and replaced taken from the BAPMS (Environmental Statement (ES) Appendix 9H (6.3.9.8) (Information dated 2016)

3.11.4 Phase 1 Habitat Survey 2020

The follow up Extended Phase 1 Habitat Surveys was conducted in 2020, to complement the Extended Phase 1 Habitat Survey provided in the Environmental Statement (Appendix 9A (6.3.9.1)). The Survey report was issued in June 2020 with the plan opposite demonstrating the updated survey for the area.

A review was undertaken between the ecological surveys.

Phase 1 Habitat Survey

There were no significant differences between the habitats recorded in 2014/2015 v 2020, that are considered sufficient to impact on the area calculations. The list below provides a brief synopsis of the differences noted on site:

- One small area of ephemeral standing water habitat (no aquatic species recorded).
- One species-poor intact hedge with trees (comprising blackthorn, pear & cherry laurel).
- Three areas of amenity grassland.
- Various areas of introduced shrub (*Buddleja davidii* 'butterfly bush') - noting this is an invasive species and should be removed.

Habitat	Comment
Plantation Broadleaved Woodland	no change from 2014/15 to 2020
Dense Scrub	no change from 2014/15 to 2020
Scattered Scrub	recorded in 2020 survey under 'hardstanding and bare ground'
Scattered Broadleaved Trees	no change from 2014/15 to 2020
Species-poor Semi-improved Grassland	recorded as semi-improved neutral grassland in 2020
Standing Water	northern-most waterbody not recorded in 2020
Tall Ruderal Vegetation	no change from 2014/15 to 2020
Amenity Grassland	not recorded in 2020 survey
Ephemeral/short Perennial Vegetation	not recorded as separate habitat in 2020 - species incorporated into 'dense scrub'
Introduced Shrub	not recorded in 2020 survey
Japanese Knotweed	present on site, also including buddleia
Bare Ground	no change from 2014/15 to 2020
Total	m2



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
Source: FA, LUC
CB:MN EB:Nicholson_M LUC FIG1_11032_r0_Silvertown_Phase1Habitats_A4P_03/06/2020

Figure 1: Silvertown Area - Phase 1 Habitat Survey

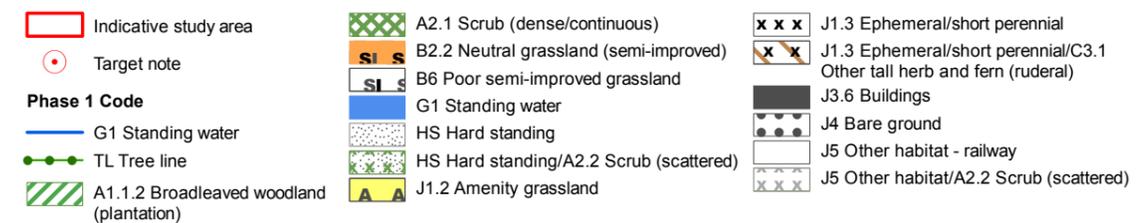


Figure 40. Updated Phase 1 Habitats Survey (information is dated 2020)

3.11.5 Natural Capital Valuation review

The detailed landscape designs provide a greater area of habitats than that reported within the 2015 Silvertown Tunnel Environmental Statement for both Greenwich and Silvertown, and an overall increase of habitats within Silvertown.

Given the improvements from the 2015 scheme design, it is considered unlikely that an additional payment to local authorities to offset residual loss of habitat and the natural capital value of the Proposed Scheme will be required. However, the numbers are approximate until the updated Natural Capital Assessment is completed to re-evaluate the site's baseline condition and post-construction designs.

Note: Reference should be made to the forthcoming document: Silvertown Tunnel - Natural Capital Assessment (Reference ST150030-ARU-FAE-ZZ-ZZ-RPT-EN-0002).

3.11.6 Tree retention

An Arboricultural Impact Assessment Report (ST150030-RLC-ZZZ-17-ZZ-ASM-LV-0001) has been undertaken to assess the arboricultural impact of the Silvertown section of the proposed Silvertown tunnel.

This assessment shows tree protection measures, which are specified in the Preliminary Arboricultural Method Statement in section 5 of the report. The arboricultural impact is assessed in section 6 of the report, which outlines measures to be followed.

The Arboricultural Method Statement is only preliminary at this stage. Once planning permission has been granted, a detailed Arboricultural Method Statement will be prepared before work on site starts to include details of drainage, services and contractors facilities.

- Trees to be retained include to the east of the flyover:
- G73 and T72 - Group of Birch and specimen Poplar
 - G74 and T76 - Group of Birch and specimen Sycamore
 - G68 and T70 - Group of Birch and specimen Prunus

3.11.7 Guidance

The report has been used in the development of the landscape proposals for the Scheme, and to complement the Natural Capital Valuation ecology work/requirements. The report defined 54 trees and 8 tree groups proposed for removal. Root Protection Areas are also shown for all retained trees, as circular areas centred on the trunk, on the Tree Protection Plan included as per Appendix A (which is also shown opposite for reference) of the report. Where there are physical obstructions to root growth the Root Protection Area should be shown as an equivalent area that is more likely to reflect actual root growth. The Root Protection Area shows the area around a tree in which all construction activity must normally be excluded, unless appropriate protection measures are implemented.

Note: A qualified Arboricultural Consultant must be retained during the period of construction and details of each site visit recorded using an environmental record form, with copies retained for sharing with the local authority Tree Officer when requested.

Refer to the Arboricultural Impact Assessment Report (ST150030-RLC-ZZZ-17-ZZ-ASM-LV-0001)

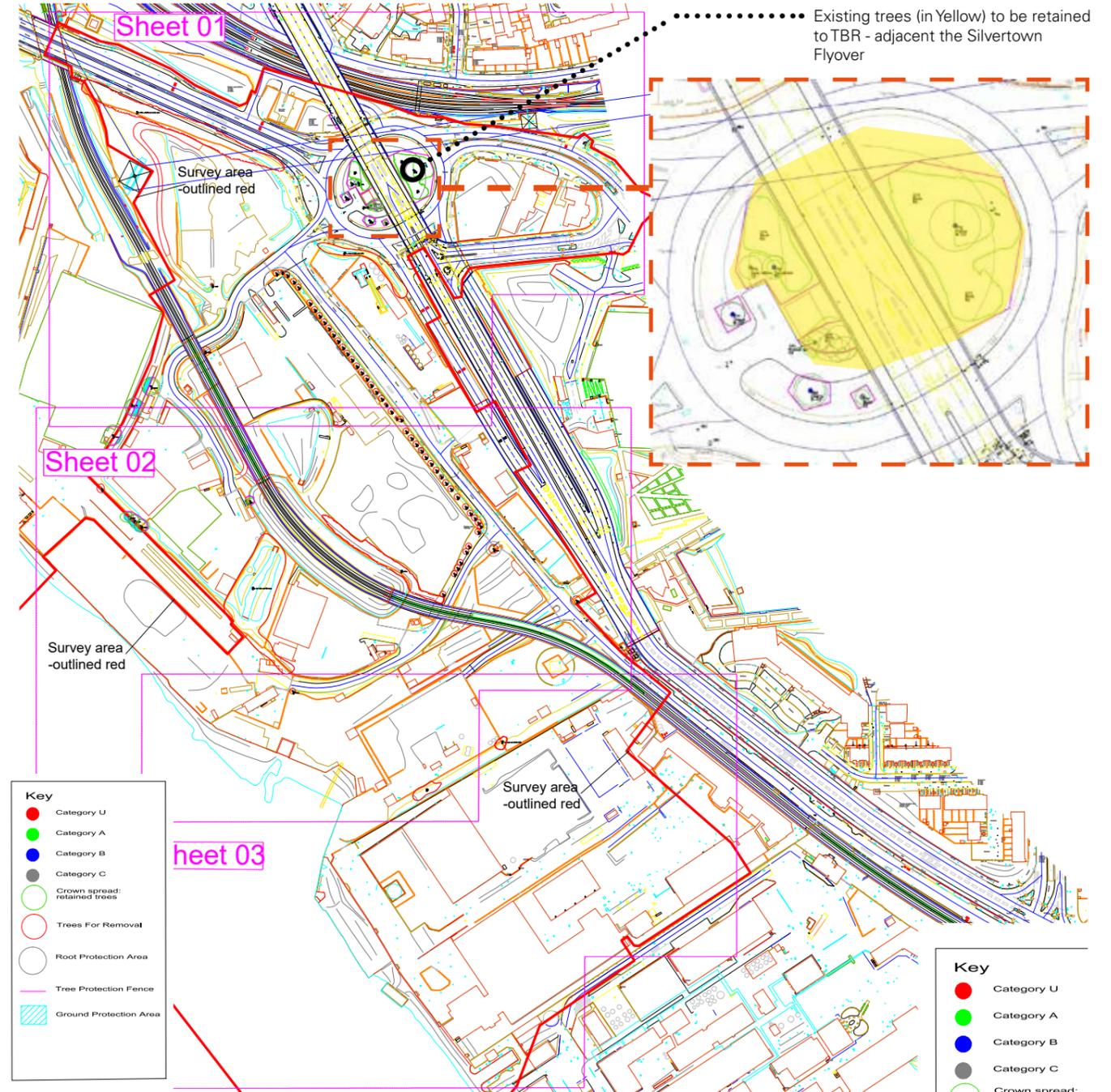


Figure 41. Tree Protection Plan: Appendix A - Arboricultural Impact Assessment Report

3.11.8 Ecological scheme proposals

The plan opposite presents the landscape design proposals, subdivided into areas which have been calculated to demonstrate the approximate total area of habitat to be returned by the Scheme as approximately 17,700 sq m (of which 1250 sq m is contained within the proposed portal compound - which is further broken down to result in 975 sq m of 'Biodiverse Roof' and 375 sq m of surface planting).

The requirements of the DCO established a permanent replacement of 10,484 sq m.

As a result the Scheme detailed design landscape proposals result in a net gain of approximately 7,216 sq m against the area of habitat reported in the 2015 Silvertown Tunnel Environmental Statement.

Ecological habitat features, in addition to the proposed planting, have been clearly identified to address the design principles (LSCP.11) and parameters set out in the BAPMS.

The NCV groups trees into a sqm value and for the purposes of clarity the existing site, the Reference design have been reviewed to understand the number of trees to be lost and replaced, to provide a clearer comparison.

	No. of Trees
Reference Design (DCO)	107
Scheme proposals	123

It is noted that the Scheme has evolved from the DCO and that new opportunities have provided for an increased number of trees, though some increment in the numbers are a result of originally retained trees needing to be removed and replaced.

Note: The information here provides for an approximate sqm comparison. The NCV will be undertaken by the ecologists based on the submitted drawings for detailed design. This calculation will follow this report and any discrepancies will be duly updated.



Figure 42. Indicative location of proposed ecological habitat features

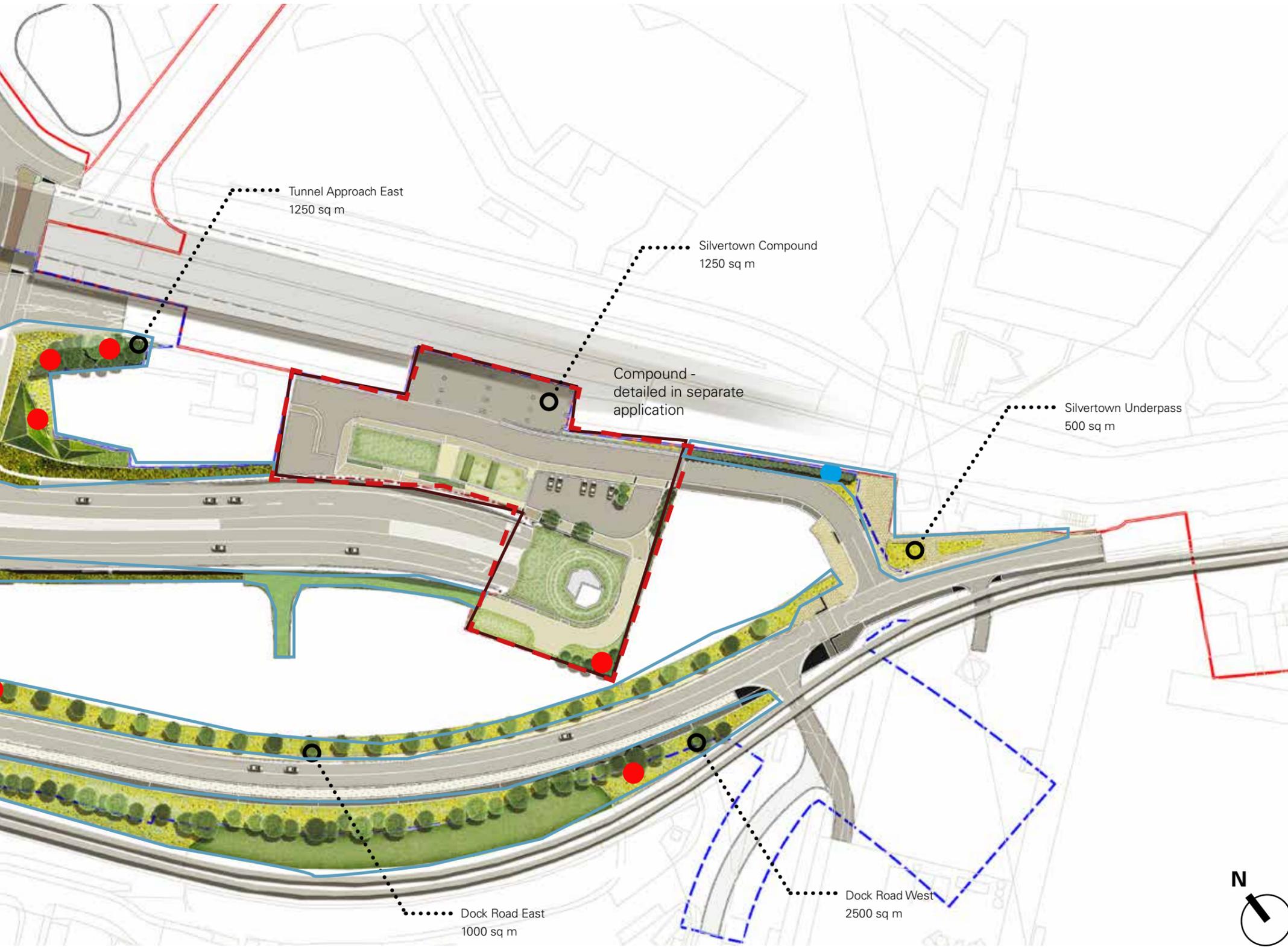


image update

image update

3.12 Compounds

3.12.1 Introduction

The Scheme has been developed in coordination with the architect and wider design team to ensure an holistic approach to design with landscape elements from the wider setting seamlessly drawn into the compounds. This section provides an synopsis of this contextual thinking.

3.12.2 Soft landscape approach

The planting proposals aim to create distinctive character areas to the compound through the use of a constrained set of plant mixes, that connect to the wider Scheme and reflect the physical area available within the compound to accept greening. Trees and planting species selected adhere to species proposed in the BAPMS, LSCP.11 and with reference to industry good practice guidance where relevant. Where additional species have been selected these have been reviewed and agreed with the ecologist.

The selected mixes are selected for their robustness typically more formal within the compound due to its more human and intimate scale feel, and becomes naturalistic towards the edge areas of the scheme (at the compound boundaries). The contrast between more formal and more naturalistic planting is achieved by the selection and layout of plants but can be enhanced further by how these areas are managed over time.

All plant mixes aim to be rich in biodiversity, particularly with regard to the species identified in the project BAPMS. Plant species in this area provide valuable habitats for bees, butterfly's, bats and insects, tailoring this information to ensure species selected are primarily resilient to climate change and comments/requests received in design development for plants to be - 'right plant in the right place'.

TREE PLANTING:

Mixed throughout the compound to promote biodiversity:
 Acer campestre Betula pendula Carpinus betulus
 Pinus sylvestris Prunus avium Prunus padus
 Prunus subhirtella Pyrus calleryana Sorbus aucuparia

ORNAMENTAL MIX

Anthemis tinctoria Lavandula angustifolia
 Hebe pinguifolia 'Sutherlandii',
 Centranthus ruber 'Albus Euphorbia characias
 Hylotelephium spectabile 'Brilliant',

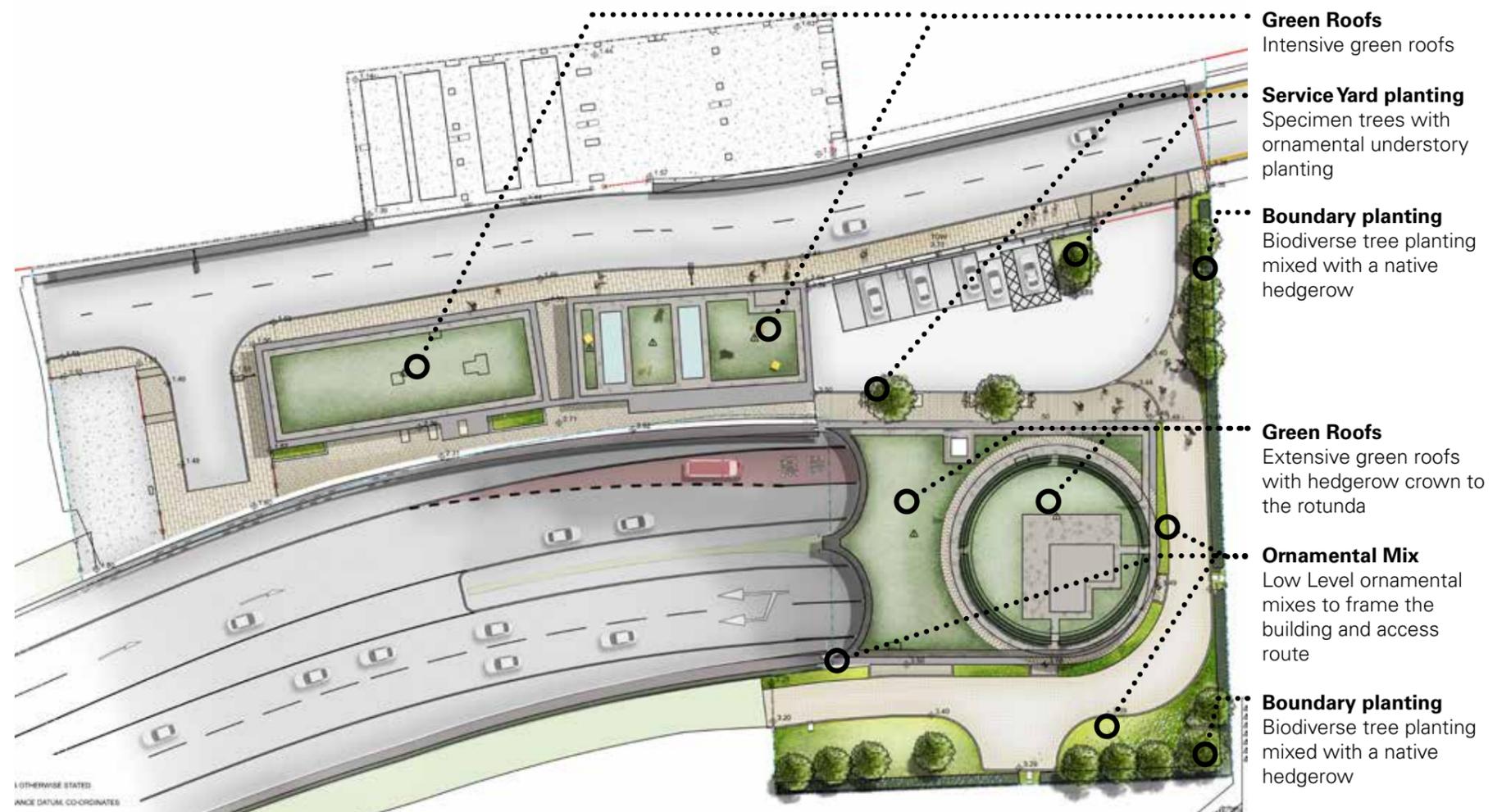


Figure 43. Rendered image of the Detailed Design of the proposed landscape for GNewham portal including biodiverse 'green roofs'



Figure 44. Examples of proposed seasonal tree and groundcover planting

3.12.3 Green Infrastructure

The planting proposals for the Scheme enhance the users experience through the creation of an attractive environment. The palette responds to the project BAPMS and generates a series of GI components, to support the wider GI network for the area, its interconnectedness and the application of LSCP.11, 13 and SGWF.04.

3.12.4 Biodiversity

The approach to planting, including trees (which are components of GI) have considered the utilities and functional requirements as a primary constraint (reflecting the application of LSCP.09), in particular the impact of necessary easements and offsets from utilities.

Design team coordination has ensured the successful integration of trees proposed and maximisation of soil volumes for tree pits. The approach has been to prioritise tree planting is soft to maximise soil volumes and provide volumes in line with this guidance and the Urban Greening Factor (from the GLA) to target 2/3 of future tree canopy.

3.12.5 Green roofs

Green roofs (aka Biodiverse Roofs - provide practical application of LSCP.13 and SGWF.04) draw on the planting mixes across the wider Scheme, in particular wildflower, brownfield, open mosaic habitats proposed to promote biodiversity to all aspects of the Scheme.

The roofs and the soft planting contained in the compound actively contributes to the wider Scheme and the requirements of the DCO (which established a permanent replacement of 10,484 sq m of habitat). The Scheme returns approximately 17,700 sq m (of which 1,250 sq m is contained within the proposed portal compound - which is further broken down to result in 975 sq m of 'Biodiverse Roof' and 375 sq m of surface planting).

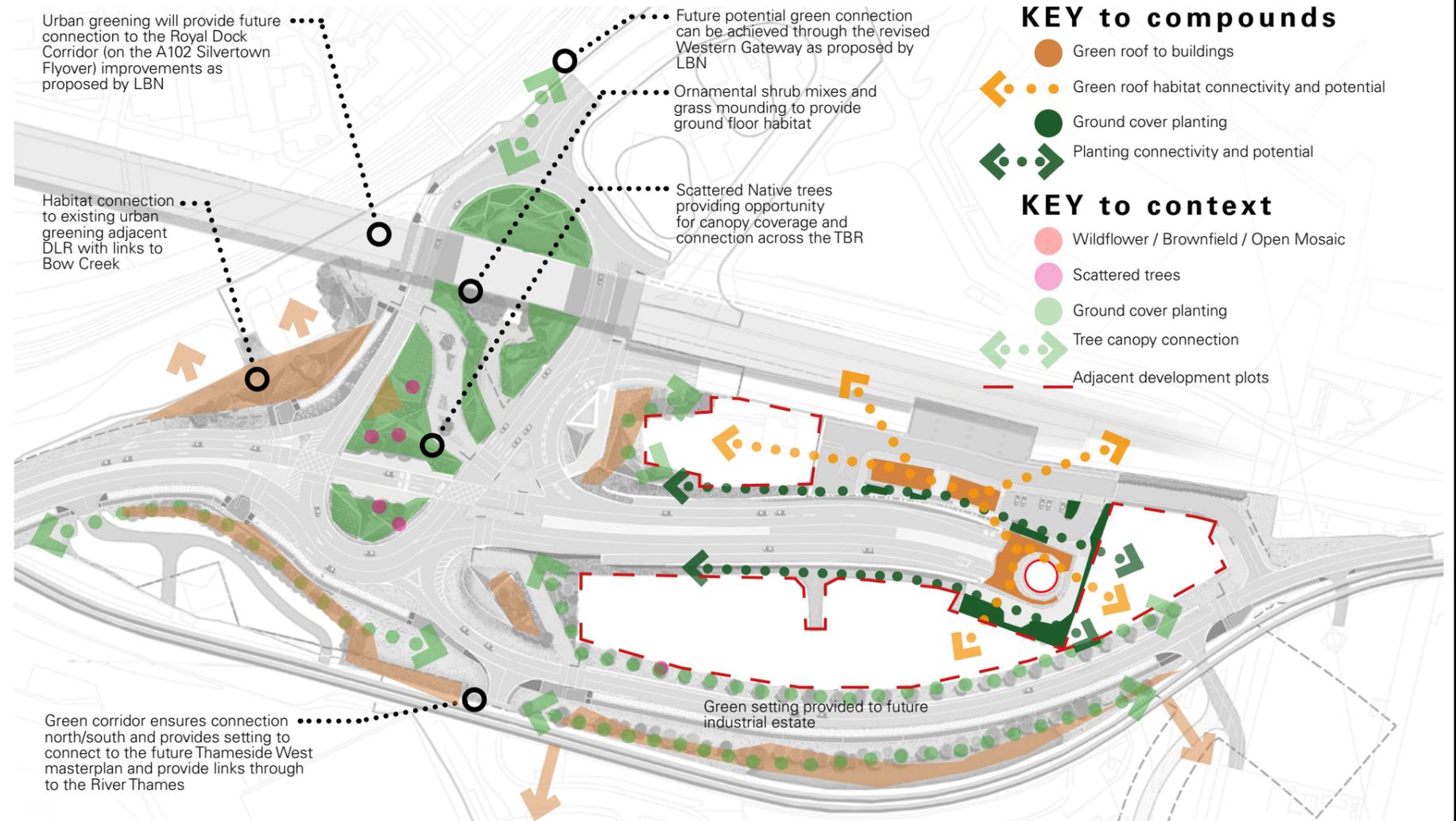


Figure 45. Plan of GI components and how the compounds link into the Scheme (including biodiverse 'green roofs')



Figure 46. Examples of proposed green roofs - intensive wildflower seed, sedum blankets and wildflower mats for extensive roofs

image update

3.12.6 Hard landscape approach

The material proposals strive create an harmonious environment within the compound that directly relates to the wider context, to promote both the pedestrian and vehicular experience. The palette directly responds to its surroundings of the wider Scheme and the application of LSCP:01, 02, 04, 05, 06 and 15.

The palette reflects on discussions with the LBN - including reference to the LBN Royal Docks: Landscape Design guide (2020), TfL and SDCGs and the DRP. Precedent material images of the palette are provided in this section and the plan opposite demonstrating there application in the Scheme.

The approach to the compound is through the proposed access road, off Dock Road. The route is legible through recognisable footpath materials that marries with its surroundings. On arrival the pedestrian entrance to the buildings are clearly visible from the roadside, promoting the application of SGWF:01, ensuring clear lines of sight maintained to optimise ease of accessibility.

3.12.7 Materials

The materials referenced in this section reflect the public realm, and those areas that will be used by pedestrians and cyclists. The review of and application of the LSCPs and relevant guidance has been considered (reference should be made to these sections) in the detailed design of the landscape proposals. Recognition of the location, the landscape design concept and notion of Scheme as 'Part of the City' has prioritised a simplistic and functional approach, prioritising the movement of people through the Scheme and to improve connectivity of communities.

3.12.8 Material overview

Materials selected implement Landscape Design Principles LSCP:05 and 15; and also reflect discussions held with the LBN, TfL, SDCGs and the DRP; and the comments received. Additional reference has been made to relevant Design Guidance as set out in LSCP:01 and ultimately in reference to Project Agreement Schedule 10 (which prescribes standards and specifications for the design and construction of the works) to ensure material selected are fit for purpose and meet the technical requirements necessary the Scheme.

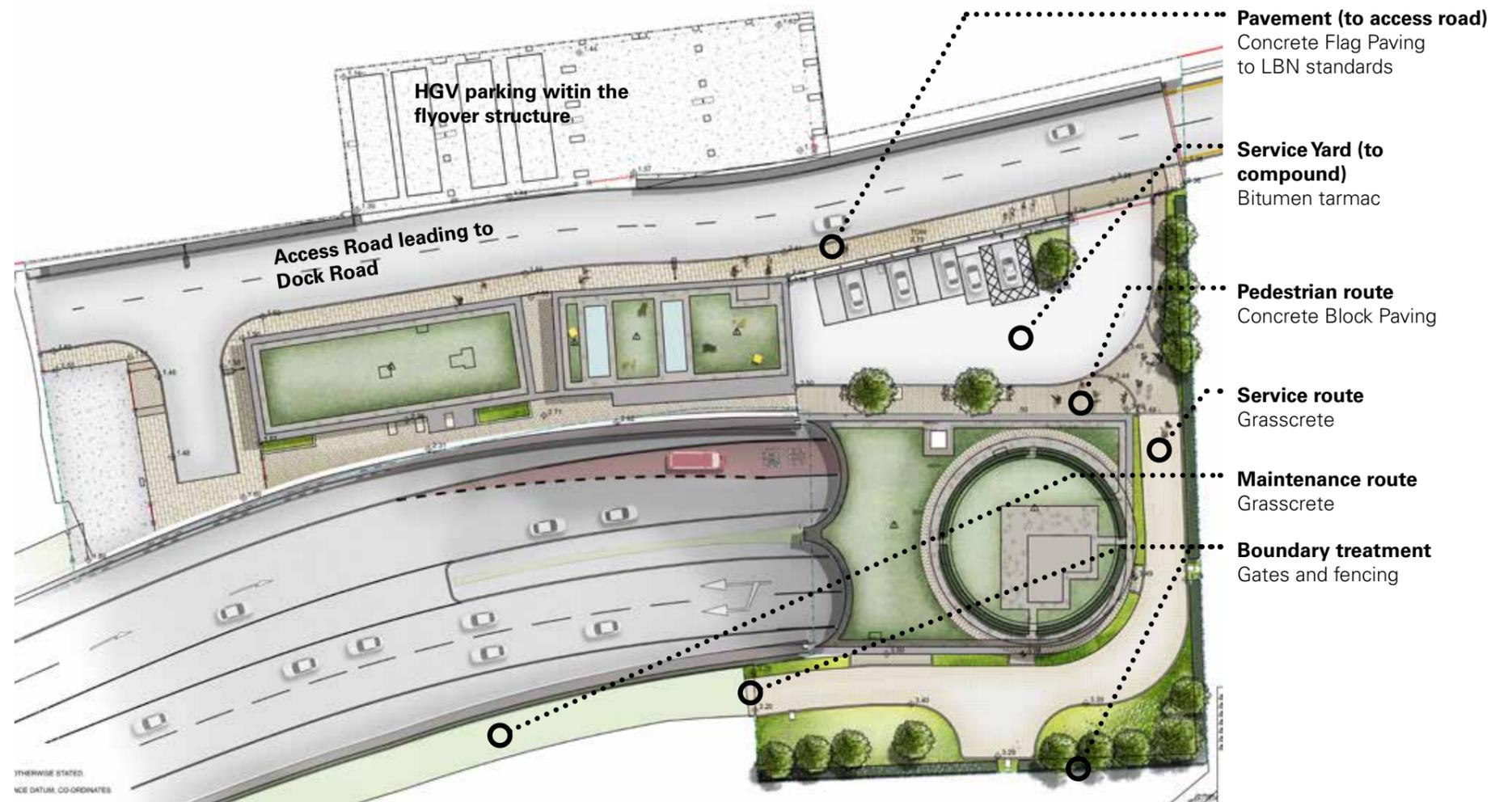


Figure 47. Rendered image of the Detailed Design of the proposed landscape for Newham portal



Figure 48. Examples of hard landscape materials - Pavement (concrete flag paving), compound pedestrian routes (concrete block paving) and grasscrete

3.12.9 Boundary treatment

Boundaries varies across the wider Scheme due to the various land holdings and differing approaches taken over time and through the compound a simple palette was selected to ensure a simplicity of the project. The compound is to be secured through the use of the building and a simple boundary treatment.

During the construction of the Scheme suitable hoarding will be utilised (which are tbc with the project sponsor TfL).

Proposed gates and fencing to the compound has considered both the sensitive nature of the project, the existing context and the future developments to select a boundary treatment that will be simplistic in its form, though providing the necessary security requirements as established in the Project Requirements Schedules 10 & 32, and positively address the Design Principles in particular LSCP.02 and PRBD.04.

The proposals are for a neutral boundary treatment (precedent image below - 2.4m high SR2 weldmesh fencing system) that will be sympathetic and transparent to allow for natural surveillance, lighting to penetrate and opportunistic views through to existing and proposed urban greening (the fencing having been agreed in detailed discussion with the appointed security advisors). Gates will be formed from the same weldmesh to ensure an homogeneous boundary treatment.



Figure 49. Precedent images - Proposed boundary treatment to Scheme

3.12.10 Site furniture

Site furniture is limited on site due to the nature of the Scheme in being a functional compound to service the daily function of Silvertown Tunnel.

The cycle stands (7no.) provides for 14 spaces and integrated into the building form to provide shelter and close proximity to the building entrance for natural surveillance and promotion of cycling as a priority.



Figure 50. Precedent images - Proposed Sheffield style cycle stands - to be powder coated to marry with internal architectural structural elements

3.12.11 Lighting

Based on Secured by Design for commercial developments, the overall uniformity of light is expected to achieve a level above 15% for P classes or BS 5489:2013 compliant. The lighting column positions should take priority over tree positions in design.

The lighting of the compound has been developed through the design stages, considering the existing levels of provision and in respect of the varying transport modes, to ensure effective CCTV, promoting the reduction of accidents or personal injuries, reducing fear of crime. Responding to address the Design Principles in particular LSCP.02 and reference should be made to the Landscape drawings (as listed in Section 1) and the following:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001. This report sets out the lighting class selection (lighting intensity) for public realm lighting and lighting column heights; and
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001. This report ensure the proposals for the Scheme are reviewed to ensure lighting levels are adjusted to meet guidance and the safe requirements of users.

Note: This section provides an aesthetic overview of materials and their location, and should be read in conjunction with the set of Landscape Plans for the compound package (Refer to STT-DCO-017.8.4.11.1_Main Compound Area – Greenwich) for further detail and their exact location, with additional reference to the highway and lighting drawings for further information relating to the road network and access road .

3.13 Implementation

3.13.1 Programme

The figure below demonstrates the proposed implementation of the landscape design proposals.

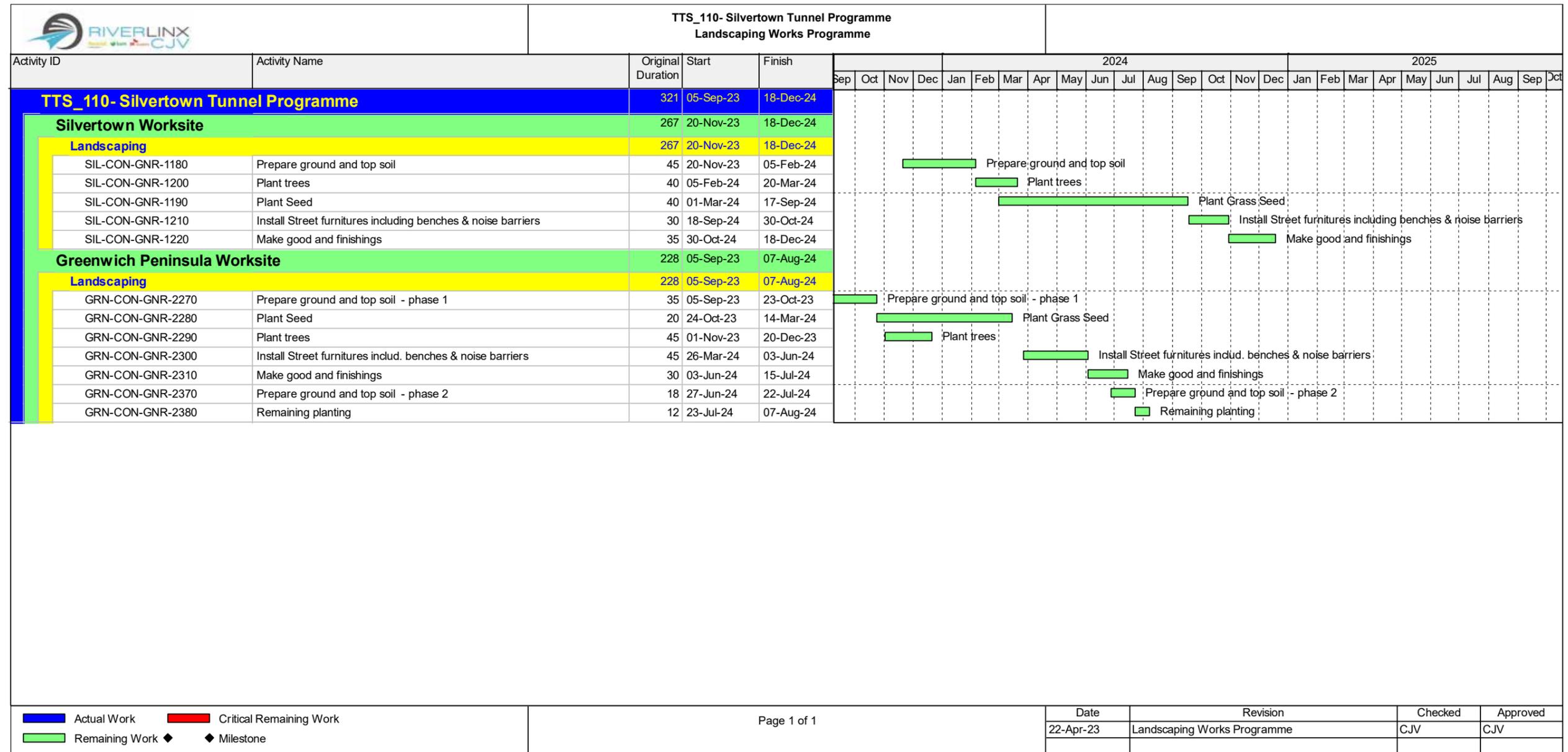


Figure 51. Landscape Works Programme

3.14 Management and maintenance

3.14.1 Requirements

The implementation of the Scheme constitutes a substantial investment of public and private funds into this area of London.

The Schemes public realm and landscape proposals must be designed to be readily maintainable and then must be adequately maintained in order to protect the value of that original investment.

If the new public realm is inadequately maintained, the quality of the environment and the facilities will degenerate and the value of the original investment will have been lost.

The requirement for a wholehearted strategic commitment to properly funded management and maintenance cannot be overstated.

All elements of the scheme which fall within the area of existing or proposed adopted highway will be maintained by the Highway Authority.

One of the benefits of high quality public realm is a reduced requirement for repair. One of the challenges of high quality public realm is the care and attention which must be paid to any repair works and, particularly, to reinstatement following works by statutory service providers.

As designers of the Scheme landscape proposals a detailed statement (the Landscape Maintenance Plan ST150030-ARU-FAE-17-ZZ-MAN-LA-0001) has been developed setting out all requirements to ensure the successful maintenance of the Scheme. This plan should be read in conjunction with the information set out in Section 1 of this report.

3.14.2 Service providers

One important (but often overlooked) function of the public realm is a route for underground services. These include rainwater sewers, foul sewers, electricity supply, water supply, gas supply, telecoms, cable TV etc.

When the scheme is complete, any excavations to access existing services or lay new services have great potential to degrade the public realm if the reinstatement is not properly managed.

Procedures and dealings with service provider companies are governed by statutory legislation, The Roads and Streetworks Act 1991.

4 Landscape design progression

4.1 Introduction

4.1.1 Programme

This section provides a brief overview of the staged progression as background information for the reader, as follows:

- Review of DCO Design
- Concept Design
- Developed Design
- Detailed Design (as per drawings submitted to complement this landscape report)

It is recommended that the reader is familiar with the DCO and in particular Appendix 7.3 Design & Access Statement (2016) - which established the illustrative design (of the above ground spatial arrangements) for the Scheme which defined the Scheme boundary.

This section reflects on the evolution of the Scheme design through the technical requirements (for instance the requirement for hardened verges adjacent to the roads to ensure access, maintenance and meet relevant H&S requirements for vehicular users - not indicated on the illustrative scheme opposite), influence of related disciplines and the impact of the evolving surrounding context.

A synopsis of the key changes of the Scheme to the developed design stage is provided in this Section.

A detailed review of the design progression against the Design Principles is provided in Section 5 of this Landscape Report 'Review of Design Principles' against the Landscape Design Proposals.

Additional Design Principles, that are either related or complementary to the proposals have also been considered and reviewed.

4.2 Proposal at DCO

4.2.1 Illustrative proposals

The rendered plans demonstrated here are taken from the 2016 DAS and provided an illustrative design only, of what potentially could be achieved. The rendered plan forms part of the DAS which is to provide a simpler view of the proposed Scheme at this stage, not taking into account all relevant technical requirements.



Figure 52. DCO Landscape Proposal Plan (Appendix 7.3 Design & Access Statement (2016))

4.2.2 General arrangement plan

The general arrangement plan was provided as part of the DCO application, with the design provided for illustrative purposes only.

The general arrangement plan was interrogated through this design process by the design team, amending and aligning as necessary to accommodate technical changes and requirements, adherence to Design Principles and guidance provided from the DRP and SDCG meetings - to deliver a working Scheme proposal.

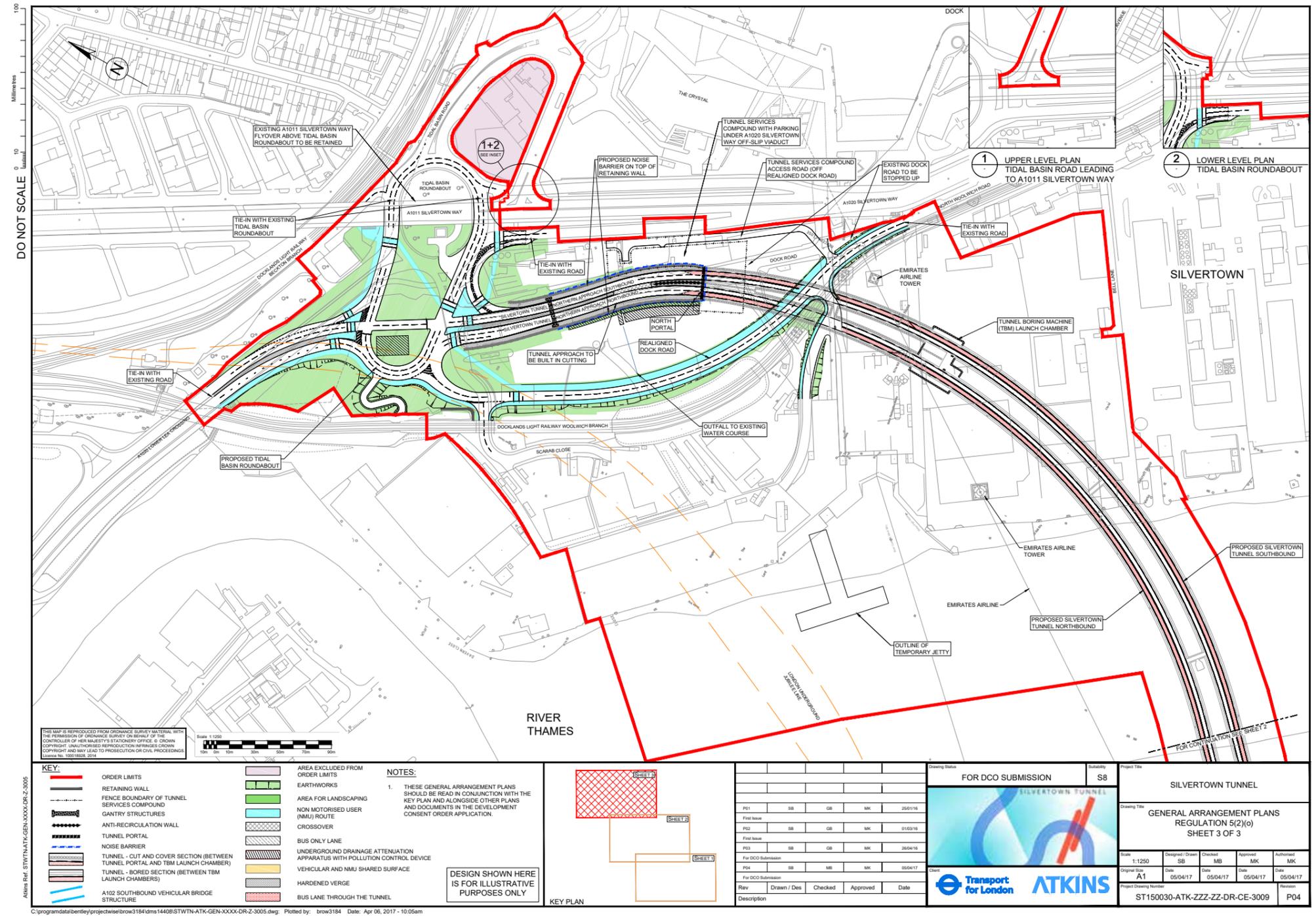


Figure 53. DCO General Arrangement Plan (Document Reference ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0093)

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4.3 Proposal at concept design

The concept design sought to push the reach of landscape to deliver on the original concept of a Tunnel in a landscape. In doing so the requirements and constraints of the Scheme were recognised so allowing for the progression of the concept to develop, as per Section 3 of this Landscape Report.

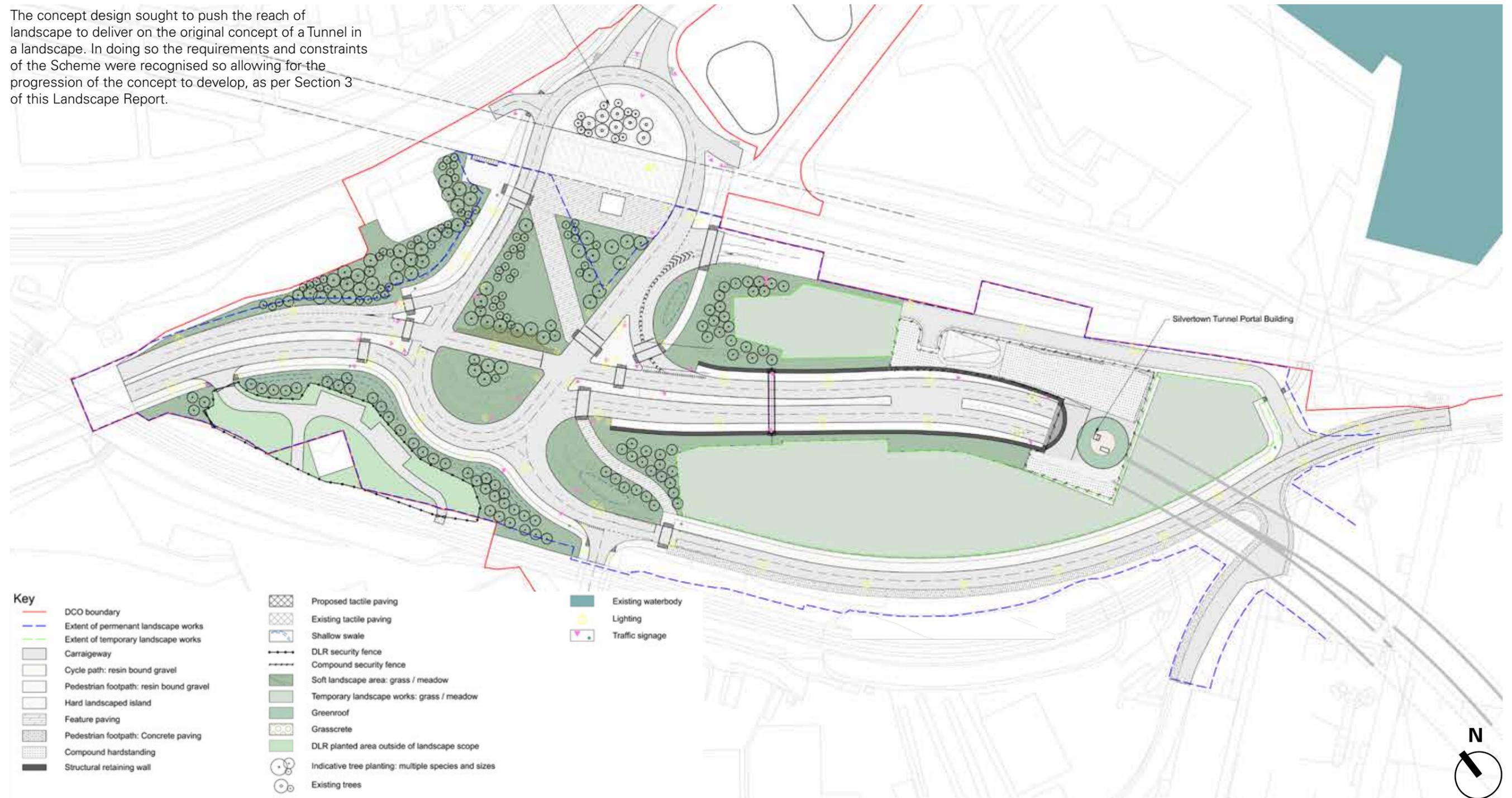


Figure 54. Concept design landscape proposal

4.4 Concept to developed design

4.4.1 Design progression summation

This section highlights key changes to the made from the concept design stage to the developed design stage:

- Removal of trees to accommodate utilities re-alignment
- Realignment of central roundabout path
- Realignment of cycle and pedestrian paths outside of roundabout
- Addition of natural drainage solutions
- Re-alignment of cycle path away from road edge
- Addition of open mosaic habitat areas
- Addition of sedum to central reservations
- Refinement of the portal building

Hard Landscape

- Coherent use of TfL approved materials with reduced materials palette to minimise visual clutter
- Refined pedestrian and cycle paths to create legible street network whilst providing the appropriate pedestrian comfort level
- Extent of footways maximised to future proof scheme with adjacent developments

Soft Landscape

- Extents of planted space maximised to meet ecological and mitigation requirement
- Trees located in coordination with utility locations and other constraints
- Plant and tree species palette identified to create sense of place

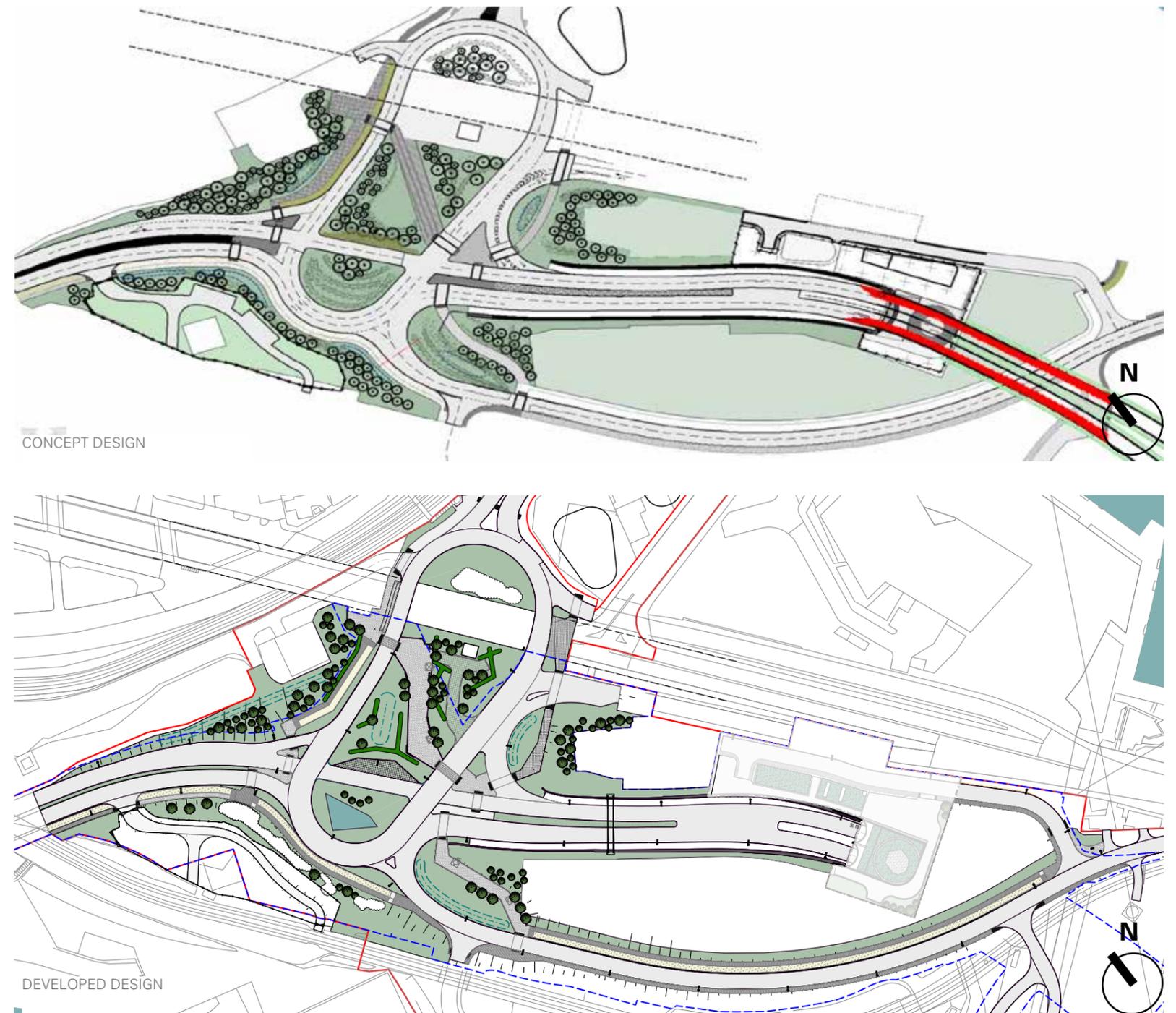


Figure 55. Concept and developed design landscape proposals

4.5 Proposal at developed design

The developed design integrated and resolved numerous requirements and constraints of the Scheme. With the establishment of the 'Part of the City' concept and the approach to frame the landscape around 3 key objectives, as detailed in Section 3.3.1.



Figure 56. Developed design landscape proposal



Figure 57. Ariel Perspective

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Figure 58. Location plan and 3 associated views (at developed design)



Figure 59. Location plan and 3 associated views (at developed design)

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5 Design Principles

5.1 Introduction

5.1.1 Approach

The Landscape Design for the Scheme is guided by 'The Design Principles' (Silvertown Tunnel - Design Principles - Document Reference: 7.4 - ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0080). These set the framework within which, through the DCO, the detailed design of the Scheme will be required to respond; taking account of the sites' rapidly changing context and contractor-led innovation.

The landscape design as per the drawings listed in Section 1, has been developed to adhere to these Design Principles.

For each set of Design Principles a review table is provided at the start of each section (where applicable) to provide an overview of all the relevant principles, for ease of reference.

In this section the Design Principles are reviewed to demonstrate adherence and their application in the design of the Scheme; those considered of key relevance are:

The **Design Process Design Principles** which ensured reviews of the Scheme at key design stages (Concept Developed and Detailed). A section is provided in this report to highlight the key comments made by the Design Review Panel (DRP) and the Greenwich Stakeholder Design Consultation Group (SDCG).*

These comments, are the opinions alone of the DRP and the SDCG, have been considered in the completion of the detailed design and implemented where practicable against the wider competing requirements of the Scheme.

*In addition meetings have been held with the Scheme sponsor and the Contractor to review and reflect on the design and comments made by the Design Review Panel (DRP) and the Silvertown Stakeholder Design Consultation Group (SDCG).

The **Landscape Design Principles** (LSCP:01 to LSCP:15) are considered to be the primary design guidance for the overall landscape design of the Scheme. These have been considered throughout the landscape design process and are highlighted in appropriate sections of this report.

Each LSCP has been considered and a brief synopsis of both its intent (including research and review of relevant guidance undertaken) and its impact at each design stage (concept, developed and detailed) is provided.

Key 'Design Comments' received through the design process from the DRP, LBN and the SDCG have then been listed, as appropriate and when relevant to the LSCP to ensure these were considered in the design of the Scheme.

A 'Scheme Response' has been provided to summarise how the landscape design has adhered to/applied the Design Principles.

Additional **Design Principles** considered complementary are listed below, with individual guidelines relevant to landscape drawn out accordingly and reviewed subsequently after the LSCPs section. These include:

- Integration of Permanent Structures
- Sustainability and Environment
- Public Art
- Advertising and Commercial Activity
- Signage and Wayfinding
- Lighting

A 'Scheme Response' has been provided to summarise how the landscape design has adhered to/applied the Design Principles.

5.2 Design Process Design Principle review

5.2.1 DPRO.01

In addition meetings have been held with the Scheme

The design of the scheme should be reviewed by the Silvertown Tunnel Design Review Panel in line with the Terms or Reference in Appendix A (of document "Silvertown Tunnel, 7.4 Design Principles TR010021")

5.2.1.1 Response to Concept Design

The Concept Design was presented to the DRP in February 2020. The comments below were highlighted to the design team:

- Build upon the design approach from tender to deliver a "Tunnel within a landscape".
- Consider what the tunnel can provide for the communities on both sides of the river in terms of good quality, well-connected networks of walkways and cycle routes set in a safe, attractive landscape.
- Conceive, layout and detail green spaces in a manner that assures longevity, considering innovative approaches to green infrastructure and SuDS provision at the outset, to ensure the landscape endures for future generations.
- Work with the LBN, TfL and GLA so that the requirements of each public body are set out with clarity.
- Demonstrate proposals can facilitate the sustainable redevelopment of adjacent development sites.
- Ensure that the project delivers wider connectivity and good place making.
- Work with stakeholders to determine and enable the most direct, efficient connections linking homes and businesses with public transport modes.

5.2.1.2 Response to Developed Design

The Developed Design was presented to the DRP in November 2020. The comments below were highlighted to the design team:

- Encouraged the Design Team to conceive the Scheme as one coherent whole and consider the elements of the scheme from the perspective of every mode.
- The Panel appreciates that this project has many stakeholders and many constraints but felt that a more integrated approach across the teams would lead to a more integrated design.
- The Panel suggested providing fly overs and walk through at the next review to show how the perspective of different modes had been considered.
- The journeys through this site should reflect and celebrate the importance of this scheme. It is not just an infrastructure project but a city making project.
- The design team, in collaboration with the local authorities, can suggest the character and set a precedent for the approach and detailing of public realm and streetscape for surrounding areas which the local authorities can then take forward with future developers.
- Pedestrian movement should take priority and footways and cycle infrastructure should be connected, coherent, comfortable and direct.
- The Panel asked the design team to reconsider the shared space at the Silvertown roundabout and provide segregated cycle routes as far as possible.
- The roundabout at Silvertown provides an opportunity to create a strong landscape feature that relates to the tunnel engineering and marks the entrance/exit to the tunnel.

5.2.1.3 Response to Design Chair

A portion of the Detailed Design was presented to the DRP in January 2021. This meeting is referred to as a Design Chair with the final DRP scheduled in July 2021.

The informal meeting was held to discuss the direction of design following the presentation at the Developed Design Stage with a primary focus to consider the concept and integration of the scheme as part of the wider journey.

5.2.1.4 Response to Detailed Design

The Detailed Design was presented to the DRP in July 2021. The comments below highlighted to the design team:

- The Panel welcomed the themes of connectivity, community and considerate design and thought those are good anchor points and quite useful ways in which the scheme could be examined and communicated. However, more evidence was needed to show that all elements within the scheme fit into the trichotomy.
- The Panel highlighted that the scheme needs to deliver an attractive and inviting landscape that is aesthetically pleasing, as well as biodiverse throughout the year.
- The Panel welcomed the approach to provide a biodiverse landscape but were sceptical how that would manifest in the design and had specific concerns about species selection and mix to ensure the planting is resilient to pest and diseases and the adverse impacts of climate change.
- The Panel also encouraged the Team to build on the opportunities to provide feature lighting for all structures in the public realm, which should be more inspiring and help create safer and more attractive places, that connects new planned development to west with the transport and other facilities to the east of the A1011.
- The Team need to be mindful of national cycle design guidance, particularly LTN 1/20 and 'Gear Change' as the project should be an exemplar of best practice in cycle infrastructure.

5.2.2 DPRO.02

Consultation on the design of the scheme should be undertaken with the Stakeholder Design Consultation Group in line with the Terms or Reference in Appendix B (of document "Silvertown Tunnel, 7.4 Design Principles TR010021").

5.2.2.1 Response to Concept Design

The Concept Design was presented to the SDCG in February 2020. With no formal comments provided at this stage.

The Concept Design was further presented to the SDCG in May 2020. The following comments were highlighted to the design team:

- **Service Buildings**

- What thought has been put into boundary treatments with adjacent developments?

Response - separate discussions to be arranged with the adjacent developers prior to the next meeting to allow more detailed proposals to be developed.

- What is the purpose of the operational compound and how does it tie in with the masterplan areas to the north, including the emergency access to the Blackwall Tunnel and access to the UKPN site?

Response - the operational compound will be used by maintenance and incident response crews during operation and TfL confirmed this was proposed under the DCO, as well as the UKPN access. TfL advised of separate discussions in respect of the other operational areas to the north and agreed to share details for the next meeting.

- **Landscape Design planting and terrestrial ecology**

- No issues raised against this item.

- **Urban Realm including pedestrian and cycling provision**

- Is a bus lane planned along the A102 and on tunnel avenue? How will Tunnel Avenue be designed – need to think about bus stops, section for walking/cycling, traffic movements to existing operational sites and separation between Tunnel Avenue and the A102.

It was explained that Tunnel Avenue is intended to be a separate local access road, preventing rat running onto the A102 and providing a more pleasant and convenient access to the sites along the west of the peninsular.

A separation barrier was likely, there could be walking, cycling and bus facilities, though no bus lane on Tunnel Avenue. A bus lane is expected on the A102 through Silvertown Tunnel.

TfL agreed to progress individual discussions with U&I, Morden College and other relevant stakeholders, and present further details on this section at the next meeting. This would include more detailed alignment and traffic management plans.

5.2.2.2 Response to Developed Design

The Developed Design was presented to the SDCG in October 2020. The following comments were highlighted to the design team:

- Lack of trees along Dock Road.
- Concern was raised over the 'forest' of lighting and traffic light columns. Highway equipment (e.g. lamp columns, traffic lights, guard rails etc) must be shown in the landscape visuals to give a true impression of the scheme.
- LBN expects use of granite kerbs in this location. Use of 'conservation kerbs' is not permitted.
- The Royal Docks Team has agreed that we can share extracts from the draft Royal Docks Design Guides which should influence both the hard and soft landscape palette (across land ownerships as it is intended to deliver coherence across the whole of the Royal Docks).
- The buff colour on cycleways will need to be discussed further.
- The highways work on North Woolwich Road includes options to reduce carriageway widths at Western Gateway which would allow for a segregated cycleway link. We would seek to link this on the northern side of the junction/roundabout, so if there is space for your segregated cycleway south of the flyover to continue north that would be ideal.
- This was not discussed at the workshop, but the cycleway on Dock Road would be better connected (both to Lower Lea Crossing and east towards North Woolwich Road, plus connecting Thameside West) if on the south side of the carriageway.

5.2.2.3 Response to Detailed Design

The Detailed Design was presented to the SDCG in June 2021. The following comments were highlighted to the design team:

- Segregation of cycling welcomed and recognition of signage required to provide clear guidance throughout the construction process.
- Appreciation for the installation of trees along Dock Road.
- Request for further additional trees to be located on the Scheme.
- Request to link art strategy to that of surrounding initiative - e.g North Woolwich Road.
- SHL (Thameside West) 'were happy' with the proposals.

5.3 Landscape Design Principles - Review

5.3.1 Design Principles overview

Codes	Design Principle (Synopsis)	Design Principle Response (Synopsis)
LSCP01	The Scheme should adhere to TfL Streetscape Guidance and London Cycle Design Standards	The Scheme design has promoted relevant guidance with departures noted in Design rationale as provided in this Landscape Report, where H&S risk and/or technical requirements on site have dictated
LSCP02	The detailed design of the Scheme should be developed with reference to relevant guidance on safety and security	The Scheme design has prioritised safety over all aspects of design, to ensure risks are designed out to minimise conflict and collisions, reviewing relevant guidance the interpretation of TfL guidance as required. Design rationale is provided in this Landscape Report and its sections reviewing the Design Principles.
LSCP03	Create a legible street network that promotes walking and cycling, taking account of local community need	The Scheme design has promoted the delivery of legible pedestrian and cycle routes to reinforce and/or improve the existing street network. Design rationale is provided in this Landscape Report and its sections reviewing the Design Principles.
LSCP04	Footways should be an adequate width and achieve an appropriate Pedestrian Comfort Level	Footway design has followed relevant TfL guidance and adheres to the minimum requirements as set out in LSCP15, Schedule 10 of the contract and guidance from the LB of Newham. Design rationale is provided in this Landscape Report and its sections reviewing the Design Principles.
LSCP05	Materials should adhere to the highway authorities agreed local materials palette and be of a quality defined in the contract specification	Public Realm materials, have been presented to the relevant authorities to deliver a palette that reflects (an agreed approach balancing), information established in LSCP15, Schedule 10 of the contract and guidance from the LB of Newham. Design rationale is provided in Section 2 and this Technical Appendix.
LSCP06	The public realm design should promote interaction with existing and proposed developments	The concept of the Scheme (Part of the City) active promotes the application of LSCP06. Design rationale is provided in Section 2 and this Technical Appendix.
LSCP07	Any formal cycle or car parking spaces affected by the works should, where practicable, be re-provided to an equivalent standard	No formal cycle or car parking spaces are affected by the Scheme works.
LSCP08	The placement of trees should help to reinforce public realm design elements	Trees have been used to reinforce the concept of the Scheme (Part of the City) and to ensure they connect with surrounding planting reinforcing a sense of place, urban integration and enhancement of biodiversity corridors. Design rationale is provided in this Landscape Report and its sections reviewing the Design Principles.
LSCP09	When locating the trees the various constraints have been looked at and considered.	Trees have been sited in respect of all necessary constraints, and reviewed by all relevant technical disciplines throughout the design process to ensure the trees do not impact on these constraints and vice versa.
LSCP10	The tree planting should consider their visual impact, SuDS capacity and take account of standards and guidance that are presented in the BAPMS	Trees have been sited in respect LSCP08 & 09, both species and the tree pits have been carefully selected and sized to ensure their long term prosperity. SuDS is restricted on site due to the high ground water level and contamination. Tree species selected have been guided by the BAPMS and reviewed by a qualified Ecologist.
LSCP11	The detailed design of the Scheme should ensure green infrastructure assets are properly planned, maintained	GI assets have been included throughout the Scheme, in collaboration between Landscape and Ecological professionals respecting the BAPMS and to deliver on their environmental benefits. A Management and Maintenance strategy has been submitted to ensure GI assets are suitably and professionally managed.
LSCP12	The landscape design should take account of the historic value and setting of the Blackwall Tunnel gatehouse and enhance	LSCP12 is specific to the Greenwich and is not applicable to these Landscape Proposals
LSCP13	Where practical green infrastructure including green walls and roofs should be considered in the design	On review of the technical constraints of the Scheme, it was proposed with the sponsor that Green Wall elements were not possible. Green Roofs have been included to the Compounds (which form a separate application) that conform to the BAPMS requirements.
LSCP14	Replacement of the existing mature trees by the Boord Street bridge should be with semi-mature, broad leaf trees	LSCP14 is specific to the Greenwich and is not applicable to these Landscape Proposals.
LSCP15	All new and changed streets should be designed to satisfy the Street Design Guidance	The Landscape Proposals have utilised the Street Design Guidance provided to guide the Scheme design.

5.3.2 LSCP.01

The detailed design of the Scheme should adhere to TfL Streetscape Guidance and London Cycle Design Standards (LCDS).

5.3.2.1 Concept Design

The Concept Design Proposal takes into consideration TfL Streetscape Guidance and LCDS and will be further developed during the next design stages.

Note: Streetscape Guidance Part B: Balancing Priorities is an older consultation version of the Streetscape Guidance - which has been superseded by the 2109 4th Edition.

5.3.2.2 Developed Design

A detailed review of the TfL Streetscape Guidance and LCDS was undertaken to guide the design development.

Both the TfL Streetscape Guidance and LCDS acts as a framework for high quality and consistent design responses which we have utilised and applied to the Scheme design. In a number of circumstances the technical application of the preferred approaches have not been applicable.

Design Comments

Following initial comments (a summation of these comments if provided for on the page opposite) from the DRP, TfL and the LBN a detailed review was drafted to form the background of information in relation to the compliance of this Design Principle (this information can be found on the following pages).

Internal reviews were held with the highways team, resulting in a further technical review of the crossing along Tunnel Avenue. The outcomes of this technical review were presented to TfL in April 2021, presenting all crossing to both sides of the Scheme. An overview is provided in this section for information, following the Scheme Outcomes.

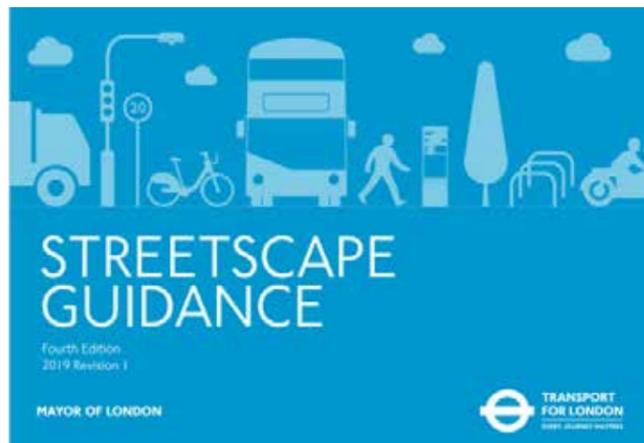


Figure 60. TfL Streetscape guidance on cycles



Figure 61. TfL LCDS guidance



Figure 62. Associated documentation

5.3.2.3 Detailed Design

To address the comments received from TfL a detailed review of the Scheme has been undertaken in respect of each junction and crossing to clearly communicate the technical constraints that had driven the developed design proposals. Presented back to TfL in April 2021.

In this review (provided on the following pages) the design team has further collaborated to push the wider team to deliver on the intentions of this design principle and the LCDS where practicable and safe to do so.

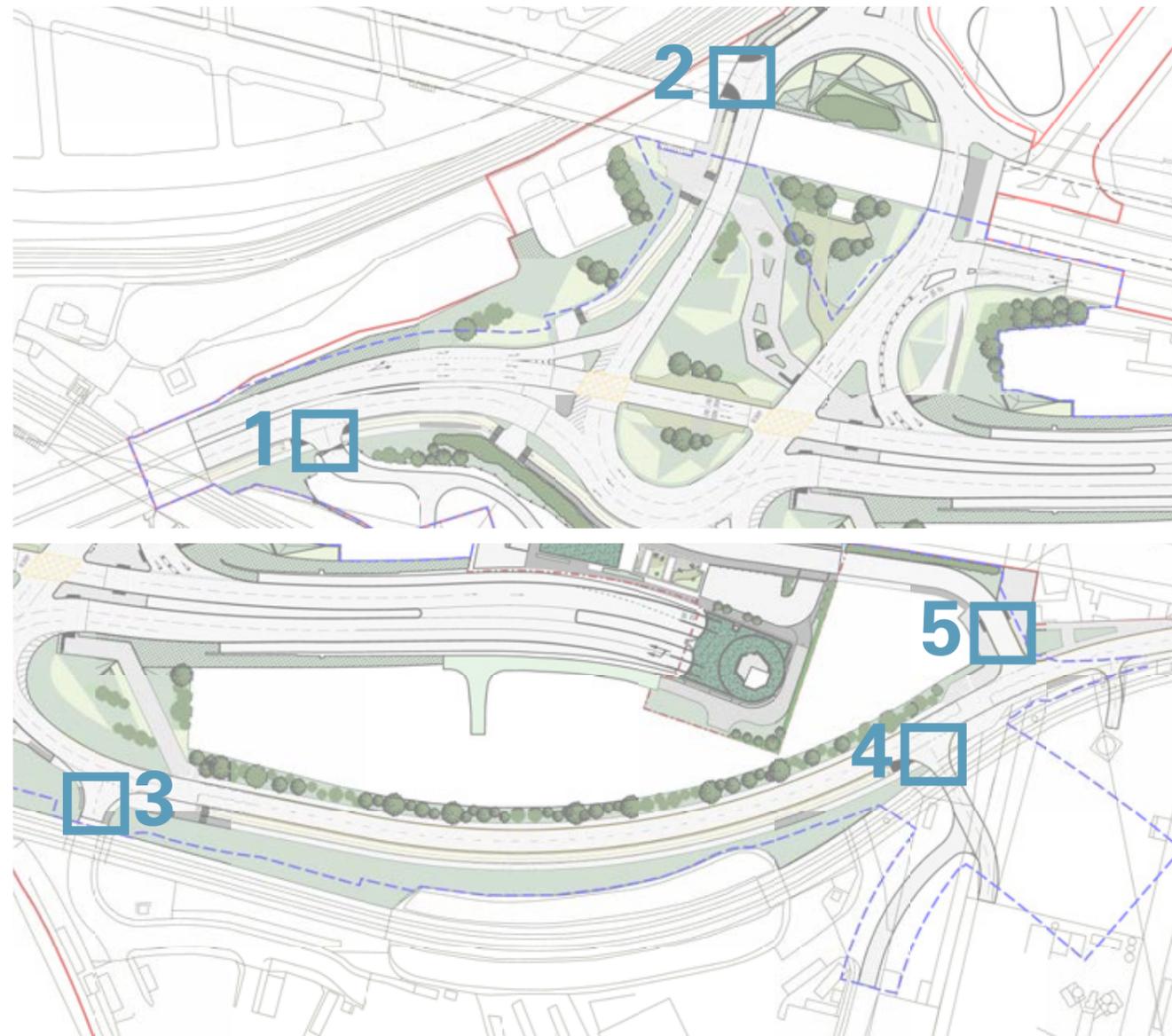


Figure 64. Key junctions at Silvertown - Northern Section to TBR (Junctions 1&2) and Southern Section to Dock Road (Junctions 3-5)

5.3.2.4 Design comments

- TfL: A primary concern for TfL was in respect of this design guideline and concern over areas of potential non compliance. This is of particular reference to the LCDS Section 1.1.5 and a core design outcome (directness) as identified below and the lack of continuity of the cycle lane.
- LBN: Noted a requirement to review against the Royal Dock Design Guidance and the preference for contrasting materials at junctions.
- The LBN stated their request for non-coloured material to the cycleways.
- DRP: The Team need to be mindful of national cycle design guidance, particularly LTN 1/20 and 'Gear Change' as the project should be an exemplar of best practice in cycle infrastructure.



Figure 63. Section 1.1.5 Design Outcomes

5.3.2.5 Scheme response

Through the design process weekly review have been undertaken with the wider design disciplines - of relevance to LSCP02 the Highways team.

These reviews have highlighted the requirements of the Scheme to deliver the required vehicle movements and compliance with Schedule 10 of the DCO.

A thorough review was undertaken of the junction crossings and presented to TfL.

As noted the primacy of this design guide has been to ensure the safe movement of people across the Scheme and to avoid collision with vehicles whilst applying the relevant guidance.

A review of each junction is provided in this technical appendix for evidence of this review and clarification as to how guidance has been applied.

Key design points to note:

- Junctions 1, 3, 4 and 5 unable to implement TfL guidance due to technical safety compliance requirements.
- Junction 2 has been amended to implement the LCDS guidance.
- Junctions 3 and 4 - have the potential to be altered under the delivery of the Thameside development proposals - presenting future opportunities to address the safety requirements to Dock Road.

5.3.2.6 Detailed Design - Junction Review

JUNCTION 1 - DLR Access

The Schemes roads are all DMRB trunk roads (noting the TfL contract requires the Scheme roads to be designed as Trunk Roads to DMRB so visibility for major minor junctions governed by TD42 and accesses to trunk roads TD41.

Visibility is required to be measured from 2.4m X distance and achieve a 70m Y distance for 50kph design speed.

TD41 does allow a reduction to 2.0m X distance in lightly used accesses which could potentially apply here.

The opportunity to give cyclist priority was reviewed and levels of use confirmed in respect of the DLR access requirements and frequency. The outcomes of which coupled with the requirements of DMRB trunk roads negates this opportunity.

JUNCTION 2 - Private Means of Access

The Schemes roads are all DMRB trunk roads (noting the TfL contract requires the Scheme roads to be designed as Trunk Roads to DMRB so visibility for major minor junctions governed by TD42 and accesses to trunk roads TD41.

Visibility is required to be measured from 2.4m X distance and achieve 70m Y distance for 50kph design speed.

TD41 does allow reduction to 2.0m X distance in lightly used accesses which could potentially apply here.

Visibility of 70m along roundabout carriageway seems achievable for Y distance.

Levels of use deemed low enough to facilitate cyclist priority to be delivered.

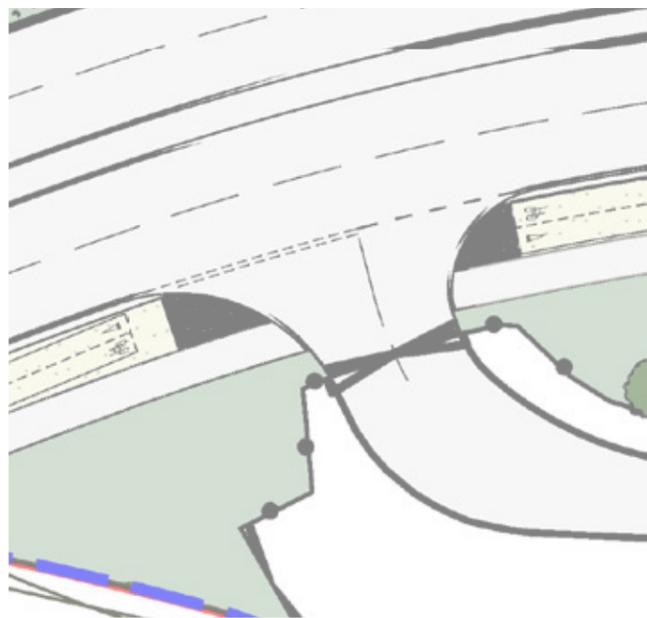


Figure 65. Junction 1 - Lower Lea Crossing



Figure 66. Junction 2 - TBR North



Figure 67. Junction - TfL example

JUNCTION 3 - Scarab Close

The existing road (Scarab Close into which the new junction will tie) is a significant access, with kerbed bellmouth, facilitating access to a number of industrial units in this location.

Crossing at this location is shared due to pinch point on the figure below as footway/cycleway narrows to avoid impact on DLR embankment (indicated by the red line).

See notes on the visibility requirements for trunk roads (as per Junction 1). If priority was to be given to the footway/cycleway, the giveway for vehicles would need to be set back approx. 4m behind edge of Dock Road.

Visibility measured from the X distance of 2.4m behind giveway line would be almost zero, to vehicles exiting the junction as blocked by DLR bridge/embankment.

Proposed crossing point gives priority to vehicles due to visibility.

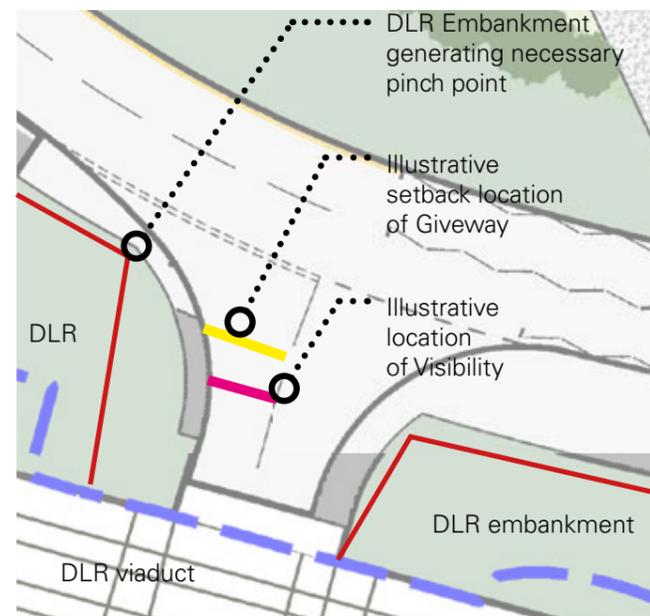


Figure 68. Junction 3 - Dock Road North

JUNCTION 4 - '14 Dock Road' Access

The existing road (Leading to 14 Dock Road into which the new junction will tie) is a significant access, with kerbed bellmouth, facilitating access to a number of industrial units in this location.

See notes on the visibility requirements for trunk roads (as per Junction 1).

In order to achieve the compliant 70m carriageway visibility would at pinch point we are slightly amending verge where arrow points and X distance needs to be measured from edge of carriageway.

If the giveway line set back to give cycle crossing priority it would significantly reduce visibility for drivers exiting access and would require a departure.

Visibility would be blocked by DLR viaduct.

Proposed crossing point gives priority to vehicles due to visibility.

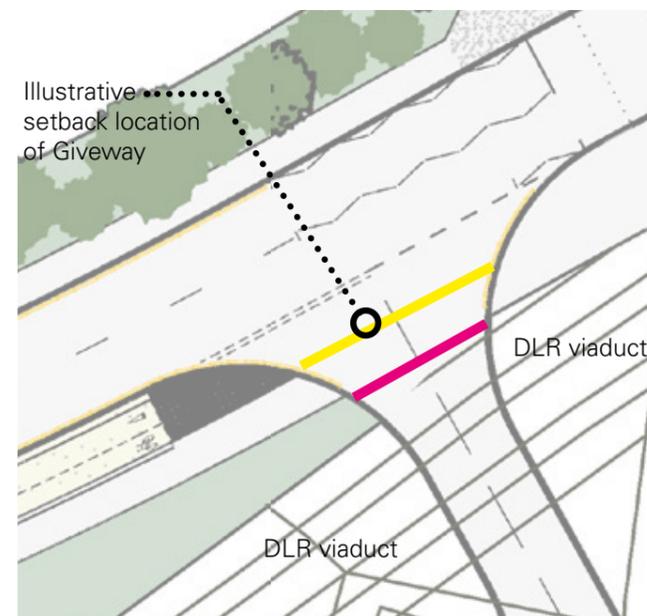


Figure 69. Junction 4 - Dock Road South

JUNCTION 5 - Tunnel Maintenance Compound Access

This junction has been formed through the new road to connect the Silvertown Compound to Dock Road. The crossing is currently proposed to be uncontrolled and shared, set back from Dock Road.

The location of the crossing has been proposed to facilitate the connection of the Sustrans National Cycle Route (No.13), from within the Royal Docks (as a shared pedestrian and cycle surface) through to the dedicated cycle route on the west side of Dock Road.

Large vehicles will use this access as part of tunnel maintenance/breakdown/emergency response. We are currently reviewing whether priority crossing can be given to cyclists/pedestrians in this location and not impact the operational regime of the tunnel.

The proposed crossing is to be shared as users are moving from the Royal Docks through the underpass - which is a shared surface to the new footpath which will act as a continuation of the shared surface before users cross Dock Road to join the segregated cycle route.

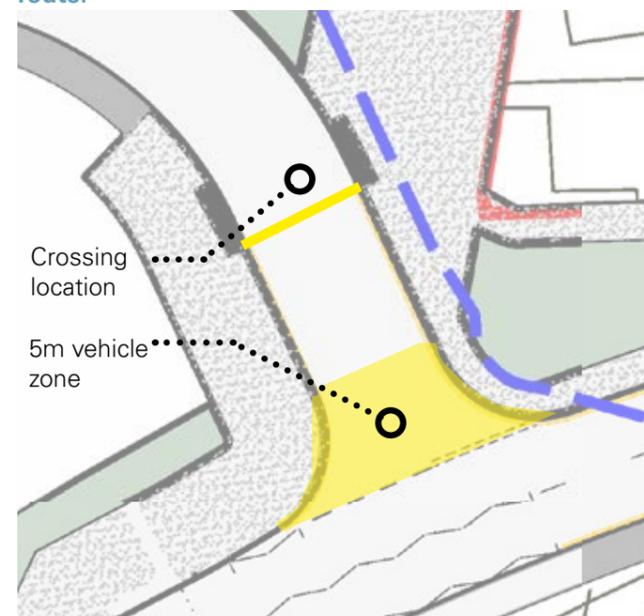


Figure 70. Junction 5 - Silvertown Compound Road



Type [1]: parallel crossings at Westferry and West India Dock Road. Ladder and tramline tactile paving are used for transition from track to shared area

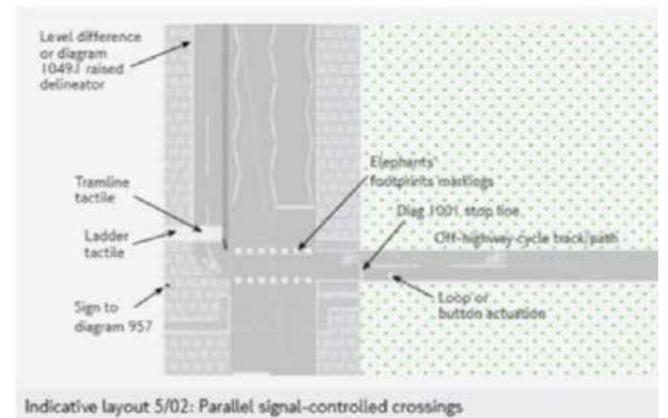


Figure 71. LCDS excerpt

5.3.2.7 Guidance document review

Streetscape Guidance Part D: Balancing Priorities

The purpose of this Streetscape Guidance is to set a high standard for the design of London's streets and spaces by applying best practice design principles.

The Road Task Force generated 9 defined street types - and are referenced in LSCP15, these are included in the Guidelines document and are covered in "Silvertown Tunnel, 7.4 Design Principles TR010021" Appendix C .

Review - Key Aspects and Design Comments

The RTF proposed six key roles which streets and roads need to fulfil.

- 'Moving' – help people, goods and services get from A to B, by enabling more efficient and reliable movement for a range of transport modes.
- 'Living' – provide welcoming and inclusive places which support economic, cultural and community activities.
- 'Unlocking' – improve the accessibility, connectivity and quality of major growth areas to support the delivery of new homes, jobs and economic sectors that London needs as it grows.
- 'Functioning' – ensure essential access for deliveries and servicing, and upgrade utilities to better serve London's growing needs and foster a digital city.
- 'Protecting' – improve safety, particularly for vulnerable users, and ensure that streets are secure.
- 'Sustaining' – reduce road network emissions and support clean, green initiatives for a healthier and more active city.

Streetscape Guidance Part D: Balancing Priorities

The purpose of this Streetscape Guidance is to set a high standard for the design of London's streets and spaces by applying best practice design principles.

The Road Task Force generated 9 defined street types - as demonstrated below, these are included in the Guidelines document and are covered in "Silvertown Tunnel, 7.4 Design Principles TR010021" Appendix C - this is covered under Design Principle LSCP15.

Review - Key Aspects and Design Comments

All users need convenient, direct, safe, legible routes that are efficient and reliable. The design challenge is to facilitate these principles within the context of a confined street where different modes often require significantly different types of infrastructure.

The following key considerations have been reviewed:

Place considerations

Consider the importance of 'place' and the role of the design in 'place making'.

Successful streets and places tend to have common characteristics. These can be summarised as those places which have:

- a distinct identity;
- diverse facilities;
- are vital;
- safe; and
- easy to navigate.

Function

An increasing emphasis on encouraging active, healthy modes of transport such as walking and cycling. Any inner city scheme should aspire to maximise the attractiveness, convenience and safety of travel by these modes.

Performance

Measures to enhance capacity should be balanced so as not to compromise other uses.

Form

Any assessment of place should seek to understand site specific qualities of the street and acknowledge these throughout the design process.



Figure 72. Street Types Matrix, taken from the Roads Task Force.

Streetscape Guidance Part B: Balancing Priorities

Street design considerations

A> Townscape character - Designers should consider:

- The texture, pattern and character of materials used in existing buildings to inform design decisions on the street.
- Key views and landmarks and how they can be acknowledged and framed.
- The impact of tall buildings, with particular regard for overshadowing and micro climate impacts.

B> Local identity - Designers should consider:

- Engaging with local authorities and communities to identify how people use their streets.
- Working collaboratively and coordinating decision-making is essential for delivering a clear vision of design quality at the local level.
- Supporting the visual character of the street so that the existing character of the place is enhanced rather than using streetscape improvements to define a place.
- Using a consistent material palette to create a coherent backdrop to the local character of adjoining buildings.
- Being contextually aware, using the materials palette sensitively and detailing to a high standard rather than a one size fits all solution.
- Carefully placing and rationalising street furniture, signage and road markings to ensure context, character and identity are respected .

Review - Key Aspects and Design Comments

Townscape is evolving, relevant development has not yet occurred to directly influence the scheme. Masterplan and consented developments have been considered in the design of the Scheme, reference to be made to LSCP06.

Local Identity is evolving from low density industrial to high density residential on the peninsula.

Existing character is heavily defined by the existing road network, in particular Tunnel Approach.

Boord Street (and Dreadnought Street) is currently a forgotten road that lacks identity. Proposals to close of the street will remove bus access and provide the opportunity to generate an improved setting of the footbridge and for pedestrians and cycle users.

The Scheme has been regularly shared with the LBN to ensure their knowledge on the use of streets has been incorporated to influence the design.

Materials selected confirm to the LSCP05 and 15 and have been amended in response and discussion with the LBN.

Streetscape Guidance Part B: Balancing Priorities

C> Land use - give due consideration to the function and character of surrounding land uses to coordinate modal needs and enhance liveability.

- Residential - Residential areas in London can vary significantly in form and density, often differing dramatically from one neighbourhood to the next. Streets which serve residential areas should enable people to comfortably walk and cycle, and provide safe play opportunities for children, thereby providing community members with safe spaces to interact. The fundamental aim should be to design inclusive streets which are flexible and encourage interaction.
- Green space - Evidence from the GLA suggests that accessibility to urban green space is one of the key elements for promoting physical activity in cities and improving the health and well-being of local people.

D> Crime prevention

- Routes serving only pedestrians and/or cyclists away from the road should not be provided unless they are overlooked, short in length or especially wide.
- High permeability improves connectivity for walking and cycling, but can be problematic if there is low natural surveillance.
- The designer should understand the existing crime levels in the area.

Review - Key Aspects and Design Comments

Land Use - the wider regeneration is resulting in large residential developments.

Boord Street will be defined by this and a future Hotel.

The western footbridge landing sits adjacent Morden Wharf - with 1,500 residential dwellings and 17,311 (sqm GIA) of commercial floorspace.

It is intended for the design to best approach the proposals by reflecting the future scenario - though noting the existing road network in place has been generated to serve an industrial use. This legacy, both in terms of road network and landownership have a lasting impact on the availability of land.

The existing road network is poorly overlooked, with low levels of permeability and low natural surveillance - elements of crime have been reported.

The regeneration of the peninsula will result in a reversal of all these negative aspects. This will be coupled with the Scheme delivering improved pedestrian and cycling infrastructure (refer to LSCP03)

Streetscape Guidance Part B: Balancing Priorities

E> Public spaces - Designers should consider:

- The demand for and usefulness of providing additional features in the streetscape which provide public amenity, such as seating
- Issues relating to providing additional street furniture such as footway congestion or antisocial behaviour
- Maintenance and management to ensure that public spaces are maintained to a high standard to encourage future use
- Partnerships and a diversity of funding sources may be required to support the long-term management strategy for public places that occupy shared curtilage

F> Heritage - The following points should be considered when dealing with heritage assets:

- The materials in this guidance are applicable in most circumstances but special treatments may be appropriate in accordance with areas of particular significance. The Streetscape Review Group (SRG) should be consulted in these instances
- It is the design team's responsibility to consult the relevant authority to establish the exact location and particular requirements of heritage sites and features
- The local authority's conservation officer should be consulted in all instances

Review - Key Aspects and Design Comments

Land Use - the wider regeneration is resulting in large residential developments.

Brood Street - Consideration on the existing and future levels of crime have been considered in the selection of and sighting of furniture in the proposed public realm creation.

A detailed Landscape Maintenance plan has been provided for the proposals.

The reference design and the review of the scheme identifies that in general there are no Heritage aspects to be considered for the proposals.

The one exception is that of the Blackwall Tunnel Gatehouse - refer to LSCP.12.

London Cycling Design Standards

The LCDS identifies the design outcomes desired to deliver the ambitions of the The Mayor's Vision for Cycling (2013)

Particular consideration should be given to:

- LCDS: 1.1.5 Design Outcomes; and
- LCDS 1.1.6 Guiding Principles.

1.1.5 Review - Key Aspects and Design Comments

The proposals improve the existing capacity of the street network for pedestrian and cyclists.

The schemes inherent purpose will increase capacity for movement of vehicles.

- Safety
- Directness
- Comfort
- Coherence
- Attractiveness
- Adaptability



Figure 73. LCDS Section 1.1.5 Design Outcomes

LCDS: 1.1.6 Guiding Principles

This section provides 20 guiding principles which are considered fundamental to deliver the quality (and ambition) of the cycling infrastructure envisaged by The Mayor's Vision for Cycling.

The guiding principles have been considered in the development of the Scheme and balanced against all Design Principles. In particular the approach to:

Note: Guidelines 8, 13, 15, 17 are deemed not applicable or relevant in the Scheme design.

8. Cyclist interventions need not be attempted on every road

13. Many of the standard tools currently used to manage cyclists' interactions with others do not work

15. Trials can help achieve change

17. But do not be afraid of capital infrastructure

Review - Key Aspects and Design Comments

1. Cycling is now mass transport and must be treated as such

2. Facilities must be designed for larger numbers of users

Guidelines 1 and 2 have considered the future developments that surround the Scheme, and TfLs PRG document. Recognising the additional network capacity that these developments will bring to the industrial areas, reference should be made to LSCP06.

3. Cycles must be treated as vehicles, not as pedestrians

Segregating cycles from pedestrians where permissible within the red line boundary, physical and technical parameters of the Scheme.

4. Cyclists need space separated from volume motor traffic

5. Where full segregation is not possible, semi-segregation may be the answer

Guidelines 4 & 5 have been considered with cycles are segregated from vehicles - though full kerb segregation, in respect of the predicted traffic volumes to the west of the Scheme.

On review of Boord St, it has been deemed suitable to follow a combination of approaches as detailed in the DCO contract, cyclist will share Brood St, due to the requirements for two way traffic to be retained on the street.

6. Separation can also be achieved by using lower-traffic streets.

The Street will be closed off to public transport and as such will have restricted vehicle movement and will allow for Guideline 6 to be applied by the LPA - as a lower-traffic street and should consider Guideline 7.

7. Where integration with other road users is necessary, differences of speed, volume and vehicle type should be minimised

9. Routes must flow

10. Routes must be intuitively understandable by all users

In respect of Guidelines 9 & 10, the provision of cycle routes has worked within the parameters to provide as continuous a route as possible.

11. Provision must be consistent and routes must be planned as a network

Guideline 11 has been considered for both sites, and is intrinsically considered and delivered through the response to LSCP03 and 06, to which reference should be made.

12. Routes and schemes must take account of how users actually behave. If they do not, they will be ignored

Guideline 12 promotes the understanding of people. Routes prescribed in the Scheme provide for the most direct route across the junction at Newham, and reinforce the crossing of the footbridge in Greenwich. The Scheme is working within the existing major arterial vehicular in Greenwich and delivering a new major vehicular route to Silvertown. The nature of the crossings provided are necessary under DMRB and to ensure the safety for all.

14. Changes in road space can influence modal choice

Guideline 14 - A review of the Scheme in respect of the RTF was undertaken in the Design Guidelines (as part of the DCO contract). All streets remained the same type. To our knowledge no dispute was raised in response to this (Guideline 15).

16. Avoid over-complication and the 'materials trap'

Simplicity has been sought in materials and design to adhere to Guideline 16.

18. All designers of cycle schemes must experience the roads on a cycle

Our designers have visited the Scheme site on foot and by bicycle, in respect of Guideline 18. Videos of secondary visits, by bicycle have been taken and circulated to the wider team. Visit to other major junctions were also undertaken, for comparison.

19. As important as building a route itself is maintaining it properly afterwards

Guideline 19 - A Landscape Maintenance Plan for the landscape has been provided to TfL and LBN for comment. Clarity is required on responsibilities for maintaining routes.

20. Know when to break these principles

Guideline 20 recognises that not all guidelines and principles are achievable and that sections of provision below expectations should be accepted rather than negate the route as a whole.

Cycle infrastructure design (LTN 1/20) - July 2020

This local transport note (LTN) provides guidance to local authorities on delivering high quality, cycle infrastructure including:

- planning for cycling;
- space for cycling within highways;
- transitions between carriageways, cycle lanes and cycle tracks;
- junctions and crossings;
- cycle parking and other equipment;
- planning and designing for commercial cycling;
- traffic signs and road markings; and
- construction and maintenance.

This document has been reviewed following comments on the detailed design from the DRP.

The guidance lists five core design principles which represent the essential requirements to achieve more people travelling by cycle or on foot, based on best practice both internationally and across the UK. These being that networks and routes should be:

- Coherent;
- Direct;
- Safe;
- Comfortable and
- Attractive.

Through the original review of the relevant guidance (in particular the LTN directly copies Section 1.1.5 of the LCDS) it is agreed that these five principles are covered through the guidance and have been applied in the development of the Scheme and that of the DCO reference Design (and its Design Principles).

The LTN also lists out a series of 22 Summary Principles. As with the core design principles these summary principles are reflective of the Section 1.1.6 of the LCDS and its 20 guiding principles (which has been reviewed and applicable principles considered against the design of the Scheme). A review of these 22 in the LTN against the 20 in the LCDS, it was considered that no additional guidelines where required to be considered/implemented.

The remaining sections of the LTN provide an overview of the potential and benefit of cycling the approach to planning for cycling. Which are understood, agreed with and have been implemented through DCO process.

Technical guidance is provided for and it is noted that relevant audits and the dimensions guidance has been adhered to, the later being directly reflective of the TfL guidance implemented.

It is noted that guidance is provided on recommended width for shared use routes carrying up to 300 pedestrians per hour should be 3.0m, routes over this figure should be 4.5m, to allow for cyclists to make adequate progress, in overtaking slow moving or groups of pedestrians in safety.

This has been considered through LSCP01, 03 and 04. In particular a review of LSCP04 provided the Scheme design with guidance on existing and anticipated levels of usage from differing users. Shared Use Routes provided to the south of the TBR are 5.0m in width.

5.3.3 LSCP.02*

The detailed design of the Scheme should be developed with reference to relevant guidance on safety and security, including Secured by Design Council CABE guidance and the Centre for the Protection of National Infrastructure and National Counter-Terrorism Security Office's Protecting Crowded Places design guidance.

*The project is not pursuing Secured by Design (SBD) Accreditation, however, the design is developed taking account of SBD principles.

5.3.3.1 Concept Design

The Concept Design Proposal takes into consideration relevant guidance on safety and security in particular:

- the necessary need for pedestrians and cyclists to have clear sightlines to the street network and public areas proposed; and
- the necessary clear sightlines required for the vehicles to safely use the Scheme. The impact being on the siting of planting and trees within the landscape in these visibility zones.

A synopsis of the key documents reviewed and key outcomes are provided in this section where applicable and relevant to the Scheme.

Secured by Design Commercial Development 2015

Resilient Design Tool for Counter Terrorism

National Counter-Terrorism Security Office's Protecting: Crowded Places design guidance.

Secured by Design (General) and the Secured by Design Council - 6 principles:

- | | |
|--------------|---------------|
| • Commitment | • Management |
| • Understand | • Improvement |
| • Respond | • Evaluate |

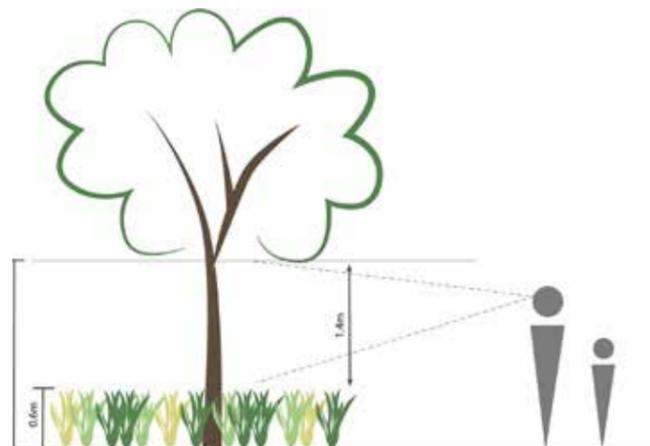
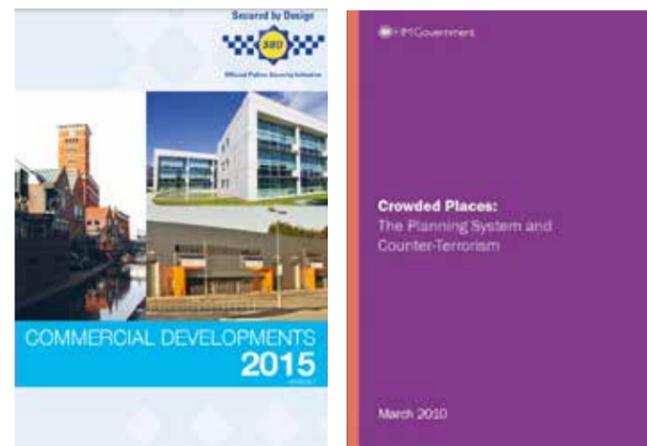


Figure 74. Secured by Design Guidance and Clear sight lines allows passive surveillance

5.3.3.2 Developed Design

Cycleways and Footways have where possible been pulled back from adjacent carriageways to improve on the minimum requirement of 500mm. Staggered crossings prevent users taking chances when crossing the road.

Secured by design (General Review)

Planting next to footpaths:

10.1 In general, planting next to a footpath should begin at the outer edge of the verge, starting with low growing plants with taller shrubs and trees to the rear.

Planting immediately abutting the path should generally be avoided as the plants could have a tendency to grow over the path creating pinch points, places of concealment, reduction of visibility and unnecessary maintenance.

10.2 Where footpaths run next to buildings or roads the path should be open to view. This does not prevent planting, but will influence the choice of species and the density of planting. Public footpaths should not run immediately next to doors and windows, therefore buffer zones should be created to separate a path from a building elevation. This is particularly important in areas with a known graffiti or anti-social behaviour problem where the use of defensive planting may be appropriate.

10.3 Careful selection of plant species is critical in order not to impede natural surveillance and to avoid an unnecessarily high maintenance requirement. Some hedging plants, for example, will require trimming twice a year, whereas other species might only need one visit every two years. Trees on appropriate root stocks can provide a more reliable means of reducing the likelihood of impeding natural surveillance. The potential cost savings of a reduced maintenance requirement could be substantial.

Landscaping, tree planting and lighting schemes shall not be in conflict with each other and lighting column positions should take priority over tree positions on new developments. Where trees are existing they shall be cut back and maintained so as not to impede the spread of light from the street lighting at any time.

Scheme Comments

Planting has been carefully selected and adopted the guidance provides in numerous cases a grass buffer or wildflower planting has been utilised directly adjacent a footpath to mitigate encroachment on to the near by footway.

No buildings front the footpaths in the Scheme.

Species have been selected to comply with the guidance in public realm areas and where pedestrians are purposefully moving. This approach has been married with the development of the Management and maintenance Strategy to ensure the long term application of the principle and success of the Scheme.

Biweekly technical discipline meetings were held to highlight conflicts and clashes. Planting proposals have been reviewed by the lighting consultant to ensure elements has been moved out of the placement of trees and that lighting of public realm areas is sufficient.

5.3.3.3 Detailed Design

During this stage key documents were reviewed and key elements considered in the development of the Scheme.

Secured by Design Commercial Development 2015:

Section 21 on landscaping:

Climbing plants can be used to cover walls that may be used as canvases for graffiti and carefully selected trees and shrubs can be used to “green up” the most hostile of environments providing both

Planting should not impede the opportunity for natural surveillance and must avoid the creation of potential hiding places. Although plant growth above 1m and below 2m should be absent to provide a window of surveillance, this does not preclude the use of hedging plants and feature shrubs and trees, providing surveillance opportunity is maintained. Plant growth below 500mm will be required in respect to car parks to deter vehicle interference.

The planting of new trees should be considered in tandem with the installation and the operational requirement of any specified CCTV system. Likewise, locate new trees so that they do not reduce directed light from lamps or provide climbing aids over boundaries or onto buildings.

Species selection of trees and shrubs should take account of their future maintenance, as poor maintenance can impact on site security. Mature, slow growing plants, although often more expensive to purchase from the outset, are normally much less expensive to maintain in the long term.

External furniture such as benches and planters should be of robust vandal and graffiti resistant design. Furniture should be fixed into the ground in order to prevent its theft and reduce the possibility of it being used for climbing or as a tool to break through the shell of the building. External furniture should not be located at or close to a building line where it can be used to climb onto roofs and nor should it be located against boundary fences.

It is recommended that a landscape architect is consulted about these matters.

Design Comment

Climbing plants have been limited to ensure the architecture of the building is expressed as per DRP comments. (TfL expressed concerns over Green Walls).

Planting has been carefully selected and a maintenance plan implemented to ensure these heights requirements are adhered to.

Trees and their location have been proposed in coordination with the lighting and security consultants. The overall uniformity of light is expected to achieve a level above 15% for P classes or BS 5489:2013 compliant.

Species have been selected to promote biodiversity and tie into the wider Scheme BAPMS, which has been developed specifically with ease of maintenance in mind (a Landscape Maintenance Plan has been developed and should be referred to).

External furniture has been selected to be simple and robust (and resistant to vandalism and graffiti), in discussion with the DRP and LPA. The street furniture proprietary fixed to the external public realm. In close proximity to the compounds external furniture has been restricted to ensure no furniture is used to assist climbing.

A qualified landscape architect has been consulted proposing the landscape for the Scheme and compounds.

Silvertown Tunnel Project, London – Silvertown Junction - Stage 2 Road Safety Audit Report (Oct 2020)

This audit identified problems with the developed design, regarding vehicle movements, queueing and braking - which have been addressed through the detailed design stage. In particular the landscape design was amended to address comments in respect of visibility splays.

In addition a number of key items (Problems) were raised with regard to the pedestrian movement, as listed opposite.

Transport for London

Silvertown Tunnel Project, London

Silvertown Junction

Stage 2 Road Safety Audit

Ref: TMS 16102

Prepared for:

TfL / Riverlinx CJV

By:

TMS Consultancy

Prepared by: Darren Newbold, Audit Team Leader

Checked by: Richard Marnott, Audit Team Member

Approved by: Loma Charles, TMS Consultancy

Version	Status	Date
A	Audit report issued to Client	[Date]

MAYOR OF LONDON



Figure 75. Stage 2 Road Safety Audit

3.4.2 Location: 8 – Pedestrian Crossings

Summary: Pedestrian and cycle confusion over traffic direction may lead to collisions at controlled crossing facilities

Given the complexity of the Tidal Basin Roundabout junction and the need for pedestrians and cyclists to cross the various arms in multi-stages, users may become confused as to which direction traffic is approaching from. Such confusion may increase the potential for collisions between vehicles and pedestrians or cyclists.

RECOMMENDATION INCORPORATED

‘Look Left’ and ‘Look Right’ road markings should be provided on carriageway at the pedestrian crossings to improve awareness of traffic directions.

3.4.3 Location: 9 – Footway / Cycleway facilities

Summary: Lack of awareness of footway designation may lead to potential collisions between cyclists and pedestrians

Although noted that signage is provided at the commencement and termination of shared and segregated footway and cycleway routes, there is a lack of repeater signs along the routes. A lack of awareness of the status of the footway as users join along the route may increase the potential for collisions between cyclists and pedestrians.

RECOMMENDATION INCORPORATED

Repeater signs should be provided at suitable intervals along the footway / cycleway routes.

5.3.3.4 Design comments

- DRP: Noted the need to balance design aesthetic against the requirements of the Scheme and find a balance to ensure the area is read as a piece of Public Realm.
- TfL: n/a
- LBN: n/a

5.3.3.5 Scheme response

The landscape proposals have adhered to the application of the guidance reviewed and been considered through the design process weekly reviews to deliver the required controlled vehicle movements balanced against the promotion of the safe movement of pedestrian and cyclist

Key design points to note:

- Introduction of a planting scheme that ensures clear sight lines and minimises encroachment of the footways.
- Planting chosen to adhere to secure by design principles, to maintain clear sightlines over planting and underneath tree canopies.
- Maintenance Strategy developed to ensure secured by Design principles are upheld. i.e. definition of heights to planting and canopies of trees.
- Lighting designed to provide safe levels for all users
- Cycleways pulled away from carriageways , where practicable to exceed the minimum 500mm TfL guidance. (Note significant sections of cycle way to the TBR are set back greater than this minimum requirement).
- Signalised crossings introduced to facilitate safe crossing of existing and proposed roads.
- Non compliant hazard tactile paving has been renewed and implemented to meet the minimum requirements of the TfL guidance.
- Hazard paving has been introduced to the base of the DLR footbridge to the north of the TBR.
- Security requirements included to reflect security consultant guidance.
- All fencing and gates to the compounds are to the be SR2 level security.
- The project is not pursuing Secured by Design (SBD) Accreditation, however, the design is developed taking account of SBD principles.

5.3.4 LSCP.03

The detailed design of the Scheme should seek to improve access for pedestrians and cyclist, taking account of local community needs, whilst being functional, practical and economical.

It should help to create a legible street network that promotes walking and cycling, and defines spaces through public realm not highways.

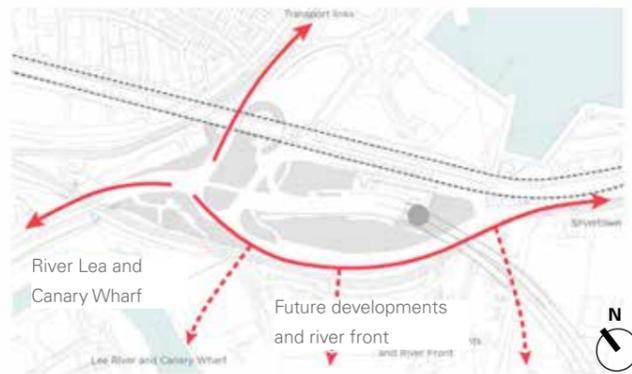


Figure 76. Proposed Cycling Network corridors

5.3.4.1 Concept Design

The pedestrian and cycling routes should seek to reinforce and improve connections across the Peninsula and with it the wider London context (as explored through the diagrams on this page). The suggested cycling routes within the Scheme will connect West Ham, Canning Town and Silvertown between them and the wider London context.

The DCO application General Arrangement plans provide an indication of defined NMU routes which should be provided to support this legible network.

These key routes will be retained, reviewed and reinforced where possible through the design stages. A review of relevant guidance and literature (including the Royal Docks: Local Transport Design Guidance has been undertaken in this stage, with notes, to guide the progression of the concept design and to inform the detailed design stage.

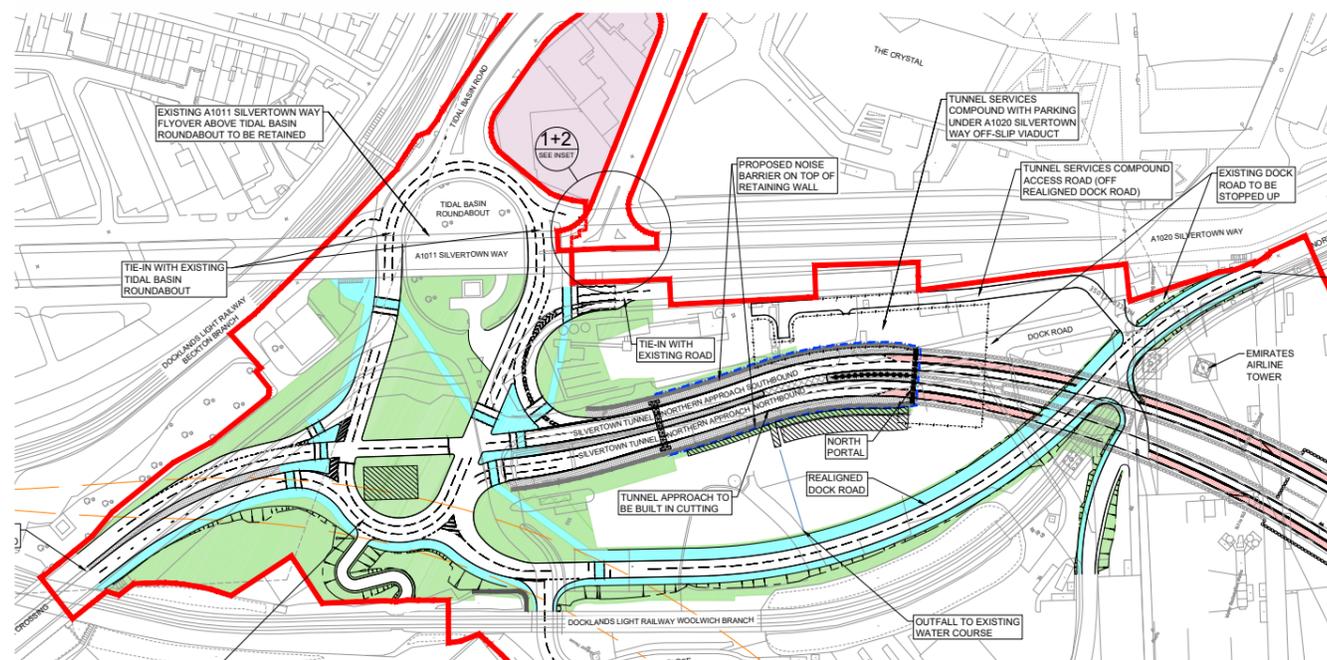


Figure 77. DCO application 2.2 General Arrangement Plans (ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0093)

5.3.4.2 Developed Design

A network of dedicated cycleways is proposed to join on to existing and established cycle route. These dedicated routes are suitably supported with a network of cycleways are to be a shared (with pedestrians) surface used to provide additional traffic-free routes (ie off road).

The network is completed with the use of dedicated routes, compliant shared surfaces, road crossings and solidified with the use of Legible London signage.

A review of the cycle network demonstrates how the network within the DCO boundary will be improved by the Scheme to provides an off road link to the National Cycle Network (NCN) Route 13 (as shown in the figure opposite) through the realigned Dock Road.

The figure below provides an overview of the intended make up of routes at the developed design stage.



Figure 79. Sustrans cycling routes

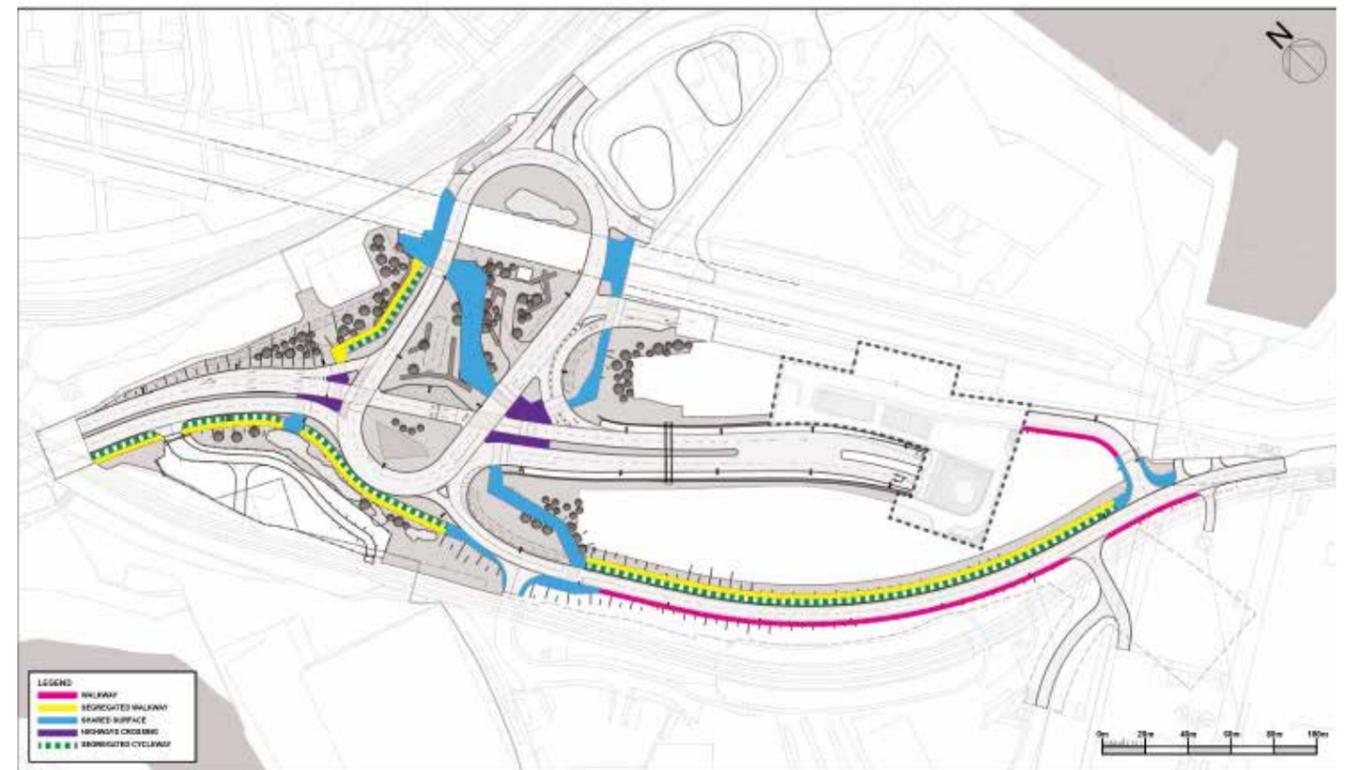


Figure 78. Proposed Cycling Network corridors

5.3.4.3 Detailed Design

Following feedback from the DRP and LBN, the location of the cycle route on Dock Road was further investigated to revert to its location on the western side of Dock Road.

Comments made in respect of the crossings was developed (refer to LSCP02) for detailed review of these junctions - considering cycle users moving through the Scheme and the connections to adjacent development opportunities.

A further review was undertaken of wider principles and strategies to reflect the comments made from the DRP to understand how the Scheme fits into the wider cycle network and connects to (as per this section).

The Scheme provides improvement and extension of the NMUs as shown on the DCO application General Arrangement Plans (as shown in the figures on the previous page) in response to detailed understanding of the ambition for the LBN.

A NMU route (pedestrian footway) is provided to the south of the TBR (as highlighted by the pink square on the plan opposite) to ensure a connection between the Scheme to the LBN vision for the Royal Docks Corridor (discussed on the next page of this document).

The NMU route (segregated pedestrian footway and dedicated cycleway) extends east under the Silvertown Flyover and towards the Royal Docks. This will ensure the Scheme supports the LBN vision for the Western Gateway (discussed in the next few pages of this document).

Both of these aspects promote the design principle LSCP03 within the Scheme to ensure a legible network.

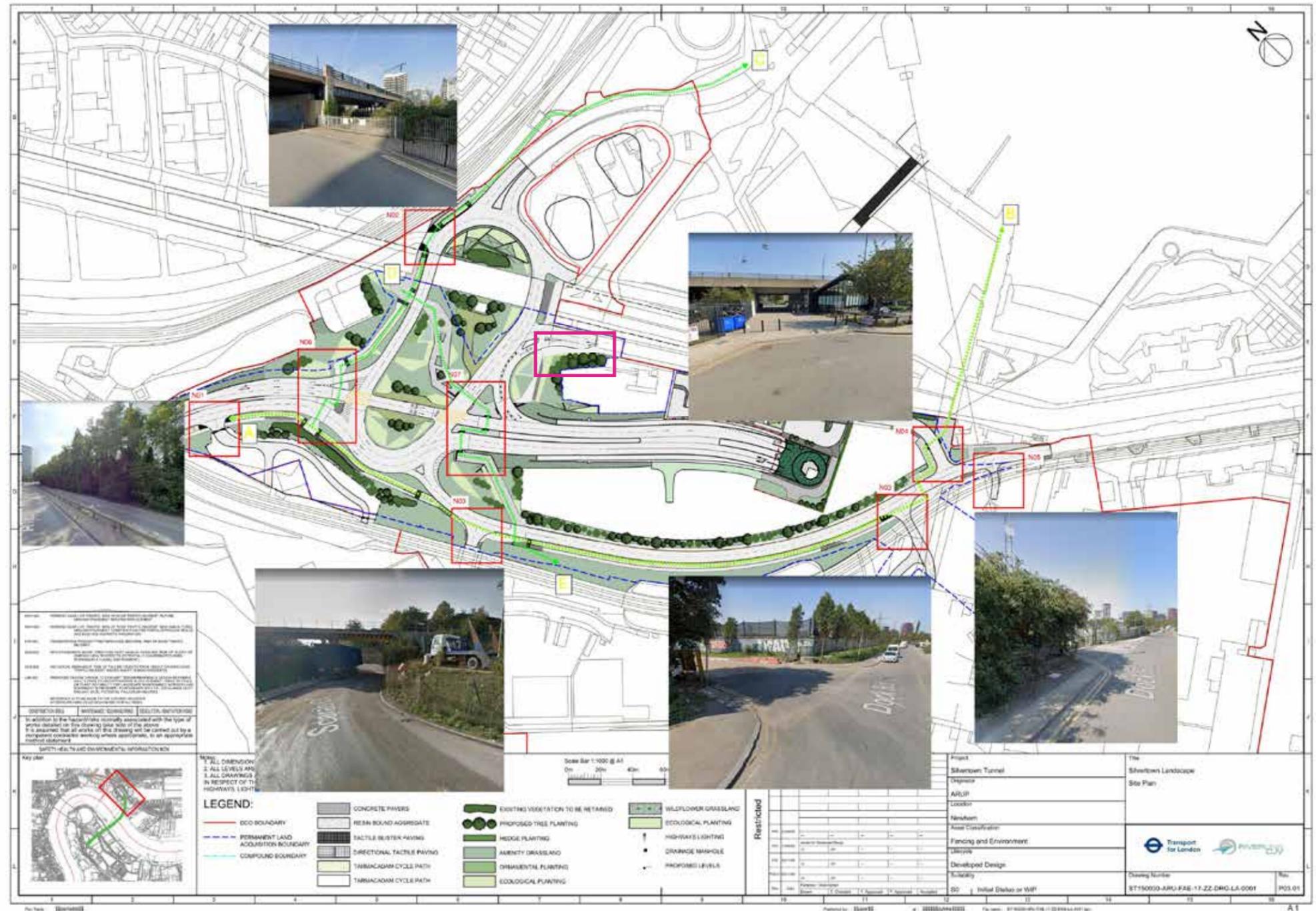


Figure 80. Developed review of crossings and key cycle routes/corridors - sketch for discussion only

London Borough of Newham Cycling Strategy 2017/18 – 2024/25

The Area is noted as having a relatively high level of 'Commutes by Bicycle' at between 5.1% and 7.5%.

Cycling Level of Service - indicates the area in question has a low level of service (<40%).

The draft MTS (2017) highlights the importance of developing a pan-London strategic cycling network. TfL's Strategic Cycling Analysis (SCA) (2017) identifies and prioritises the indicative cycling connections that would form this network at a London-wide scale. The SCA identifies a number of indicative cycling connections in Newham.

Scheme response

- The proposals improve the existing capacity of the street network for pedestrian and cyclists.
- The schemes inherent purpose will increase capacity for movement of vehicles.
- Medium Potential connections - Canning Town to Woolwich Ferry.

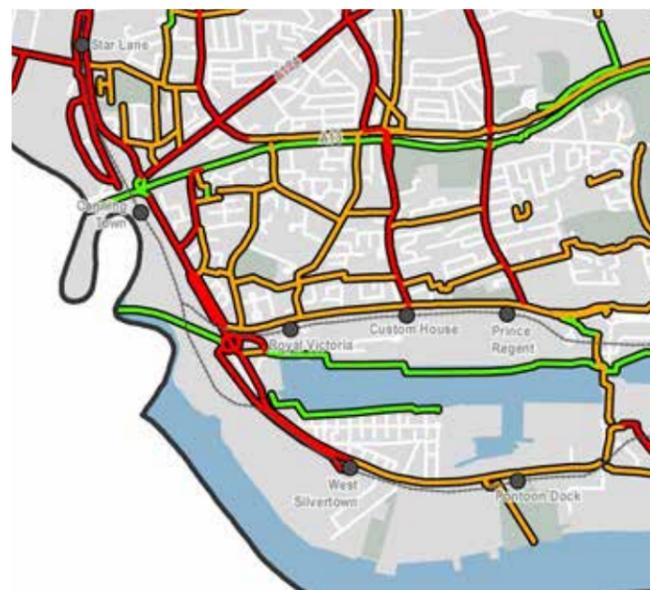


Figure 81. Newham Cycling Levels of Service, 2016

TfL's Strategic Cycling Analysis (2017)

The report considers four broad areas of analysis:

- Where are the cycling connections with the greatest potential to contribute to cycling growth in London?
- How could these connections be prioritised?
- How could these connections contribute towards achieving Healthy Streets goals?
- What opportunities are there to deliver area-wide cycling improvements?

Scheme response

The Silvertown area is noted as having Medium Potential connections (with the route running from west Silvertown DRL, up Dock Road and crossing the DLR to connect to the Canning Town on the eastern side of Bow Creek.

- Canning Town to Woolwich Ferry
- Noted High Demand in the Royal Docks
- The area is defined as having a high CTAL, which can improve the PTAL of an area.



Figure 82. Proposed Strategic Cycling Network corridors - TfL 2017

Royal Docks Corridor

Newham Council, in partnership with the Royal Docks Team, has prepared proposals to change the road layout and street environment along the Royal Docks Corridor, which includes Silvertown Way and the section of North Woolwich Road up to Connaught Bridge. The proposals are intended to be implemented and completed by 2024.

The plan below demonstrates the intention for the portion on the Silvertown Viaduct, which will continue the opportunity of the Royal Dock Corridor in providing a dedicated cycle route across the DLR north to Canning Town. The proposed cycle routes to be implemented to the access/exit ramps will tie into the proposed shared use footway that is to be implemented to the south side of the TBR.

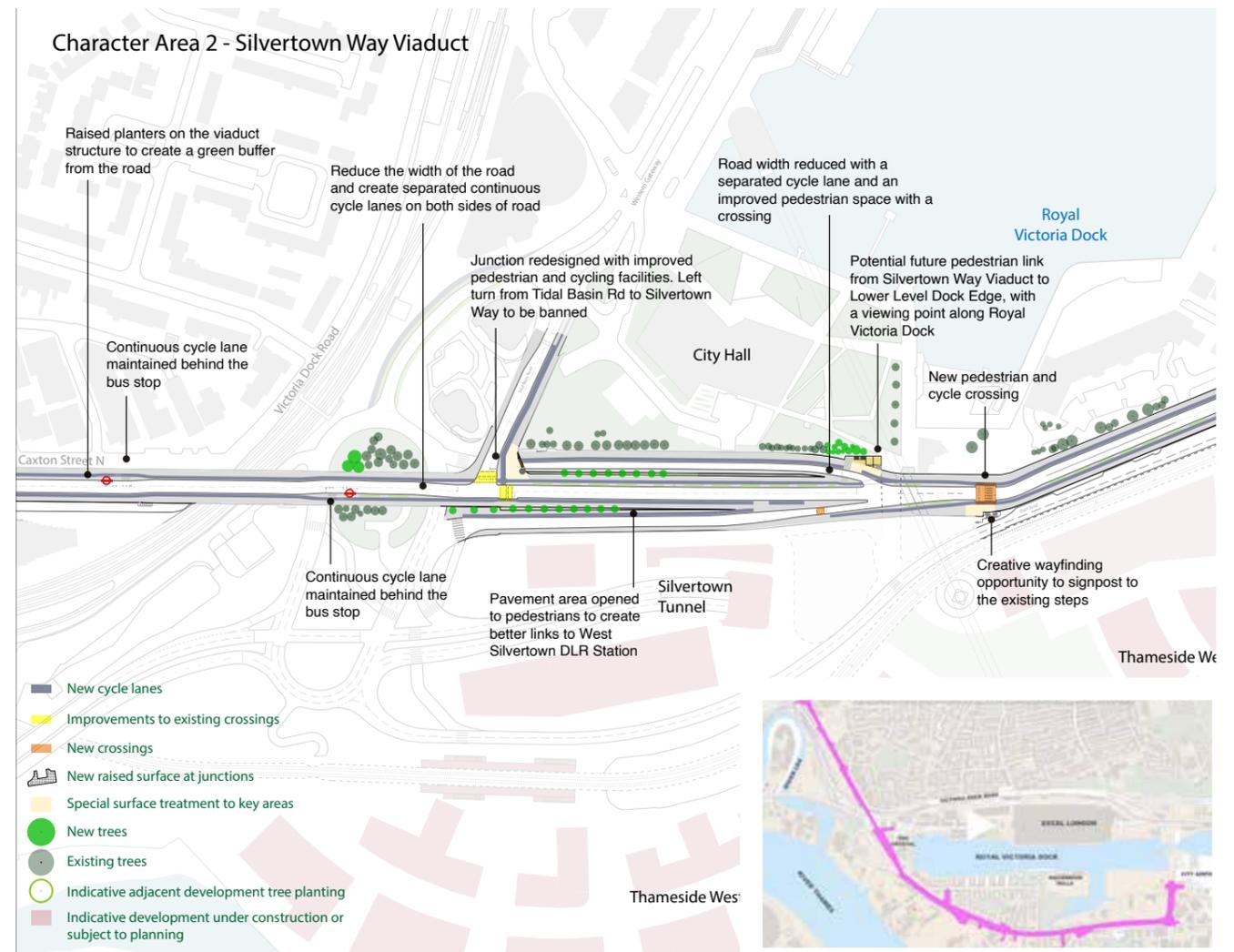


Figure 83. Royal Docks Corridor - Conceptual proposals to the viaduct

Royal Docks - Western Gateway

The LBN are proposing the implementation of a cycle lane along the Western Gateway, which will connect into the TBR. The proposals at this stage are preliminary and have been reviewed to ensure that the TBR segregated cycle route will provide for a future connection to this proposed route through the Royal Docks.

The plan below demonstrates the intention of the LBN, promoting a segregated two way cycle lane to the northern side of the Western Gateway, with a remodelled arm off the TBR (through the removal of the central reservation and reduction in the number of lanes).

Noted below on the plan is the location of the proposed segregated cycle lane to be implemented as part of the Scheme and with it an indication (red arrow) of the ideal alignment to be installed. Which will provide greater opportunities for urban greening. The pedestrian route (the blue arrow), demonstrates that the Scheme landscape design will not negate this intention, and has pro-actively been design to align with LBN's intentions.

The areas of green are indicative of areas that could be planted to promote the connection between the TBR with the Docklands through GI.

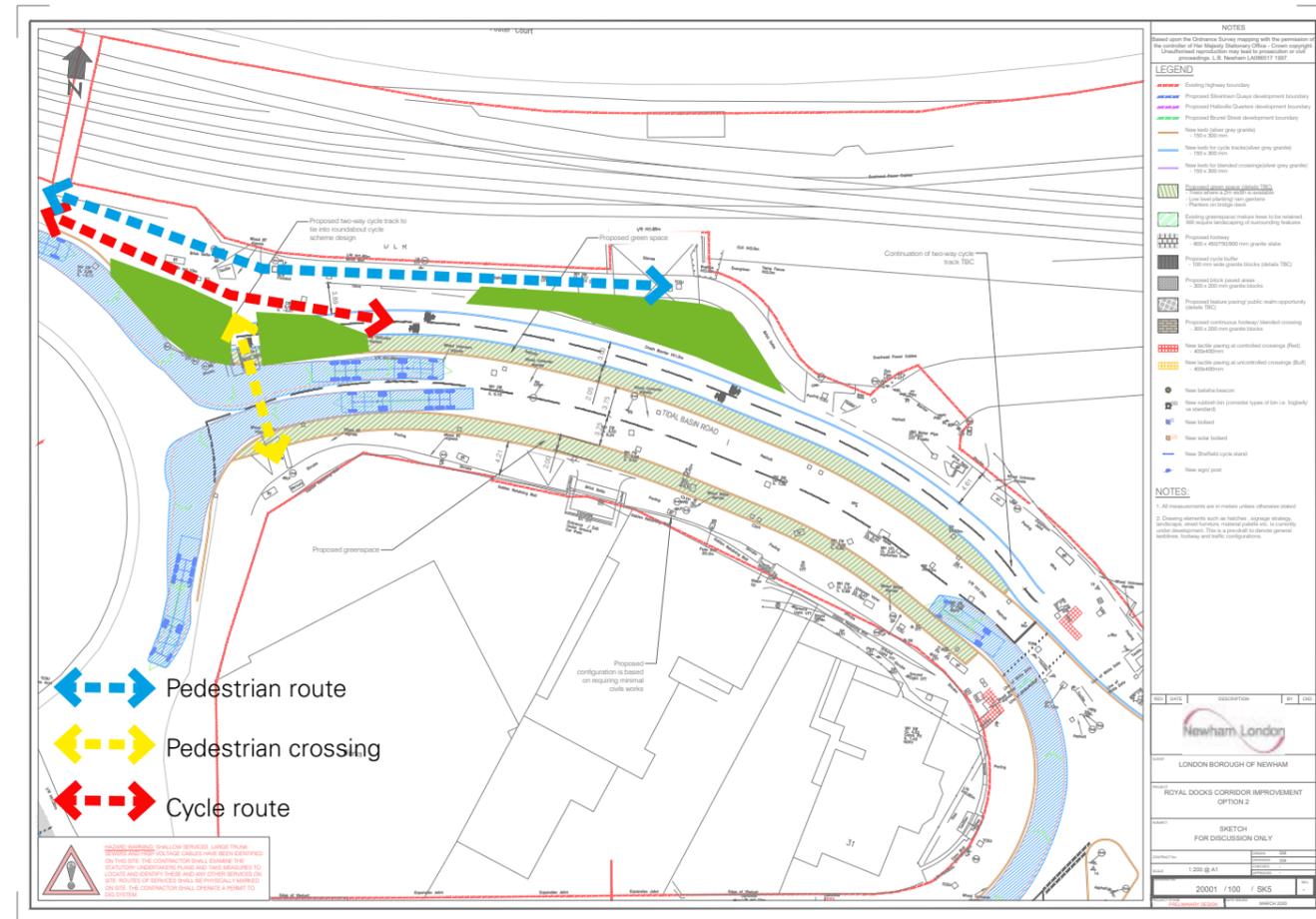


Figure 84. Western Gateway proposed cycle lane - sketch for discussion only

5.3.4.4 Design comments

- **DRP:** Material should be made to demonstrate the active creation of a legible network, as required under this Landscape Design Principle.
- **TfL:** Echoed the comment from the DRP. TfL could not understand from the presentation how the Scheme connects to the wider context.
- **LBN:** Noted the proposed Western Gateway cycle route within the Royal Docks and the opportunity to link to the proposed cycle network to the TBR.

5.3.4.5 Scheme response

The landscape proposals section provides additional information to demonstrate the implementation of the legible network and its connection to the surrounding context.

The proposals implement the creation of public realm in both the TBR and improves the area adjacent to the Silvertown Flyover step access.

The proposals increase the widths of the existing pedestrian and cycle infrastructure to either meet or exceed the minimum requirements as set out in the TfL Guidance the Design guidance provided in LSCP:15.

Key design points to note:

- Introduction of Legible London totems and finger posts to promote legibility.
- Landscape design proposals extended to east of the TBR.
- Cycle routes implemented to the north and west of the TBR as per the design guidance in LSCP:15 and to connect to future works on the Western Gateway as indicated by the LBN.
- Shared use footway to the south of the TBR will provide for connections to the future works on the Silvertown Flyover slipways as proposed by the LBN.
- Establishment of simple material palette, reflecting intent of the Royal Docks Landscape Design Guide.

5.3.5 LSCP.04

Footways should be an adequate width and achieve an appropriate Pedestrian Comfort Level as defined in TfL's Pedestrian Comfort Guidance for London and based on expected demand that will arise from all committed developments that would utilise such footways.

The scheme should allow future (non committed) schemes to expand or add to footways to address anticipated demand.

5.3.5.1 Concept Design

The suggested footways have been designed to either comply with or exceed the minimum requirements as set out in the DCO Scheme.

Footways are proposed to achieve the minimum requirements as established in Appendix C Streetscape Design Guidance (under LSCP.15) of 2.0m.

Note: All footways are adjacent road infrastructure with no at ground floor uses in either the existing when the future case scenario when the masterplan proposals are built out (refer to LSCP.06).

Initial review of Pedestrian Comfort Guidance (PCG) indicates recommended widths - the area is deemed as a low flow (<600pph), refer to figure below demonstrates the requirements for a 2.0m wide (with no furniture) to meet DfT requirements.

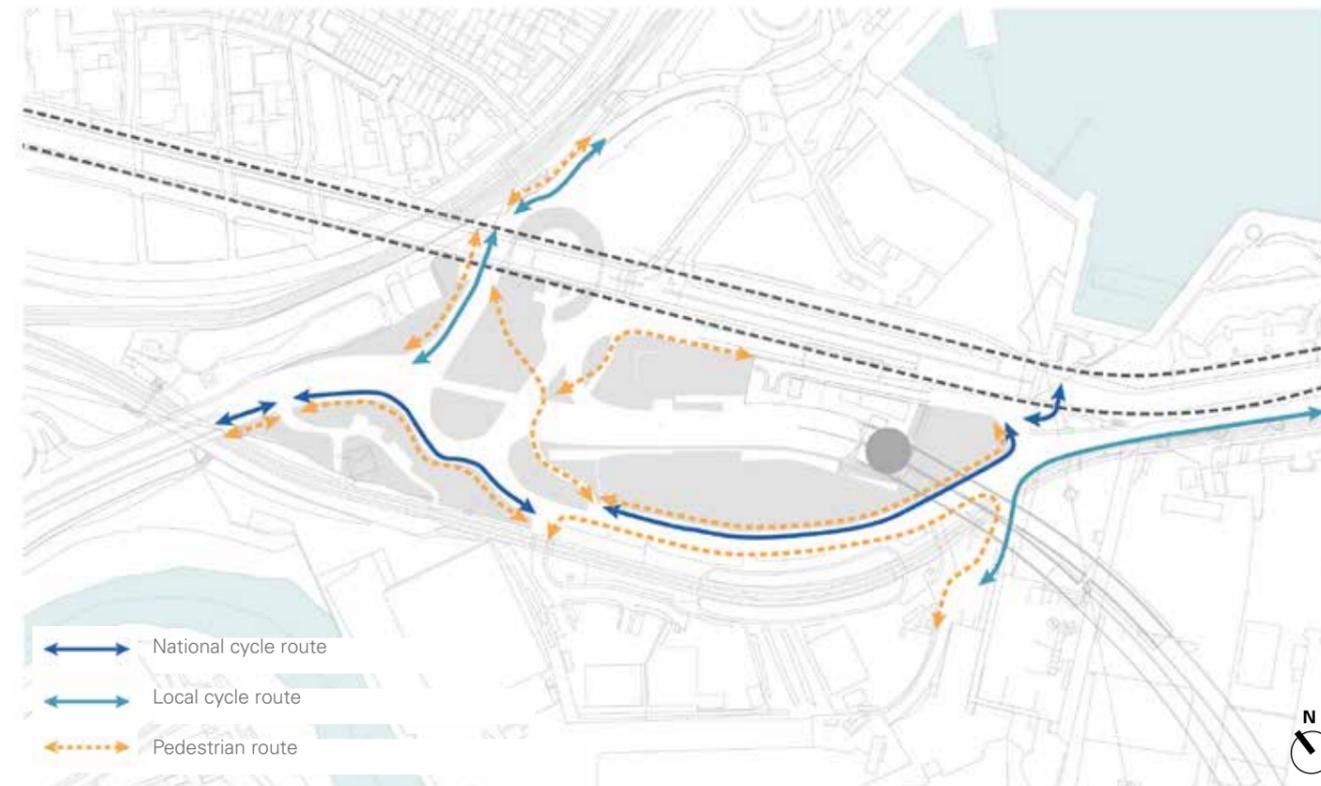


Figure 85. Pedestrian and cycle routes

5.3.5.2 Developed Design

Compliant footways have been introduced, with areas of segregated footways as well as shared surfaces. TfL streetscape guidance has been followed, with correct widths used ensuring for sufficient infrastructure is in place for non-committed developments in the vicinity and within encompassing masterplan.

As per LSCP.15 the central route through the TBR has been amended to achieve a minimum width of 10m.

The PCG promotes responsible planning for London's streets to create excellent pedestrian environments through a clear, consistent process during the planning and implementation of transport improvement projects.



Figure 86. Key Widths - Pedestrian Comfort Guidance, TfL

The Scheme at present currently services an area of light industrial with very limited pedestrian movement.

The Thameside Development Site, as indicated in LSCP.06 and the landscape report is a major new development for the area and will change the current level of use, delivering the following:

- 5,000 new homes
- Mixed tenure development
- River-front living
- New DLR station
- New Parkland and conservation space
- New school
- 1km riverside walkway
- Industrial and creative workspaces

Appendix B: Recommended Widths

This diagram shows recommended footway widths for different levels of flow, based on the research carried out for this project. They show the total width of the footway rather than the clear footway width.

This information provides an initial indication as to comfortable footway widths in different environments in advance of a full Pedestrian Comfort Assessment.

Pedestrian comfort levels are defined on Figure 8 on page 13.



Figure 87. Key Widths - Pedestrian Comfort Guidance, TfL

5.3.5.3 Detailed Design

Footways implemented are clear from obstruction and a minimum of 2.0m - for Greenwich the DCO promotes the retention of tunnel Avenue and the promotion of the footway for shared use. It also recognises the existing private land boundaries and adjacent infrastructure with design guidance seeking a minimum 3.0m shared surface route on Tunnel Avenue.

Footways have where possible been implemented with adjacent soft landscaping which will allow for expansion of these footways should future development demands necessitate.

The DCO Transport Assessment (Appendix 6.5, Doc Ref ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0078) provides a clear understanding of the level of usage (diagram below). The figures below represent a 12 hour period (07:00-19:00).

The pedestrian counts demonstrated, utilising the busiest applicable section was (The Western Gateway), 233 journeys (125 west and 108 east) equating to an average of approximately 20 pedestrians per hour (pph).

The cycle counts demonstrated, utilising the busiest applicable section (Lower Lea Crossing), 171 journeys (91 west and 80 east) equating to an average of approximately 15 cycles every hour.

With an appreciation of future used (to be delivered through future regeneration LSCP06) there will be an uplift from the surrounding developments - notably Thameside West and the change of use of the Crystal into the new home for the GLA. These developments will result in the delivery of approximately 5,000 homes, 26,809m² commercial floor space, 5,055m² community use, a primary school and nursery. Placing increased pressure on the Schemes street network. However the Thameside West proposals is coupled with an increased street network, access to the Thames and the Thames Path to be installed providing additional pedestrian and cycle routes (notably providing a potential alternative route to cross Bow Creek/River Lea). A new DLR station will provide for residents to have access to far reaching destinations - without needing to use Dock Road.

A review was undertaken of the Thameside West proposals to ascertain the potential increment of pedestrians and cyclists. The Transport Assessment (June 2019 Document Reference: 035668) provides the figures below, taken from the Trip Generation section, demonstrating both the existing trip (in red) and predicted trips (in green) over a 3 hour period*, the final column provides an interpolation of these total predicted figures to generate a per hour figure, as below:

Mode	AM (07:00-10:00)	PM (16:00-19:00)	People Per Hour (PPH)
Bus Passengers	65 (691)	34 (730)	244
Tube/DLR	101 (3,755)	86 (4,112)	1371
Rail	57 (834)	48 (897)	297
Pedestrian	33 (686)	28 (444)	229
Cyclists	20 (512)	22 (376)	171

It is considered that these figures will be spread across the street network (with the majority of DLR trips accessed from within the masterplan) and the number on individual streets will be below 600 pph threshold as set out in the PCG.

5.3.5.4 Design comments

Comments received from the DRP, TfL and the LBN. Focused around the understanding of the widths and routes of pedestrian footways around the TBR and connections to its immediate surroundings.

5.3.5.5 Scheme response

The landscape proposals section provides clarity on materials, their location and application for the Scheme.

- Footways implemented are clear from obstruction and a minimum of 2.0m.
- Extents of footways have been implemented with adjacent soft landscaping to allow for expansion.

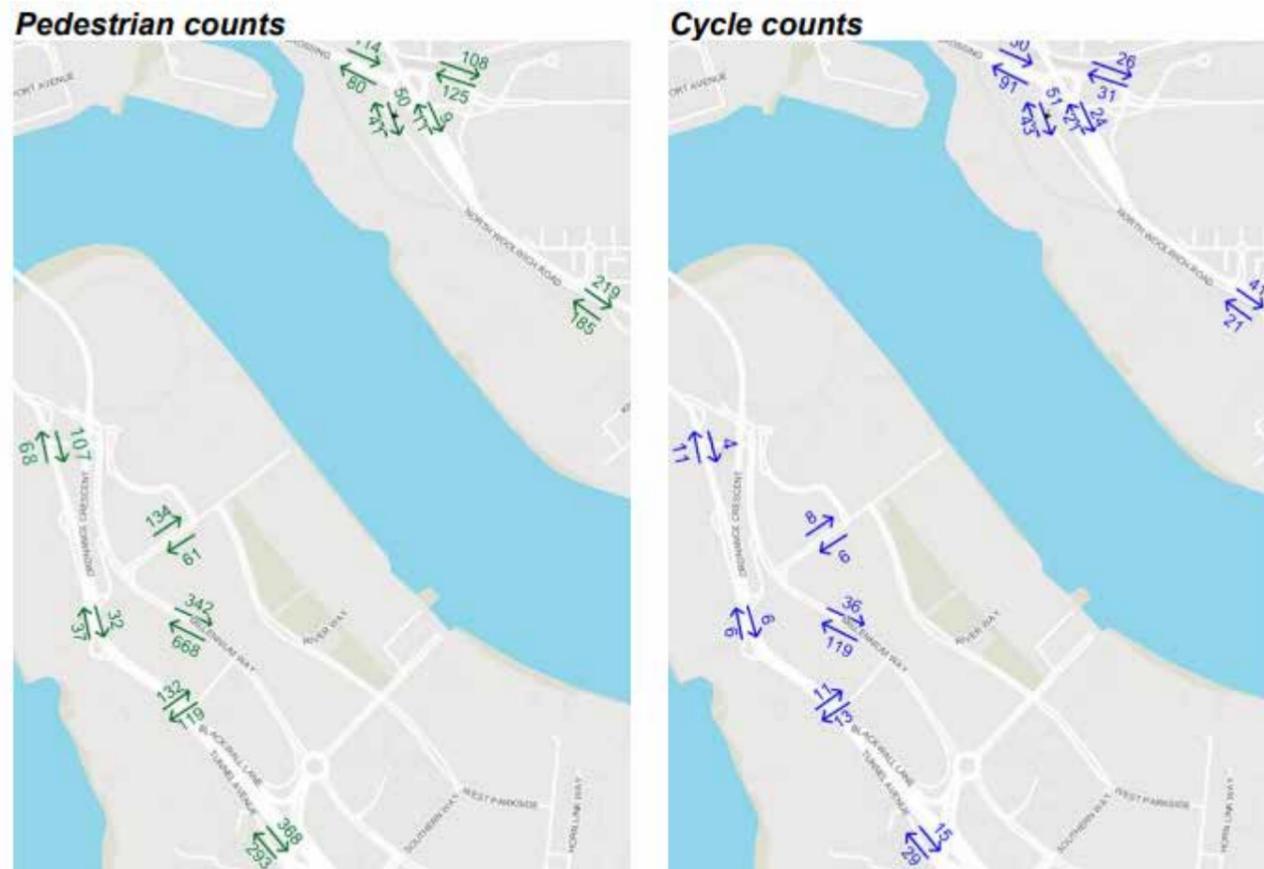


Figure 88. Pedestrian and Cycle counts

5.3.6 LSCP.05

Public realm materials should be robust, durable and meet the technical requirements of the Scheme.

Materials should relate to and reflect the anticipated and emerging character of the surrounding townscape and be suitable for a high quality mixed use development. Materials should adhere to the highway authorities agreed local materials palette and be of a quality defined in the contract specification

5.3.6.1 Concept Design

Robust, durable materials are proposed in accordance with the Local Authority materials palette/TfL Guidance.

Materials should be in keeping with the Royal Docks Public Realm Materials and Elements Palette adopted in February 2011.

5.3.6.2 Developed Design

The materials palette has been refined and developed to work in respect of the Schemes' surrounding context. (LCSP.06).

It was noted that the Royal Docks Design Guides (covering Landscape, Lighting and Wayfinding) were currently being redrafted for submission late 2020. Informal comment has been provided from the LBN on this and their comments will be incorporated (in conjunction with the publication of the Guides.

Materials selected at this stage, were reviewed by the relevant stakeholders with comments provided where applicable. Materials were generally accepted to best reflect the emerging character of the area and surrounding townscape - providing a suitable level of durability that can be maintained by all parties.

Guidance received from the LBN at this stage included for:

- the use of black asphalt to the cycleways;
- the use of standard concrete paving to footways (preferably 600x600mm);
- not using conservation kerbs;
- the accepted proposal of simple robust concrete furniture;
- the permanent removal of current 'Welcome to Newham' signage on the TBR; and
- the desire for pedestrian friendly materials to be introduced at road crossing to promote pedestrian priority (refer to LSCP.01).

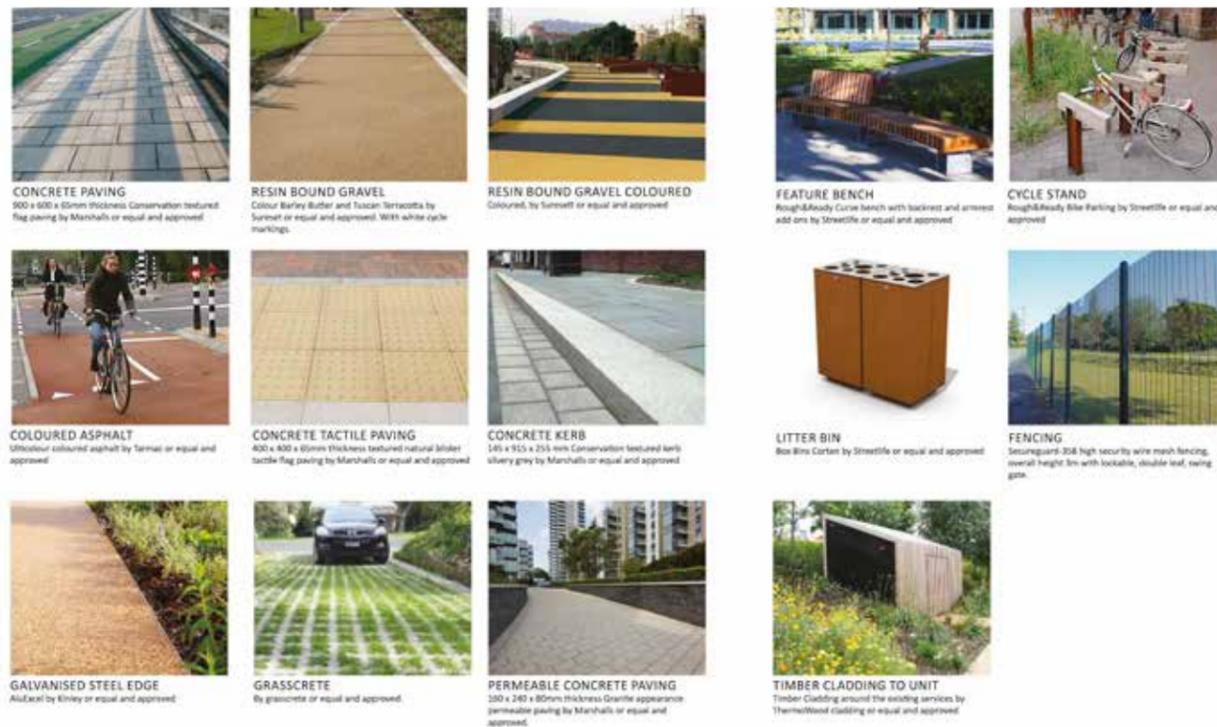


Figure 89. Materials palette at Concept Design

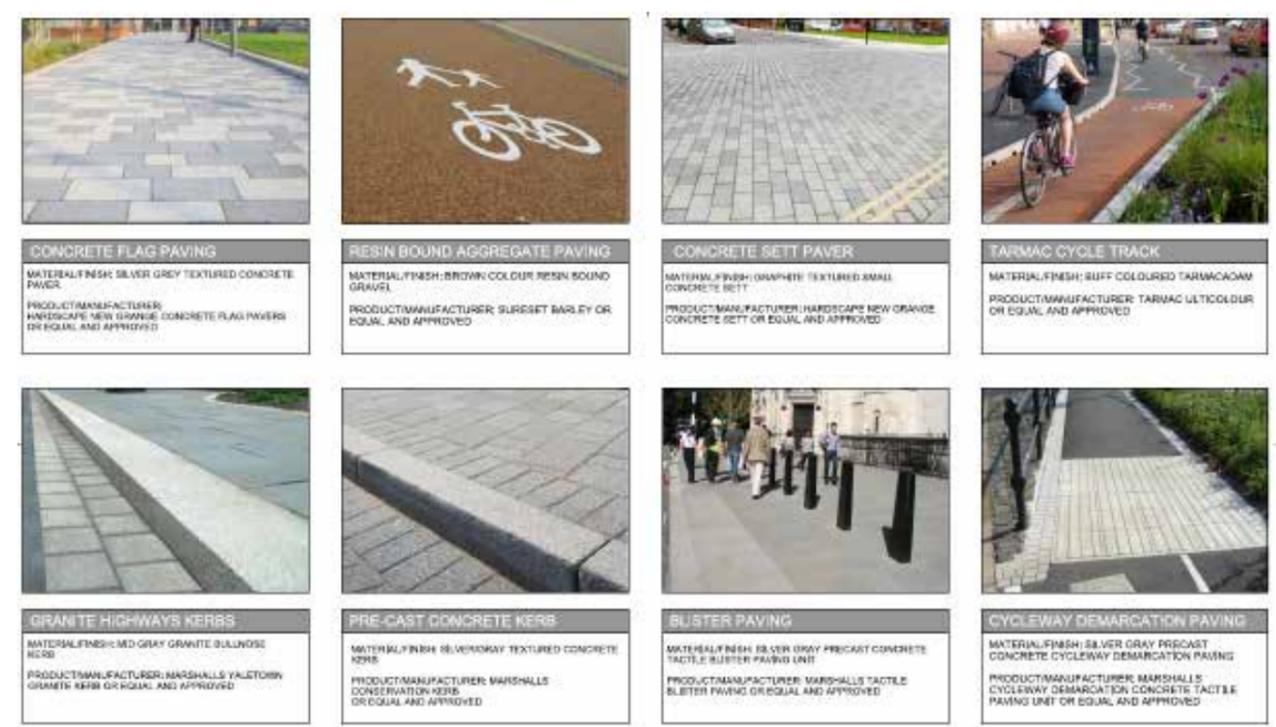


Figure 90. Material palette at Developed Design

5.3.6.3 Detailed Design

The Royal Docks Design Guide as published by the LBN and was provided to the design team in the Detailed Design stage for the Scheme.

The information below demonstrates the palette intended for the Royal Docks which have been applied to the landscape design for the Scheme where applicable.

LBN - The Royal Docks Design Guides were published December 2020:

<https://www.royaldocks.london/articles/signposts-to-the-future-the-royal-docks-design-guides-are-out-now>

- Wayfinding Design Guide
- Landscaping Design Guide
- Lighting Design Guide
- Accessibility & Inclusivity
- Guide Engagement Appendices



Figure 91. Royal Docks Landscaping Design Guide

Hard Surfacing

The Royal Docks contains significant areas of hard surfacing. The prevalent dock edge treatment of exposed aggregate concrete pavers and granite setts was established in the 1990s through the London Docklands Development Corporation. This palette was updated through the Royal Docks Local Transport Design Guidance (RDLTDG), authored by Peter Beard Landroom.

Both palettes have been well adopted over the years in a number of different locations, and contain hard-working, economical and practical elements. There is however little guidance for more 'special' treatments, or surfaces that respond to the specific characteristics of a place.

In our 'Site Wide Approach' (opposite), we have updated the RDLTDG palette to include some alternative surfacing options, such as brushed concrete and resin-bound chippings. The 'Site Wide Approach' should be the first point of reference, and provides a number of materials that respond to different situations. The specific performance of surfaces in different locations has been considered, with the notes underneath each element providing guidance of where these surfaces are appropriate.

The 'Baseline Palette' section sets out a logic for specifying more area-specific hard surfaces, responding to the underlying landscape character areas of the docks.

In the 'Dock Edge Accent Palette' we have provided more specific advice for the dock edge to show how different elements should be set out in combination with street furniture, lighting and wayfinding. This includes a design for a bespoke paving mat to be deployed around the dock-edge to assist with identity and wayfinding.

Existing surfaces



Existing path surface outside University of East London

Where existing hard surfaces are currently working well they should be kept and maintained. However there will be some locations, such as new public spaces and the confluence of key routes, where new surfacing should be considered from the palette included in this guide. Where there are accessibility concerns, such as with strips of granite setts crossing the path, these should either be removed and replaced or made accessible through re-pointing.



Kinetic pavements generate electricity from pedestrians' footsteps, and can be integrated into most settings - ideally with high footfall.



5.3.6.4 Design comments

- DRP: Requested further information to understand the context into which the design proposals would be sited and to be provided with more visual information on the look and feel of the public realm being generated on the TBR.
- TfL: n/a .
- LBN: Indicated preference of material, hard and furniture, which are reflective and supportive of the developing design. LBN noted the requirement to not use Conservation Kerb, instead proposing the use of Granite if possible. (To be explored in the design process).
- LBN: Defined preference for black asphalt to cycle ways and footway paving as per the emerging design guide.

5.3.6.5 Scheme response

The landscape proposals section provides clarity on materials, their location and application for the Scheme.

This section also provides information on site furniture.

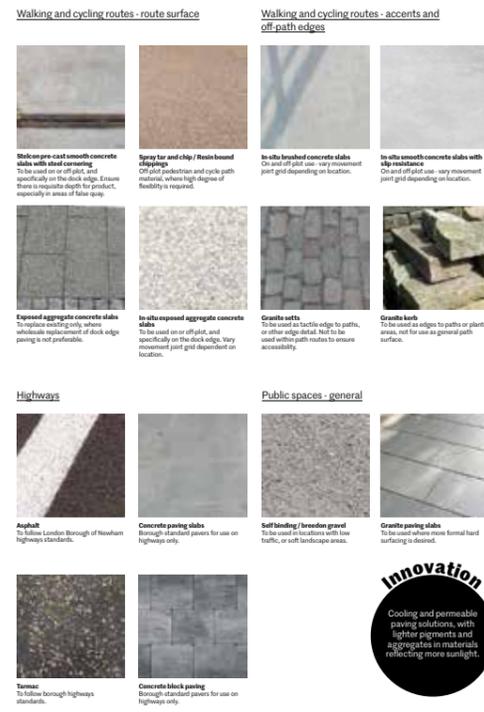
The Scheme increases the widths of the existing pedestrian and cycle infrastructure to either meet or exceed the minimum requirements as set out in the TfL Guidance the Design guidance provided in LSCP.15.

The widths to footways proposed are based on the expected demand from committed developments - including the provision of additional pedestrian infrastructure to be delivered through these developments.

Key design points to note:

- Materials have been reviewed to adhere to the information provided by LBN where achievable - noting due to technical and drainage requirements the highways design has driven the design of the kerbs to the Scheme.
- Footway and cycleway material adhering to LBN direction and design guidance.
- Site Furniture utilise Legible London.
- Site Furniture utilises a robust concrete site furniture - approach agreed with the DRP and LBN and proposed element accepted in discussions.
- Materials adhere to the requirements of the Project Agreement Schedule 10.

Note: The General Arrangement drawings as listed in the Executive Summary are to be reviewed with this LSCP for greater detail and information on hard materials.



5.3.7 LSCP.06

The public realm design should promote interaction with existing and proposed developments.

5.3.7.1 Concept Design

The landscape proposals have been developed to be mindful of potential future developments. Once the status of these proposals has been confirmed we will revisit the landscape scheme and adjust where necessary.

5.3.7.2 Developed Design

It was noted at this stage that the Thameside masterplan was not at a detailed design stage. The landscape proposals have developed the Scheme to allow for the seamless future connection of pedestrians, cyclists and vehicles in respect of the masterplan provided, whilst respecting the requirements of the DCO and the current site layout.

Known developments at this stage to be explored in the Detailed Design Stage are:

- Thameside
- The Triangle
- The relocation of the GLA to the Crystal (as indicated in section 3.2 and on the figure below)

Existing connections to the east, into the Royal Docks under the Silvertown Flyover, have been reinforced through the landscape design and the introduction of signalised crossing points to promote safe movement of the public from and to existing and proposed developments.

Comments from the LBN at this stage were incorporated in to the Detailed Design Stage.

The design of the landscape has sought to ensure the reinforcement of both footways and cycleways.



Figure 92. Thameside West Landscape - Composite Landscape Masterplan produced to include the indicative Scheme proposals in context with the surrounding masterplan and development proposals



Figure 93. Existing geometric design to the Royal Docks



Figure 94. Precedents of geometric design

5.3.7.3 Detailed Design

A review of existing roundabouts in the greater London area was undertaken during this stage to further understand scale, public realm design and connectivity.

Sites were visited on foot and cycles to gain a level of experience and understanding for both users.

These additional visits were targeted in November/ December 2020 at differing times of the day to best represent the worst weather and lowest levels of light.

Twelve sites were visited in total, with the most relevant, in terms of public realm, pedestrian movement and connection to surrounding context provided below and utilised to inform the design progression.



Figure 95. Review of London based roundabout schemes - Marble Arch, A13 Junction at Canning Town and Elephant & Castle Junction

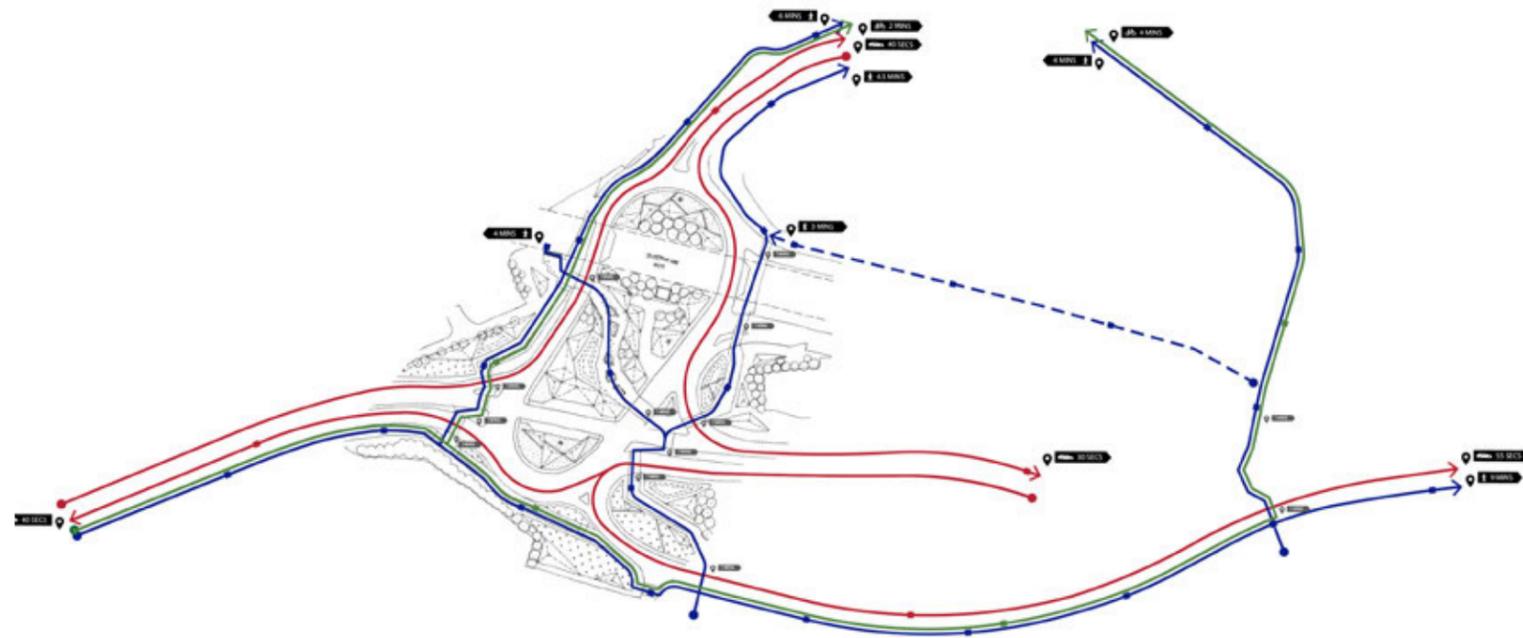


Figure 96. Schematic plan to demonstrate movement of Scheme users

5.3.7.4 Design comments

- DRP: Requested further information to understand the context into which the design proposals would be sited and to be provided with more visual information on the look and feel of the public realm being generated on the TBR.
- TfL: Echoed the comment from the DRP.
- TfL: Requested further information to understand the design rationale implemented to the TBR.
- TfL: Echoed the comments of the DRP to understand how it feels to move through the TBR.
- LBN: n/a

5.3.7.5 Scheme response

The landscape proposals section provides additional information to demonstrate the surrounding site context and relevant connections. Key design points to note:

- The design rationale strives to reflect the angular design language present in the Royal Docks. Introducing angular mounds to the TBR.
- The design actively promotes the reinforcement and improvement to footways and cycleways - promoting pedestrian and cycling networks - facilitating the movement of these users across the scheme between existing and emerging developments.
- Review undertaken to understand the times taken to move across the TBR (refer to LSCP.03).
- Connections diagram generated to demonstrate connections to the surrounding context. (Refer to the landscape proposals section).

Note: This LSCP should be read in conjunction with previous LSCPs and in particular LSCP.03.



Figure 97. Indicative sketch of the TBR

5.3.8 LSCP.08

The placement of trees should help to reinforce public realm design elements such as:

- strengthening movement patterns;
- connecting spaces and providing visual continuity across them;
- aiding reinforcement of space and boundaries;
- providing character and sense of space;
- enhancing architectural elements; and
- screening of visually unattractive vehicles.

5.3.8.1 Concept Design

The concept design has sought to review the existing location and replicate their form on the proposals

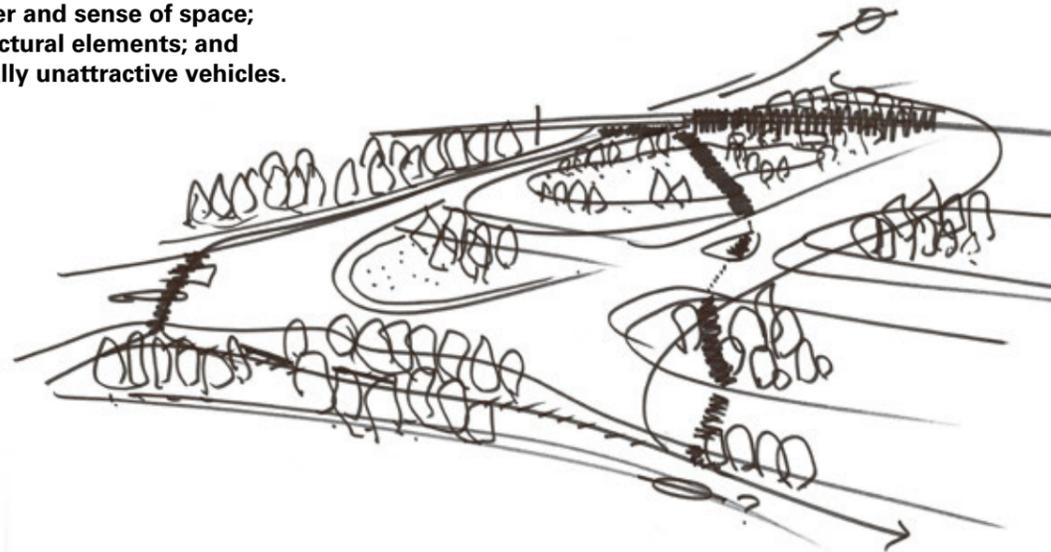


Figure 98. Indicative tree planting sketch strengthens movement patterns

5.3.8.2 Developed Design

The tree planting has been split into two themes, with more formal planting in the centre of the TBR set up around a grid, and clusters of trees in more natural arrangement to the outside of the roundabout.

This will help with place making by giving a formal character to roundabout whilst allowing the project to blend into the surrounding existing vegetation.

Design coordination is needed to test the tree planting strategies around the utilities and above ground servicing and visibility requirements, but these conversations will continue through to detailed design stage. (This design principle is developed in conjunction with that of LSCP.09).

Reference has been made to the BAPMS, in respect of tree species selection (dependant upon ground conditions). Reference on this aspect should be made to LSCP.11.



Figure 99. Proposed Tree Planting overlaid against existing GI assets



Figure 100. Tree Planting examples, demonstrating seasonal colour and use of systematic planting patterns

5.3.8.3 Detailed Design

The landscape proposals at this stage further progressed the design rationale to generate a design that promoted the integration of the Scheme into its surroundings and further define the public realm with the TBR.

The proposals treated the TBR as the core, a piece of public realm, where earth mounding has been utilised to generate a sense of enclosure and draw on the geometry found within the Royal Docks (particularly to the Crystal building). Tree planting has been used to screen the retained substation and provide a sense of enclosure to the footway through the TBR.

The proposals to the edges of the Scheme has sought to maximise ecological value and reinstate the existing sense of place, that currently screens the TBR from all but those close range views.

The selection of tree species for the proposals has been balanced between the principles of the BAPMS, their biodiversity value, their appropriateness in the context of the design and their aesthetic beauty.



Figure 101. In progress planting layout plan and location of trees

5.3.8.4 Design comments

- **DRP:** Requested further information to understand the context into which the design proposals would be sited and to be provided with more visual information on the look and feel of the public realm being generated on the TBR.
- **TfL:** Echoed the comment from the DRP.
- **LBN:** Requested for an avenue of formal tree planting to be introduced to the east side of Dock Road to the adjacent development site.

5.3.8.5 Scheme response

The landscape proposals section provides additional information to demonstrate the intent of the landscape design to positively include for the placement of trees in defined areas of public realm.

Key design points to note:

- Trees placed outside of desire lines to ensure clear views for pedestrians.
- Trees reinstated to the edges of the Scheme to reinforce edges existing transport infrastructure and replicate existing character.
- Tree species used to provide visual connection across road infrastructure.
- Earth mounding and planting utilised to complement tree planting in public realm areas (TBR) to aid screening of vehicles and generate a sense of enclosure to the public realm on the TBR.
- Avenue of trees introduced to Dock Road, to strengthen movement patterns.

Note: This LSCP should be read in conjunction with LSCP09.

5.3.9 LSCP.09

The placement of trees should be located to consider;

- street signs and signals;
- proximity to buildings and carriageway;
- appropriate footway width;
- underground and overhead utilities; and
- accessibility for future maintenance.

5.3.9.1 Concept Design

When locating the trees the various constraints have been reviewed and considered. More detailed coordination is to be undertaken during developed design as these technical parameters are developed further by related disciplines.

5.3.9.2 Developed Design

Trees have been placed with consideration of underground and overhead utilities, with assumptions of offsets made until the official offsets have been confirmed.

All tree planting has been placed at sufficient distances away from the carriageway, and so as not to block the line of sight to traffic signals and visibility splays.

All footways adhere to the correct guidance, and provide sufficient infrastructure for future surrounding developments and for maintenance. (This design principle is developed in conjunction with that of LSCP.08).

More work is needed to formalise the tree planting around the utilities and other underground constraints, but these conversations will continue through to detailed design.

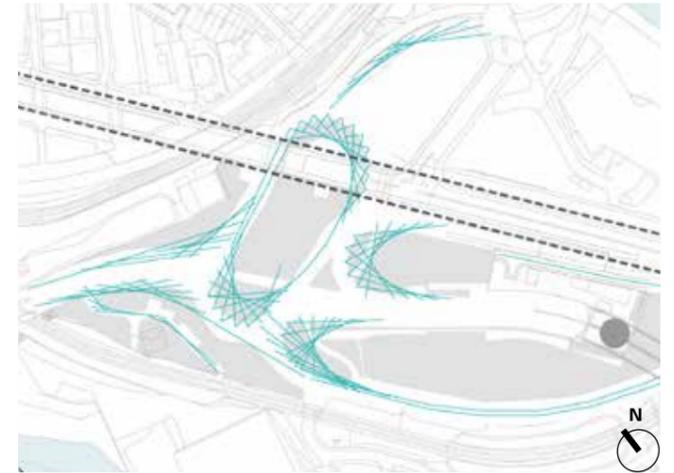


Figure 104. Visibility splays for traffic



Figure 102. Tree placement - Concept Design Layout

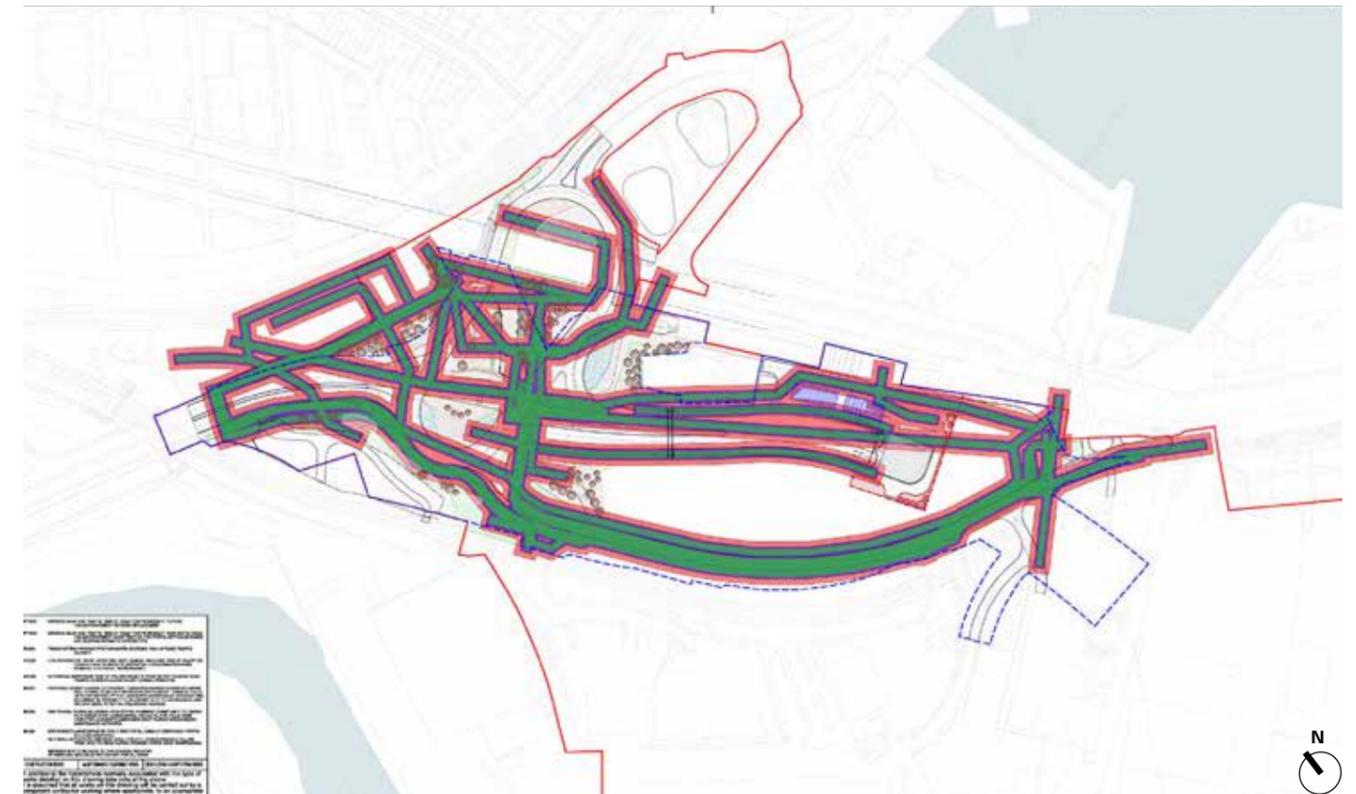


Figure 103. Planting Layout Plan against current utilities requirements

5.3.9.3 Detailed Design

The Detailed Design stage has considered the further development and refinement of the landscape proposals to ensure the placement of trees is both suitable and promotes the requirements of the design principle for example Signage placement (Newham Traffic Signs and Road Marking Plans T150030-ARU-TRS-17-ZZ-DRG-HE-0001 and 002).

The landscape proposals (in particular the placement of trees) were reviewed further in respect of the safe visibility splays required for the Scheme (as demonstrated below). This was reviewed in conjunction of the developing utilities.



Figure 105. Sketches of all current above ground elements

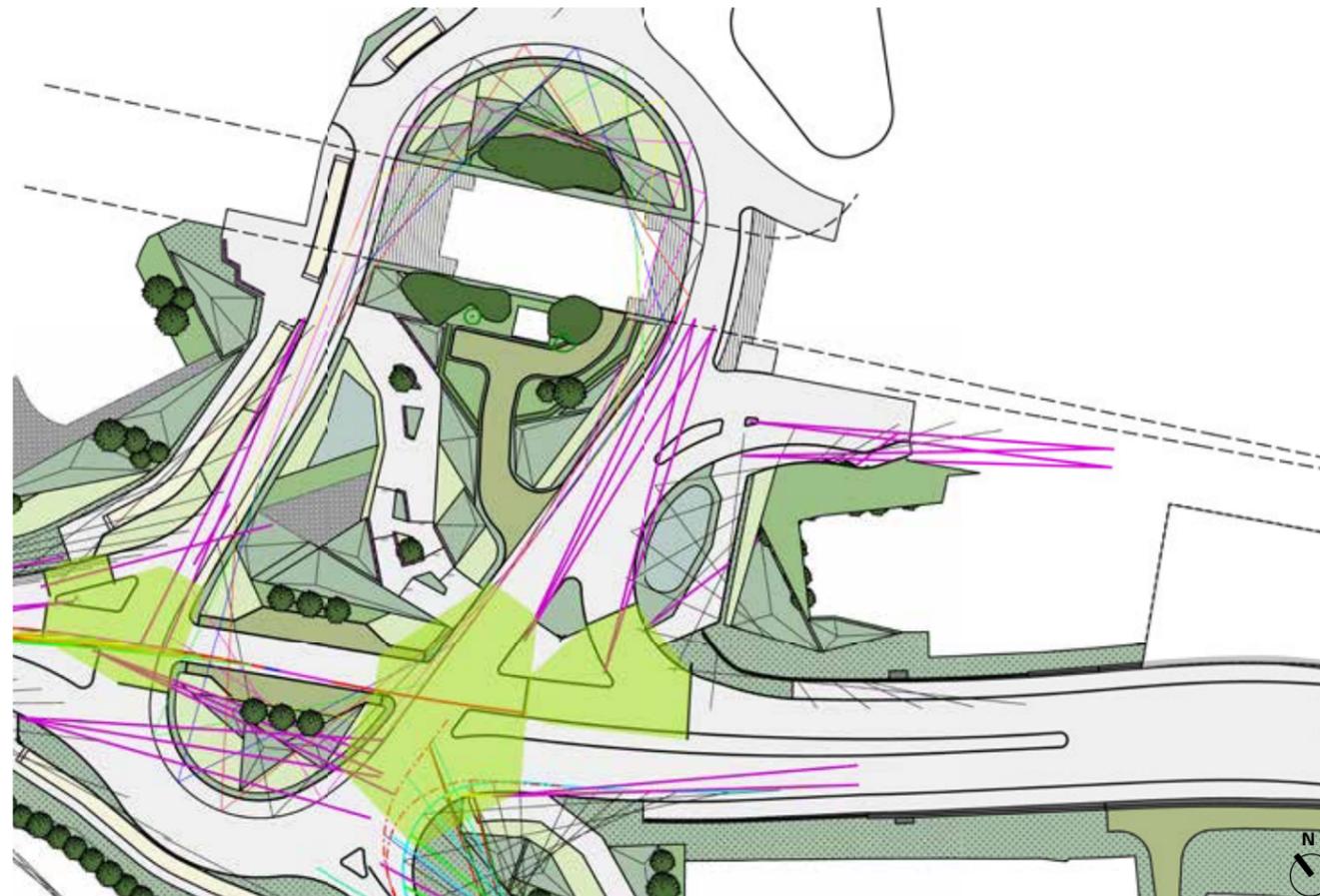


Figure 106. Working drawing of all current utilities

The major utility providers were consulted in respect of their requirements. With a set of plans provided with a clear indication of the service providers zones of planting allowance. Proposed trees were indicated along with their projected root growth, to identify future clashes with the service providers zones of planting allowance.

The approach to address these clashes (clearly indicated on the plans) was to indicate the extent of suitable root barrier (as indicated by the pink lines) to be installed.

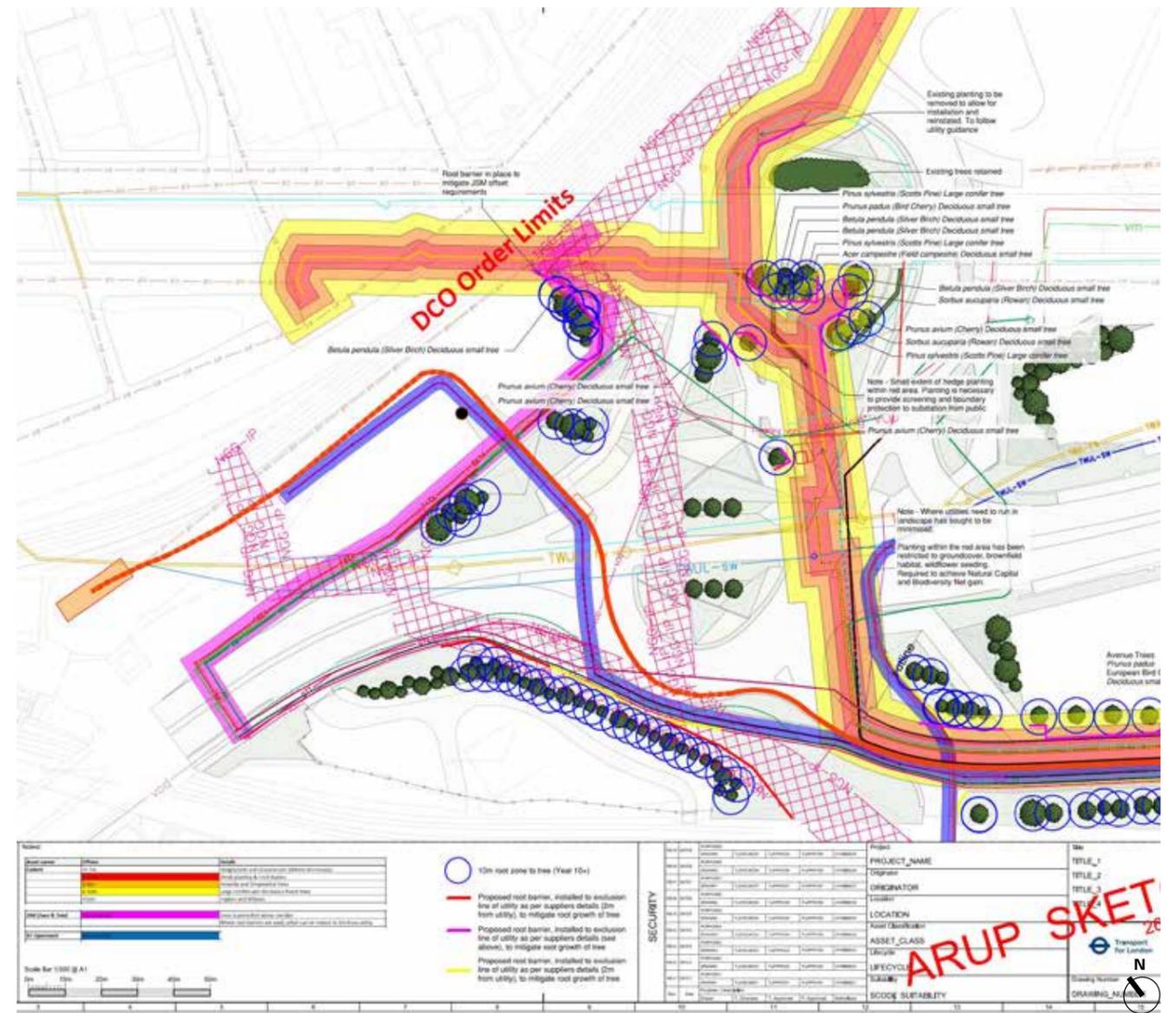


Figure 107. Working drawing of all major utilities - as presented to service providers

5.3.10 LSCP.10

Where trees are planted in a streetscape setting, their sitting should not only consider their visual impact, but also their capacity to work as part of an integrated SuDS system.

This should be reflected in the design of tree pits, which should also be sized based on ultimate size of the tree, water availability and ground water storage. Large tree pits should be provided to increase growth potential to increase the tree's access to space and light and reduce the potential for vandalism.

The tree planting should take account of standards and guidance that are presented in the BAPMS and where they are used as part of an integrated SuDS scheme, they should be designed in accordance with CIRIA 753 'The SuDS Manual' and TfL SUDS Guidance (2016).

5.3.10.1 Concept Design

Tree pit details will be designed in accordance with the relevant Local Authority Streetscape Design Manual /TfL Guidance during developed design.

A review of relevant SuDS information (as highlighted below) was undertaken with particular reference to sections on urban trees.

An early understanding was acquired for the site to consider how the surface water could be part of an integrated design process.

5.3.10.2 Developed Design

The use of tree pits as part of a formal integrated SuDS system was reviewed and deemed not practicable - due to the technical requirements of implementing the Scheme.

Tree pit details have been designed to be appropriate for the setting, with consideration to the materials used such as staking and ties and the underground structures like root barriers and directors. Considered in tandem to the technical requirements and utilities (refer to LSCP.09) required for the Scheme.

The approach to the planting of trees will reflect the landscape proposals of this report (Section 3)

Trees to the edges of the Scheme are predominantly in either existing or new green verges of landscape planting with access to suitable soil volumes. This approach maximises both their visual impact and long term growth.

To the TBR - tree pit details have been designed to be appropriate for the setting, with consideration to the materials used such as staking and ties and the underground structures like root barriers and directors.

Reference has been made to the BAPMS, in respect of tree species selection (dependant upon ground conditions). Reference on this aspect should be made to LSCP.11 and the planting plans, which have been developed and reviewed by a qualified ecologist for the Scheme.



Figure 110. TfL SuDS in London - Nov 2016 and CIRIA 753 'The SuDS Manual' - 2015

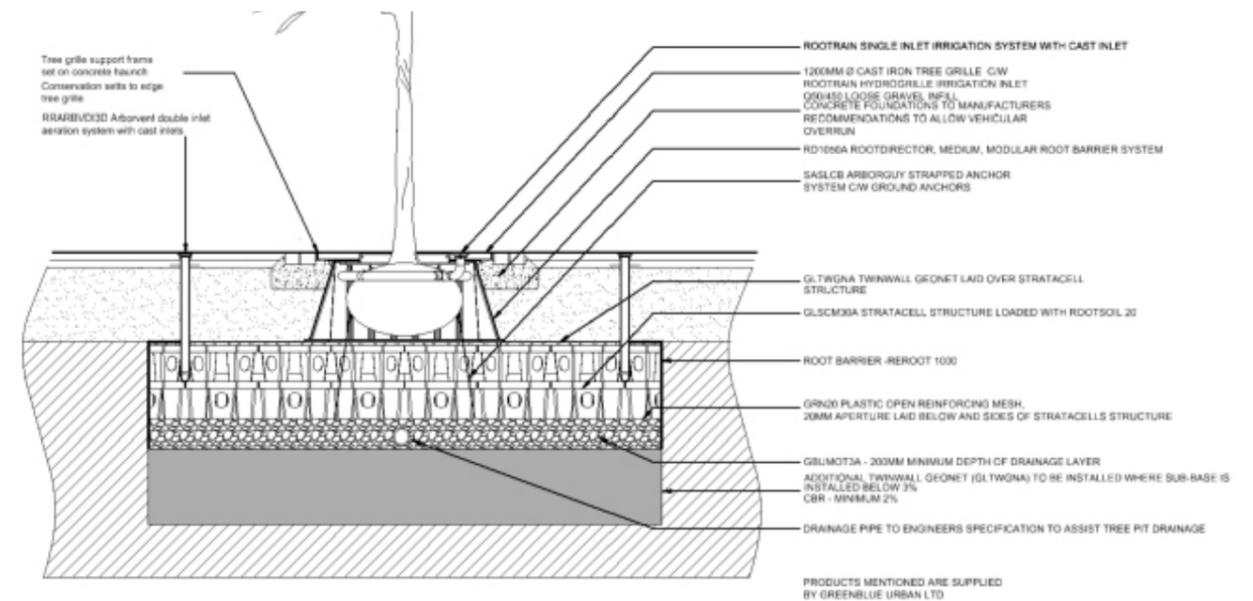


Figure 111. Tree pit in soft (typical detail)

5.3.10.3 Detailed Design

The areas highlighted (in red) demonstrate those trees which are to be planted in the streetscape, all other trees are to be planted in soft landscape.

Tree species have been specified as a minimum of Extra Heavy Standards (14-16cm girth) - where trees are located in defined public realm areas the size of these has been increased to a minimum of Semi Matures (18-20cm+ girth).

The selection of tree species has been based on their Natural Capital values which includes, pollution tolerance, particulate air quality attenuation, carbon sequestration, water conservation, biodiversity value and appropriateness in the context of the design.

Several literature sources have been consulted including:

- Air quality information is from the Lancashire University Urban Trees Brochure www.es.lancs.ac.uk/people/cnh/UrbanTreesBrochure.pdf
- The Trees and Design Action Group <http://www.tdag.org.uk/>
- The Trees for Cities Best Practice Guide www.treesforcities.org/index.php/download_file/372/141/
- The Woodland Trust Urban Air Quality Report <http://www.woodlandtrust.org.uk/publications/2012/04/urban-air-quality/>

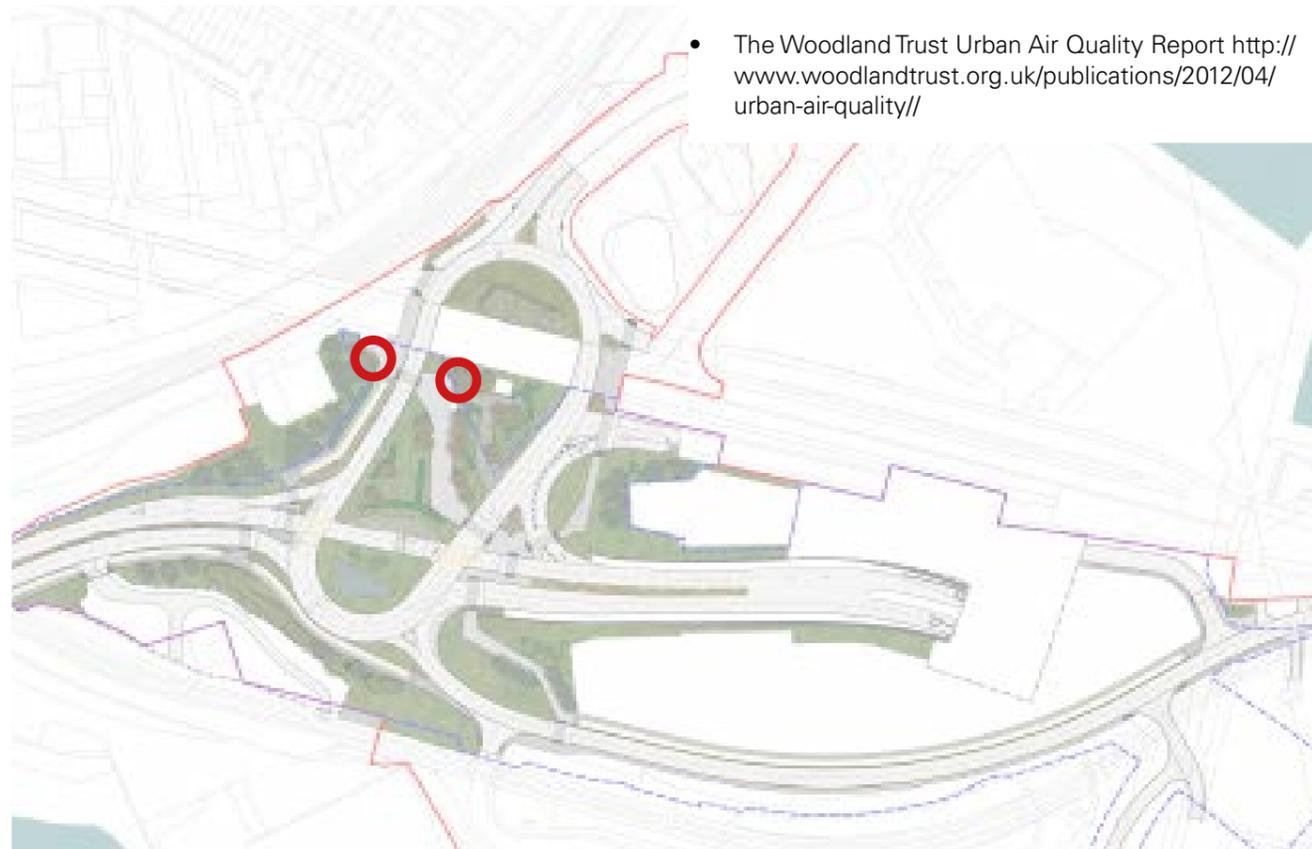


Figure 112. Tree pit in hard locations at developed design (relocated on advice from TfL and LBN)

5.3.10.4 Design comments

- DRP: n/a.
- TfL: In consultation on green infrastructure and urban greening it was proposed that trees should be sited in soft landscape rather than hard landscape to minimise tree pits and better promote this principle.
- LBN: echoed above comments.

5.3.10.5 Scheme response

The landscape proposals section provides additional information to demonstrate the intent of the landscape design proposals to include for the placement of trees in the public realm.

Key design points to note:

- SuDS are not technically suitable for the project and are not to be included in design - Ground water levels negates active SuDS use.
- Landscape to capture rain run off from pedestrian footways in the TBR.
- Trees have been sized appropriate to their location and proximity to intensity of pedestrian use (and potential risk of vandalism).
- Soil volumes have been considered - deemed suitable in naturalistic settings (to Scheme edges) and with trees in public realm settings placed in appropriate soft landscape.
- Volumes have sought to be maximised in respect of utilities and locations to physical infrastructure.
- Review and approach to target recommendations of tree planting contained in the Royal Docks - Landscape Design Guide.
- Incorporation of guidance from TDAG document: Trees in Hard Landscapes: A Guide for Delivery

text update

5.3.11 LSCP.11

The detailed design of the Scheme should ensure green infrastructure assets are properly planned, maintained and managed by relevant arboriculture and landscape professionals; that they take into account the BAPMS, and have a strategy goal to enhance the built environment and tackle climate change. Wherever possible, green infrastructure should:

- improve air quality and human health;
- manage surface water run-off;
- mitigate the urban heat island effect;
- increase biodiversity and ecosystem variety; and
- add amenity value through creating beautiful streets and spaces for people to enjoy.

5.3.11.1 Concept Design

The initial design identified simplistic locations and areas of differing types of GI, as demonstrated in the figure below.

The landscape proposals will be developed and design by suitably trained and qualified landscape architects and ecologists.

5.3.11.2 Developed Design

Planting (GI asset) has been designed to tie in with the existing GI to the edges of the Scheme, with specific care taken to preserve existing vegetation where possible.

The tree planting has been designed to bridge the gaps between the areas of existing infrastructure, with low level vegetation proposed to create continuous corridors of vegetation as much as possible.

Planting has been selected in respect of the guidance and requirements of the BAPMS, where suitable species have been selected to contribute to the city wide issues in tackling air quality, human health and the urban heat island effect.

Swales are limited due to the technical constraints of the site and were considered at this stage (indicated provisionally below in red to be explored in the detailed design stage) have been introduced to manage surface water run-off whilst creating marginal habitats for invertebrates and other species.

Native species have been specified to encourage local biodiversity and ecosystem variety (to reflect the guidance of the BAPMS. Species have been reviewed by the qualified ecologist, noting direct comments from TfL on species selection.

Areas of open mosaic habitat have been introduced to bring ecosystem variety and create visual interest and potential learning opportunities for users. Planting has been utilised to reinforce public realm proposals to provide amenity value for users to experience.

A Landscape Management and Maintenance Strategy document has been prepared and issued to TfL for comment, this document takes account guidance within the BAPMS (in particular Section 5.4.13 Brownfield Habitat Management).

The selection of tree species has been based on their Natural Capital values which includes, pollution tolerance, particulate air quality attenuation, carbon sequestration, water conservation, biodiversity value and appropriateness in the context of the design.

Several literature sources have been consulted including:

- Air quality information is from the Lancashire University Urban Trees Brochure www.es.lancs.ac.uk/people/cnh/UrbanTreesBrochure.pdf
- The Trees and Design Action Group <http://www.tdag.org.uk/>
- The Trees for Cities Best Practice Guide www.treesforcities.org/index.php/download_file/372/141/
- The Woodland Trust Urban Air Quality Report <http://www.woodlandtrust.org.uk/publications/2012/04/urban-air-quality/>

text update

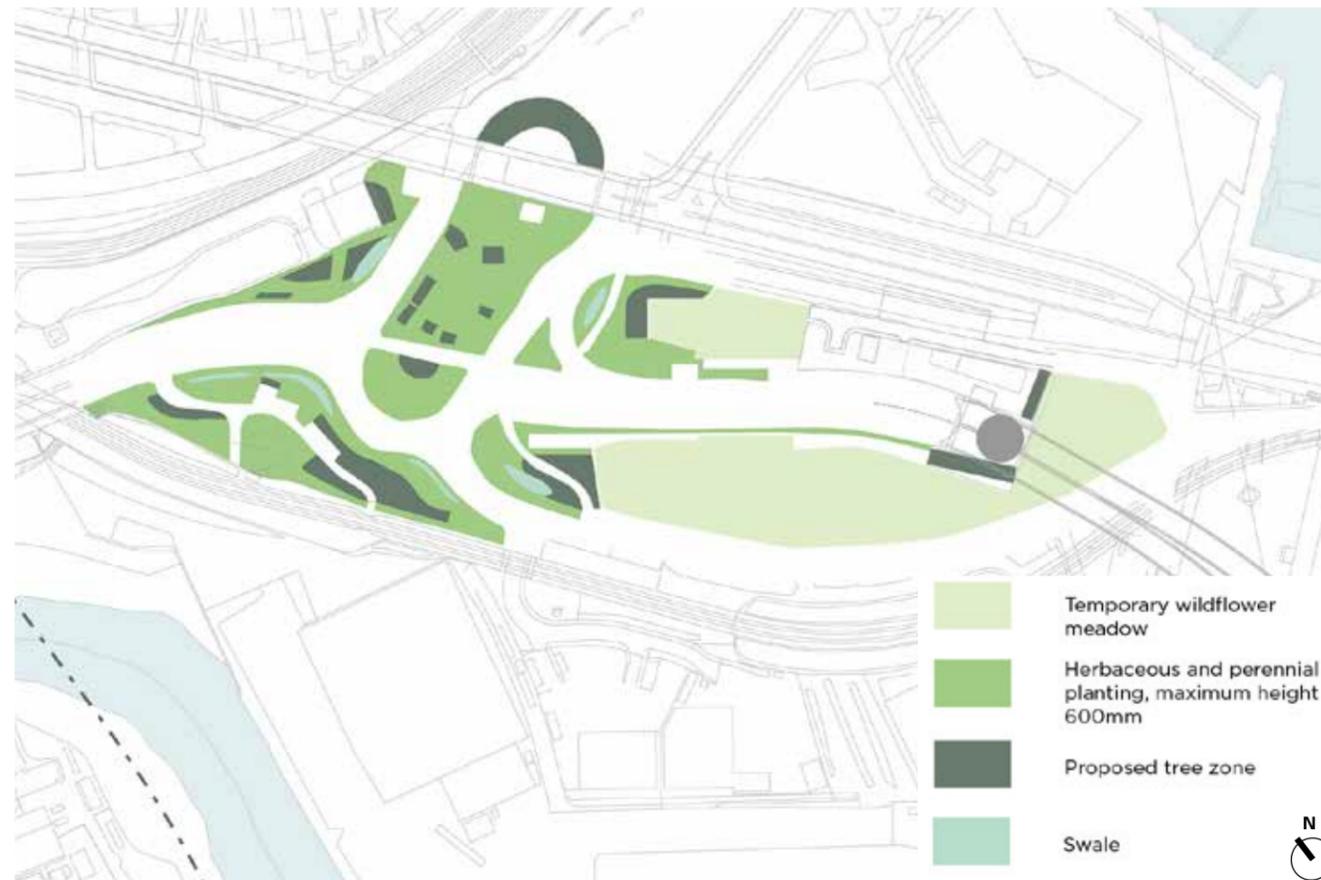


Figure 114. Proposed Green Infrastructure - concept

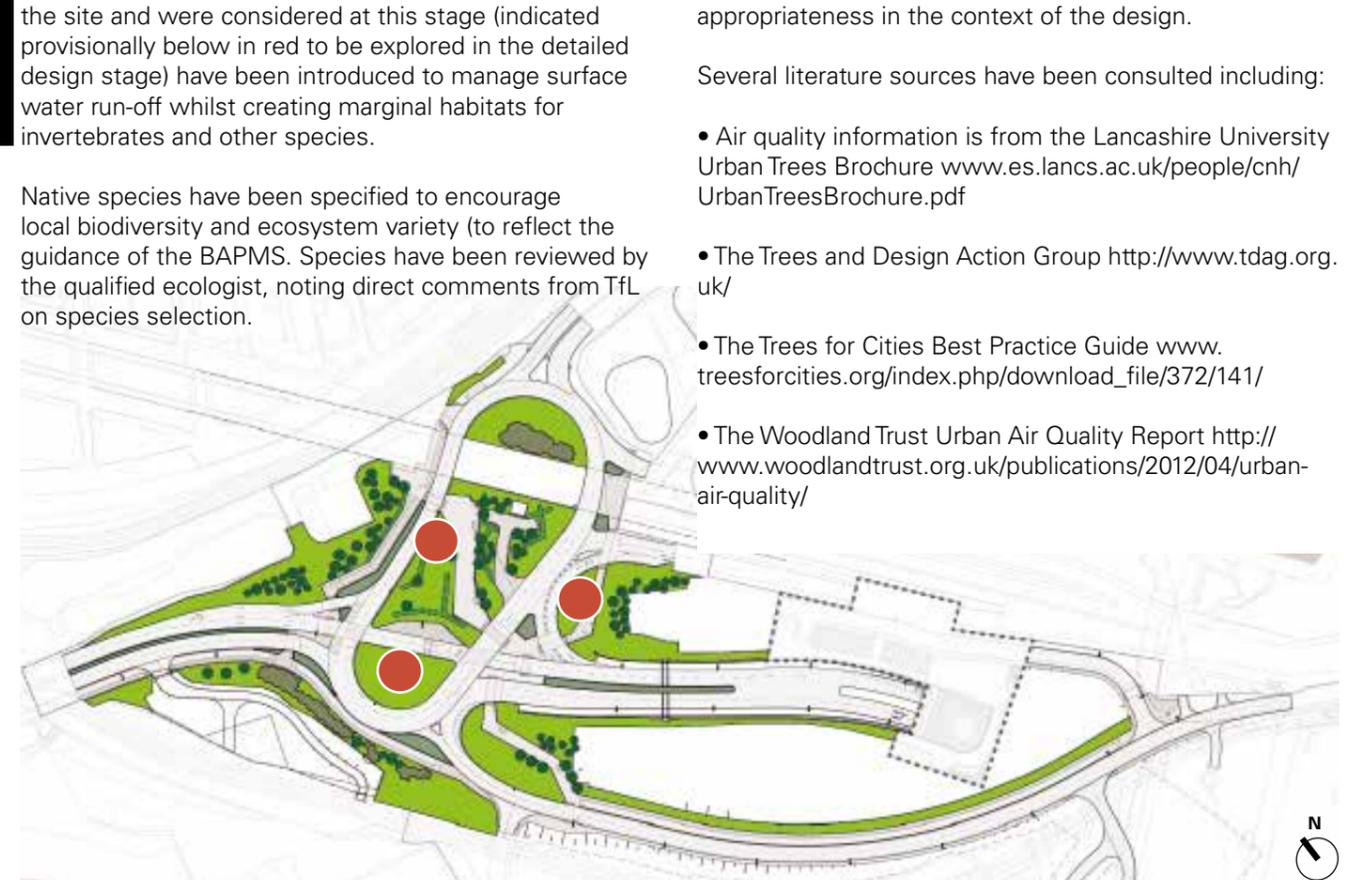


Figure 115. Proposed Green Infrastructure

5.3.11.3 Detailed Design

TfL commissioned Arup to develop a LEN and a NEW for the area. The below represents the proposed vision includes the creation of a bold and comprehensive GI strategy. GI can be broadly defined as a strategically planned network of high quality natural and semi-natural areas and other environmental features (both green and blue networks).

The landscape proposals for the Scheme were reviewed against this strategy (which considered all existing strategies such as those to Blow Creek or The Silvertown Flyover greening), to ensure they complemented these forward thinking strategies.

The GI vision will result in:

- Reduced air pollution.
- Reduced urban heat island effects.
- Climate change resilience.
- Improved flood resilience.
- Improved biodiversity.
- Opportunities to improve well-being / mental health.
- Economic benefits of a better environment.

5.3.11.4 Design comments

- DRP: n/a.
- TfL: In consultation on green infrastructure and urban greening, the proposals were lauded by the sponsor.
- TfL encouraged the use of open mosaic habitat and the variety of GI assets proposed.
- TfL commented on the use of native species, whilst noting their suitability they strongly encouraged the use of the principle of 'Right plant Right Place', which should supersede and complement the principles set out in the BAPMS.
- LBN: echoed above comments.

5.3.11.5 Scheme response

The landscape proposals section provide additional information to demonstrate the intent of the landscape design proposals with defined sub-sections on the proposed planting, GI and the ecological approach.

Key design points to note:

- Planting reviewed with qualified ecologist.
- Planting reviewed and implemented against the principles set out in the BAPMS, maximising variety of habitat and ecology on site.
- Landscape to capture rain run off from pedestrian footways in the TBR.
- Additional literature review to select trees, to promote tackling air pollution.
- Earth mounding and planting introduced at ground level to the TBR to tackle air pollution.
- Landscape proposals generated to create a variety of experiences for the users, to generate amenity value.
- Landscape Maintenance Plan produced for the Scheme to ensure GI assets are properly maintained.



Figure 116. Neighbourhood Enhancement Areas (2017)

text update

5.3.12 LSCP.13

Where practical green infrastructure including green walls and roofs should be considered in the design of the built structures in order to mitigate the environmental impact of the Scheme.

Such green infrastructure shall be provided in accordance with the principles of the BAPMS.

5.3.12.1 Concept Design

A green roof is proposed for the Silvertown Tunnel Portal Buildings.

Green wall components have been proposed to the retaining walls on the Scheme and will be reviewed in the developed design stage.

The Scheme proposals and the BAPMS will be reviewed in the developed design stage, its primary purpose is to ensure a biodiversity net gain is delivered for the Scheme.

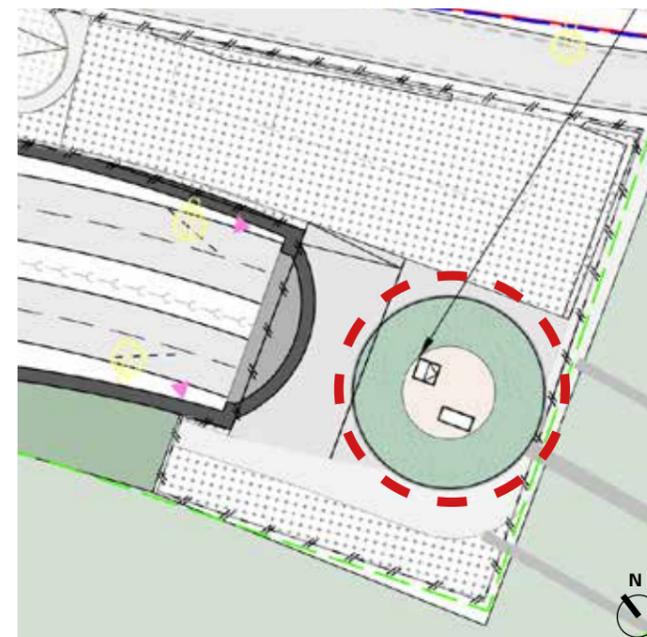


Figure 118. Proposed Green Roofs

5.3.12.2 Developed Design

A mixture of intensive and extensive green roofs have been specified on the portal and supporting buildings within the compound.

These will be developed during detailed design to specify the locations and design of the planting to ensure the promotion of the BAPMS and to ensure a biodiversity net gain is delivered for the Scheme.

Green walls were explored with the ecologists and presented as opportunities to both the portal buildings and the retaining walls. A thorough review of their requirements was undertaken and ultimately considered not suitable for these locations. This approach was presented to TfL (sponsor) in the Developed Design submission and agreed not to be included, TfL commenting against green walls as unsuitable for the Scheme and the maintenance constraints.

It has been also considered, through design review and discussion with the architectural team, that green walling is not suitable for the Silvertown Tunnel Portal Buildings,

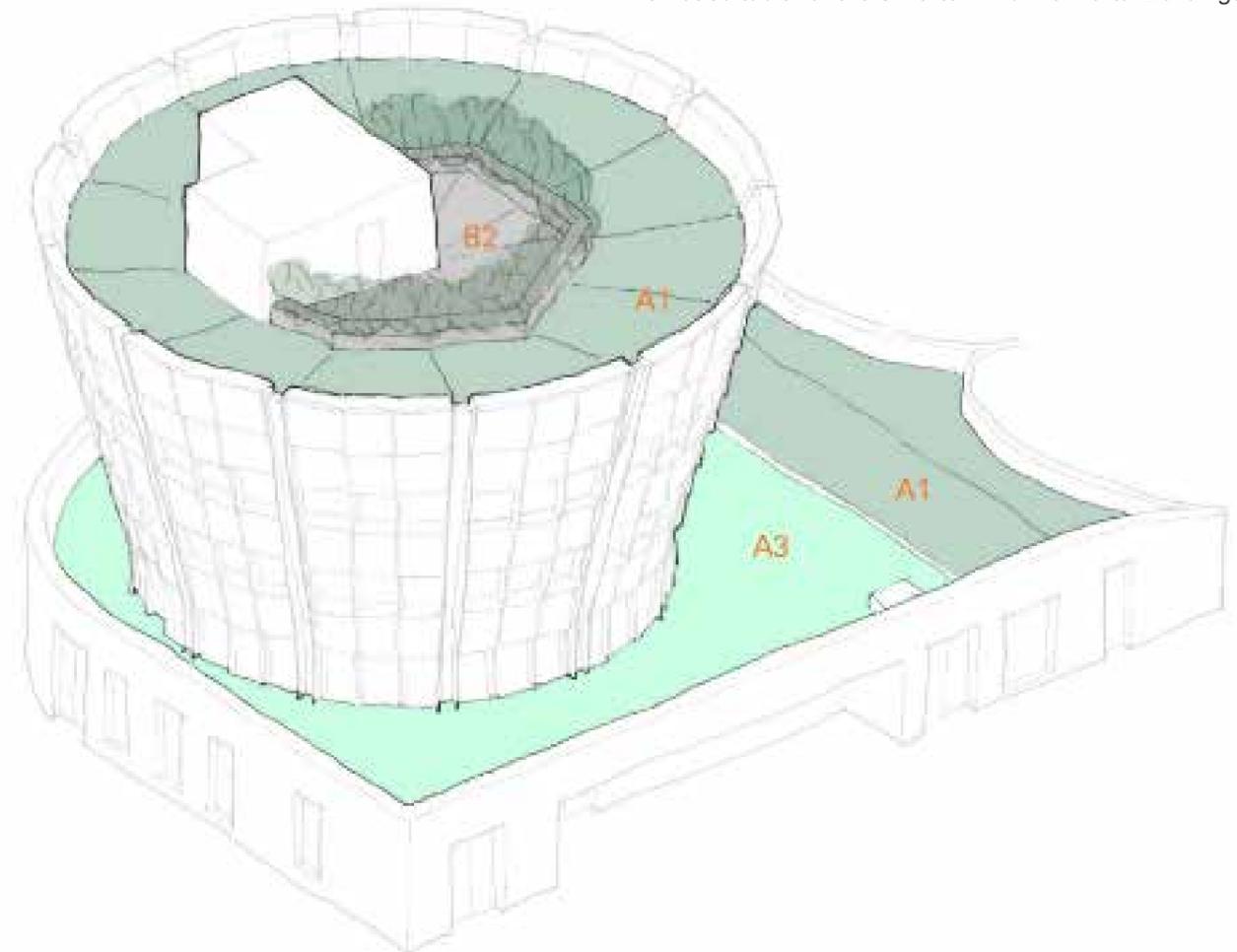


Figure 117. Proposed Green Roofs to portal buildings

5.3.12.3 Detailed Design

The green roofs have been developed for each building in as part of the Compound Package - which forms a separate but complementary application).

Bi-weekly coordination meetings with the architects, and ecologists has developed a series of roofs which support the intent of the BAPMS and contribute towards ensuring a biodiversity net gain is delivered for the Scheme.

Reference should be made to the Architectural design of the Portal Building.

5.3.12.4 Design comments

- DRP: n/a.
- TfL: In consultation on green infrastructure and urban greening it was proposed that trees should be sited in soft landscape rather than hard landscape to minimise tree pits and better promote this principle.
- TfL responded in respect of the notion of green walls explored stating their concern over expense and failure experienced on previous projects. The proposed approach to not include green walls was understood and accepted.
- LBN: echoed above comments.

5.3.12.5 Scheme response

The landscape proposals section provide additional information to demonstrate the intent of the landscape design proposals - with defined sub-sections on the proposed planting and ecological approach.

A separate Compound Package is to be submitted to complement and support this application and will include detailed information on the proposed green roofs.

Key design points to note:

- Planting (GI) reviewed by qualified ecologist and implemented against the guidance and principles set out in the BAPMS.
- Green roofs implemented to compound buildings.
- Green walls not practicable or implementable.

Note - For full planting schedule reference should be made to eh submitted drawing package and planting schedule (as noted in Section 1 of the Landscape Report).

5.3.13 LSCP.15

All new and changed streets should be designed to satisfy the Street Design Guidance presented in Appendix C of this document, (of document “Silvertown Tunnel, 7.4 Design Principles TR010021”)

5.3.13.1 Concept Design

Footways and cycleways proposed have been reviewed in accordance with the Street Design Guidance in Appendix C of the Design Principles.

This guidance provides practical guidance on how the Design Guidance should be combined with TfL's Street Type for London guidance and local design guidance.

TfL's Street Type for London provides a common language between developers, designers and the capital's highway authorities, and was developed by a Roads Task Force set up by TfL. The Reference Design of all the new (and replacement) streets that are being delivered as part of the Scheme have been considered in line with the 'Street Types for London' methodology.

Relevant guidance and information has been considered through the review and application of related Landscape Design Principles, in particular LSCP.01, 02, 04 and 05. This information will inform the continuing design of the Scheme.

A snapshot of the Street Types Matrix is provided below for reference against the classification material contained in the Street Design Guidance in Appendix C of the Design Principles and was further considered in the Developed Design of the Scheme.

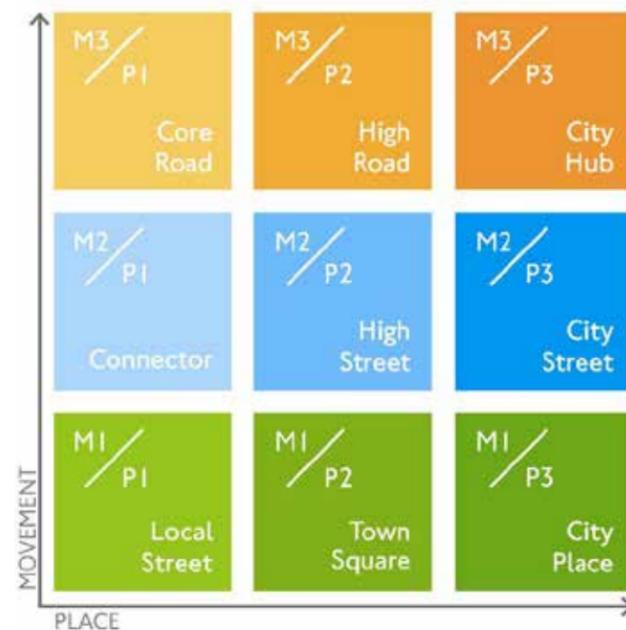


Figure 120. Street Types Matrix, taken from the Roads Task Force

5.3.13.2 Developed Design

Footways and cycleways have been proposed and designed in accordance with the Street Design Guidance in Appendix C of the Design Principles.

This Appendix C sets out Design Guidance on how the design of each of the proposed streets within the Scheme should be implemented. A review of each specific road type definition was undertaken, as below:

Dock Road (DG.DKRD)

Successful local streets should provide quiet, safe and desirable residential areas that foster community spirit and local pride.

Tidal Basin Roundabout (DG.TBRB)

Successful arterial roads should provide reliable major routes for large volumes of traffic that mitigate the impact on adjacent communities.

Tidal Basin Pathway (DG.TBPW)

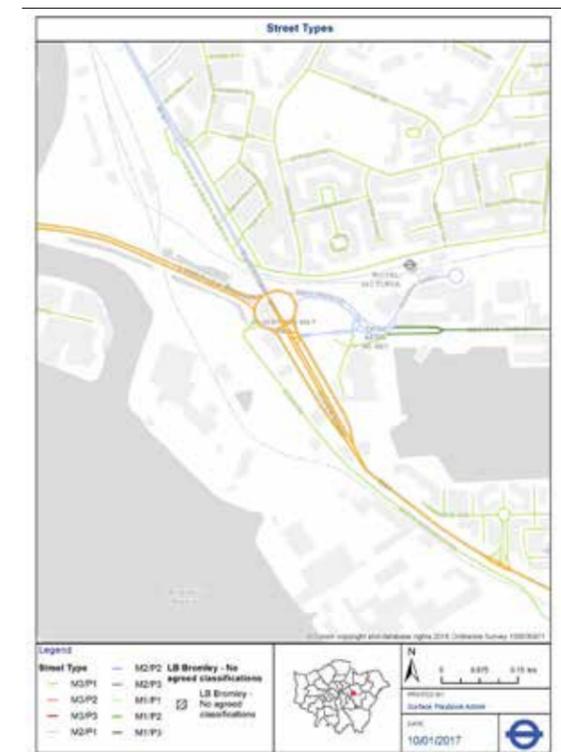
Successful town squares/streets should provide focus areas for community activity and services (retail, leisure, public, etc) with ease of pedestrian movement a priority.

Design comments - In the developed design stage the review with the DRP considered each of the road types and comments were received.

In respect of LSCP.15 the application of the design principles.



Figure 119. Street Types Matrix, proposed new classification of streets (illustrative design) and existing classification



5.3.13.3 Dock Road

DG.DKRD.01 - The street should be of a human scale with two-way movement and no centre line to increase vigilance and awareness of all other road users. The carriageway should have traditional footways on each side, and an off-carriageway segregated cycle path to accommodate the strategic cycle route.

DG.DKRD.02 - As a local street the carriageway width should typically be 6.4m and where possible Dock Road should be designed with this width. However, detailed design should also take into account of the turning movements of HGVs. Footways of at least 2.0m should be provided on each side and an off-carriageway bi-directional cycleway should be at least 3.0m wide on the west as shown in Figure C2-5. The realigned Dock Road should be carefully tied into North Woolwich Road with suitable transitions for footway and cycle facilities.

DG.DKRD.03 - The off-carriageway two-way cycleway should be provided on the western side of the road.

DG.DKRD.04 - Any build-outs or raised side road entry treatments must mark the transition in scale, character and intensity. All side road entries should feature continuous footways, and where necessary (for example on informal crossings) traffic calming through changes in surface treatment should be used to improve the environment for pedestrians.

DG.DKRD.05 - Tree planting and soft landscaping (including SUDS) should be incorporated into the streetscape.

Compliance - footways are provided on both sides and with an off-carriageway segregated cycle path (to the west) to accommodate the strategic cycle route (Sustrans Route 13).

Divergence - The TfL Contract Requirements specifies Dock Road to be designed to Trunk Road Standards, which requires a centre line marking.

Compliance - the carriageway has been design with a consistent width of 7.3m (as per TfL Contract Requirements), footways of 2.0m and off-carriageway bi-directional cycleway of 3.0m - adhering to the minimum width requirements.

The realigned Dock road is tied into the existing road network with footpaths aligning. Cycleways tie into the existing network, to the north Lower Lea Crossing (existing width 2.0m). The new segregated cycle path is complemented with a crossing point on Dock Road to safely cross to access the Royal Docks to the east.

Compliance - an off-carriageway segregated cycle path is provided on the western side of Dock Road.

Compliance - due to technical constraints no build outs or raised tables are proposed on Dock Road. A review of the constraints taken place with TfL - a review of this information is undertaken as part of LSCP01.

Compliance - Both tree planting and soft landscaping provided to both sides of Dock Road. Boulevard style tree planting is provided to the eastern side, to the frontage of the development plot, following consultation and comment from LBN. A naturalistic approach has been retained adjacent the DLR, promoting the BAPMS approach and reinforcement of GI principles. SuDS are not technically possible in the Scheme on Dock Road.

5.3.13.4 Design comments

- Comments received from the DRP, TfL and the LPAs. Focused around the understanding of the widths of the cycle and pedestrian route, the priority at crossings.
- Additional comments were made surrounding the connections of the Scheme to its context.
- TfL: Under grounds for objection, section 6.3.4 the following comment was received during the design process from TfL: *The Dock Road cycle the drawing should be updated to show the cycle path on the west side as per previous detailed discussion/ correspondence and project communication from TfL to RLX.*



Figure 121. Implementation of the cycle way on the west of Dock Road (DG.DKRD.03.)

image update

5.3.13.5 Tidal Basin Roundabout

DG.TBRB.01 - The carriageway width should encourage slower speeds. Generous cycle routes should be provided that are separated from traffic by a typical 0.5m buffer where space allows. These routes should be well signed and integrated into the wider cycle network.

Compliance - 3.0m off-carriageway bi-directional cycleways have been provided to the north and west of the TBR, separated from traffic by a minimum of 500mm buffer through out (where possible this buffer has been expanded and planted). Ground level markings and Legible London Finger Posts have been used where appropriate to reinforce connection to the wider network (refer to LSCP03 for more information on legibility).

DG.TBRB.02 - The carriageway should typically be 11m width for a 3 lane carriageway and 7.3m width for a 2 lane carriageway, with a footway of at least 2m around the outer perimeter for the areas to the north and west where there is 3m off-carriageway bi-directional cycleway.

Compliance - carriageways follow the typical widths and in adherence to Schedule 10 of the DCO. The footways and off-carriageway bi-directional cycleway adhere to the design guide and minimum widths required.

DG.TBRB.03 - To the south and east shared pedestrian-cycle space should be provided.

Compliance - shared pedestrian-cycle space has been provided to the south that transitions into the existing infrastructure to the east of the TBR.

DG.TBRB.04 - The considered use of public art, lighting and signage should be used to inform people that they are entering the Docks and reinforce local identity. This should be reflected in both the materials and design of the roundabout.

Compliance - the public realm includes for clear lighting to provide a safe and secure environment, complemented with Legible London signage at key entrance points to the TBR. The TBR itself provides opportunity for public art (Reference should be made to the Greenwich and Newham Urban Realm Report). The design incorporates materials from the Royal Docks Landscape Design Guide.

DG.TBRB.05 - Pedestrian and cycle crossings should be located on desire-lines and designed to put the pedestrian and cyclists first. They should be of a width commensurate to the predicted level of use. Guard-railing should be avoided.

Compliance - signalised crossings have been provided to safe crossing for pedestrian and cyclists and to promote the key north-south and east-west route, around the TBR to connect to the Royal Docks. Guard railing has not been used following TfL's Streetscape guidance.

DG.TBRB.06 - Planting of large shrubs, mature trees and species-rich meadow grass is to be included in the centre of the roundabout and on suitable plots around the perimeter.

Compliance - planting that promotes the BAPMS has been specified and located within the technical parameters of the TBR, i.e. outside of visibility splays to promote health and safety and secured by design principles. The Landscape proposals provide clarity on the type and location of planting provided.



Figure 122. Street Types Matrix, proposed new classification of streets (illustrative design) and existing classification

5.3.13.6 Tidal Basin Pathway

DG.TBPW.01 - The pathway should typically be 10.0m wide, and should provide a shared surface for both cyclists and pedestrians, but providing the opportunity to segregate in future, should demand levels require.

DG.TBPW.02 - The material should be smooth and hardwearing for ease of cycling and walking, and should be differentiated from the carriageway in colour and texture.

DG.TBPW.03 - The considered use of public art, lighting and signage should be used to inform people that they are entering the Docks and reinforce local identity. This should be reflected in both the materials and design of the area, and reflect the likely patterns of use.

DG.TBPW.04 - Planting of large shrubs, mature trees and species-rich meadow grass is to be included on suitable plots on either side of the pathway, in order to soften the area and provide screening from traffic on the roundabout.

Compliance - the pathway has established a min. width of 10m, allowing for both pedestrians and cyclists. Materials used promote a shared approach, look and feel, allowing for future segregation if required.

Compliance - the pathway has been designed with a clearly differentiating material to that of the adjacent carriageway, reinforcing the shared approach as used in other areas of the Scheme.

Compliance - The public realm provides opportunity for art, lighting and signage to be incorporated. The design incorporates materials from the Royal Docks Landscape Design Guide. The use of art is to be considered through a defined process and collaboration with adjacent developments and/or initiative i.e. The Line, to promote the positive integration of the Scheme with its context.

Compliance - planting that promotes the BAPMS has been specified and located within the technical parameters of the TBR, ie outside of visibility splays to promote health and safety and secured by design principles. The Landscape proposals provide clarity on the type and location of planting provided.



Figure 123. Implementation of the Tidal Basin Pathway

5.3.13.7 Scheme response

The landscape proposals have considered all relevant guidance and a review of LSCP.15 has been undertaken in respect of all new and/or changed streets as to their satisfaction of the Design Guidance provided in Appendix C of the "Silvertown Tunnel, 7.4 Design Principles TR010021".

Key design points to note:

- Soft landscape and planting utilised to promote a sense of scale, setting and integration of the streets into the existing context.
- Adherence to the implementation of minimum widths and requirements across the Scheme, with delivery beyond these requirements noted in this section.

5.4 Complementary Design Principles - Review

5.4.1 Introduction

As noted in the introduction to Section 5.4, a number of Design Guidelines were provided to the Scheme under 'The Design Principles' (Silvertown Tunnel - Design Principles - Document Reference: 7.4 - ST150030-PLN-ZZZ-ZZ-DSD-ZZ-0080).

This section provides a synopsis of additional design guidelines where landscape design is required to adhere or where it is directly influential. These are listed opposite and reviewed in this section, with a table provided for oversight and a synopsis of the response. In each case where applicable guidance and or references have been provided to further detailed information by lead disciplines.

The information here reflects the approach to adhering to the design principles in respect of the landscape proposals with a brief synopsis provided.

Note: Silvertown Portal Design Principles have been considered in the holistic design of the landscape design for the Scheme. The principles guide the massing of development and portal structure and are to be covered in a separate application and architectural design report.

5.4.1.1 Integration of Permanent Structures

There are three common component parts to the Scheme at each end of the tunnel and these comprise:

- Portal Structure including retaining walls;
- Tunnel Services Buildings housing mechanical, electrical and fire suppression accommodation; and
- Tunnel Services Compound sited within operational land and containing the Tunnel Services Buildings and providing parking for operational and maintenance vehicles.

These elements may be physically separate or combined in a number of configurations subject to the detailed design of the Scheme portals and the emerging third party masterplan proposals adjacent to them.

A head house is also required at each portal. These should be located directly above the TBM launch chambers.

The following principles have been considered particularly relevant in the development of the Scheme's landscape design:

PRBD.01	PRBD.04	PRBD.11
PRBD.15		

5.4.1.2 Sustainability & Environment

The Scheme should ensure sustainability in the five themes of the TfL sustainability toolkit: economic progress; climate change; safety and security; quality of life; and transport for all. The sites are located in a highly urbanised industrial environment and habitats across the site are generally of poor quality, though are subject to high levels of pressure in terms of biodiversity loss due to development.

The following principles have been considered particularly relevant in the development of the Scheme's landscape design:

SUEN.02	SUEN.03	SUEN.04
SUEN.05		

5.4.1.3 Public Art

Public art can add value to the urban environment, and the Scheme could provide opportunities to deliver a range of types of public art in a way that integrates the infrastructure into the public realm and engages with the local communities. Such opportunities should be considered during the detailed design of the Scheme.

The following principles have been considered particularly relevant in the development of the Scheme's landscape design:

PBRT.01	PBRT.02	PBRT.03
PBRT.04	PBRT.05	

5.4.1.4 Advertising and Commercial Activity

Advertising and other commercial activity are increasingly important ways to raise revenue to support the delivery of transport schemes. This should be considered from the outset.

All advertising will be subject to the Town and Country Planning Act 1990 regime and the validation requirements of the relevant local planning authority. This should be achieved by adhering to the following Design Principles.

The following principles have been considered particularly relevant in the development of the Scheme’s landscape design:

- ADCA.01
- ADCA.02
- ADCA.03
- ADCA.04

5.4.1.5 Signage & Wayfinding

Wayfinding for pedestrians, cyclists and motorists is integral to transport infrastructure. Poorly sited signage can be a distraction and an obstruction to movement, and harm legibility of the road network.

The following principles have been considered particularly relevant in the development of the Scheme’s landscape design:

- SGWF.01
- SGWF.02
- SGWF.03
- SGWF.04

5.4.1.6 Lighting

All Scheme lighting, including within the tunnel, should be in accordance with relevant design standards and guidance and use sustainable, energy efficient illumination throughout. Lighting should also be used to provide for personal safety and security including the illumination of cycleway and footways.

The following principles have been considered particularly relevant in the development of the Scheme’s landscape design:

- LTNG.01
- LTNG.02
- LTNG.03
- LTNG.04
- LTNG.05
- LTNG.06
- LTNG.07
- LTNG.08

5.4.2 Design Principles overview

Codes	Design Principle (Synopsis)	Design Principle Response (Synopsis)
PRBD.01	The Scheme should allow for the future development of the surrounding area as defined in planning policy.	Reference should be made to LSCPs response in this report - in particular LSCP06
PRBD.04	Compound boundaries should be high quality and suitable for their use	Reference should be made to LSCPs response in this report - in particular LSCP02 and Section 3.8
PRBD.11	Where an adjacent site masterplan has been prepared the Scheme proposals should seek to integrate	Reference should be made to LSCPs response in this report - in particular LSCP06
PRBD.15	Where required noise barriers should be of high quality visual appearance, and suitable for their context	Reference should be made to Greenwich Landscape Report and the Silvertown Landscape Report for detail of their visual appearance in the context of the adjacent landscape/environment.
SUEN.02	The detailed design of the Scheme should ensure that the species selected for the permanent landscaping should be native and of local provenance	Species have been reviewed by a Qualified Ecologist and selected against the principles of the BAPMS and the LSCPs.09-11. Species have predominantly been selected to be native with those not following the TfL defined principle of 'Right Plant Right Place'
SUEN.03	Opportunities to introduce Green Infrastructure design including biodiversity roofs and sustainable living walls	GI has been implemented across the Scheme. Green Roofs are provided to all buildings on site (located within the compounds). Green walls are not provided deemed suitable (supported by TfL).
SUEN.04	All habitats that cannot be replaced on site should be offset to ensure there is an overall net gain in biodiversity	A review of the site has been undertaken and with a qualified ecologist areas calculated to ensure compliance with this design principle.
SUEN.05	Building materials should be locally sourced, reclaimed, recycled and have low carbon impact.	Materials selected to target Green Guide rating A+, A or B. CJV to provide comment on sourcing.
PBRT.01	Public art should be considered, engaging with the local community, encouraging a sense of ownership and belonging in the public realm.	dRMM have developed a strategic proposal for the locations of public art opportunities. The approach is to make use of functional elements and to introduce interventions that bring other benefits to the public realm.
PBRT.02	Consideration should be given to both temporary and permanent art.	Public art opportunities are divided into temporary (such as vinyl art print or art canvas for the noise barriers) and permanent (such as paint for the Newham flyover walls).
PBRT.03	The integration of public art should be considered as part of any night-time functional lighting Scheme.	The proposals have considered and identified suitable locations and opportunities for public art to be installed within the wider lighting proposals of the Scheme.
PBRT.04	Where barriers are required for noise, they should be designed to provide opportunities for public art	The noise barriers are proposed to have flat surface on the back face (not traffic facing) in order to facilitate the integration of public art or signage.
PBRT.05	Public art should provide functional as well as aesthetic enhancement	By introducing public art in areas such as the Newham flyover, the general feeling of safety, security and way-finding is enhanced.
ADCA.01	Any new advertising hoardings should be fully integrated into the design from the outset	n/a - no advertising hoarding is proposed for the Scheme
ADCA.02	Modern LED advertising screens should be dynamic in form.	n/a - no advertising hoarding is proposed for the Scheme
ADCA.03	Advertising screens could also be used where appropriate as a canvas for public art.	n/a - no advertising hoarding is proposed for the Scheme
ADCA.04	Advertising hoardings should not cause a negative impact on the public realm.	n/a - no advertising hoarding is proposed for the Scheme

Codes	Design Principle (Synopsis)	Design Principle Response (Synopsis)
SGWF.01	Clear lines of sight should be maintained throughout pedestrian environments to optimise ease of accessibility, enhance network legibility and wayfinding, and reduce dependence on signage and auditory information	The landscape proposals have been developed to promote this principle, reflecting guidance set out under LSCP.02 and 04
SGWF.02	The Scheme should avoid unnecessary traffic signage, especially where it would act as a roadside distraction or visibility hazard or provide confusion to pedestrians and cyclists.	Cyclist and pedestrian wayfinding have been provided at key junctions only refer to the landscape plans for locations.
SGWF.03	Wayfinding should only be illuminated or reflective if it is essential to the use and operation of the scheme and its interaction with the surrounding area.	Under the scheme it is not the intention to light any further signage or wayfinding, refer to the Stage 3 Signage Strategy (Report No: ST150030-ARU-TRS-ZZ-ZZ-RPT-HE-0004) for details of the directional signs identified to be lit
SGWF.04	Where practical green infrastructure including green walls and roofs should be considered	The landscape proposals have been developed, reflecting guidance set out under LSCP.08-11. GI assets have been used to provide connections across road infrastructure. Green Roofs are provided to all buildings on site (located within the compounds).
LTNG.01	Lighting designs should adhere to TfL's Streetscape Guidance and should enhance place making	The lighting designs for the Scheme have adhered to the relevant TfL Streetscape Guidance to provide suitable illumination to support all users.
LTNG.02	The need for lighting to reduce the risk of accidents, help prevent crime and the fear of crime, should be balanced with the need to promote terrestrial and aquatic biodiversity.	Reference should be made to Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
LTNG.03	In pedestrian areas, dark patches and high light/dark contrasts should be avoided where they impair visibility.	Reference should be made to Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
LTNG.04	In order to reduce visual clutter, lighting should be integrated into seating, steps, walls, furniture and other similar design features where feasible to do so.	Reference should be made to Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
LTNG.05	Lighting units should be high quality and robust. The ease of their future maintenance should be a relevant consideration to the choice of detailed light fittings.	Reference should be made to Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
LTNG.06	Lighting units should be selected to be coherent, consistent, and contribute to place making. They should also limit light pollution, improve energy efficiency and ensure equipment longevity	Reference should be made to Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
LTNG.07	Notwithstanding the above requirements to reduce light pollution, lighting designs, wherever possible, should take into account the contribution made by lighting to create a sense of place, while complying with Streetscape Guidance or making an exception to the guidance where shown to be necessary.	Reference should be made to Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
LTNG.08	Lighting proposals should contribute to the legibility of the proposed streetscape with clear distinctions made between vehicle, cycle and pedestrian environments.	The lighting elements within the landscape proposals have considered against relevant complementary guidance, in particular LSCP.03 and adhered to the guidance set out in LSCP.15.

5.5 Integration of Permanent Structures Design Principles - Review*

5.5.1 PRBD.01

The detailed design of the Scheme should allow for the future development of the surrounding area as defined in existing and emerging planning policy.

The detailed design of the Scheme should avoid creating constrained development sites or under utilised open space which cannot be developed.

5.5.1.1 Scheme response

Refer to the design rationale set out in this Landscape Report and the LSCPs response in this report in particular LSCP.06.

5.5.2 PRBD.04**

Where required, compound boundary fences and walls should be of high quality visual appearance, and suitable for their context and adjacent uses.

5.5.2.1 Silvertown Design

The portal building is sited directly over the tunnel entrance (portal PRBD.08) to minimise structure and maximise sustainability. Supporting compound buildings are located to inform a portion of the compound edge adjacent the access road (in yellow on the plan).

A simple weldmesh fence (in blue on the plan) in anthracite grey to a height of 2.0m is proposed to the site. This is amended on the road frontage (in dark blue on the plan), to include for a small wall extending off the building façades used, to provide a softer design transition between boundary treatments. This secure boundary requirement has been amended to merge with the acoustic barriers (in red on the plan), to reduce duplication and clutter, when viewing the scheme from the outside.

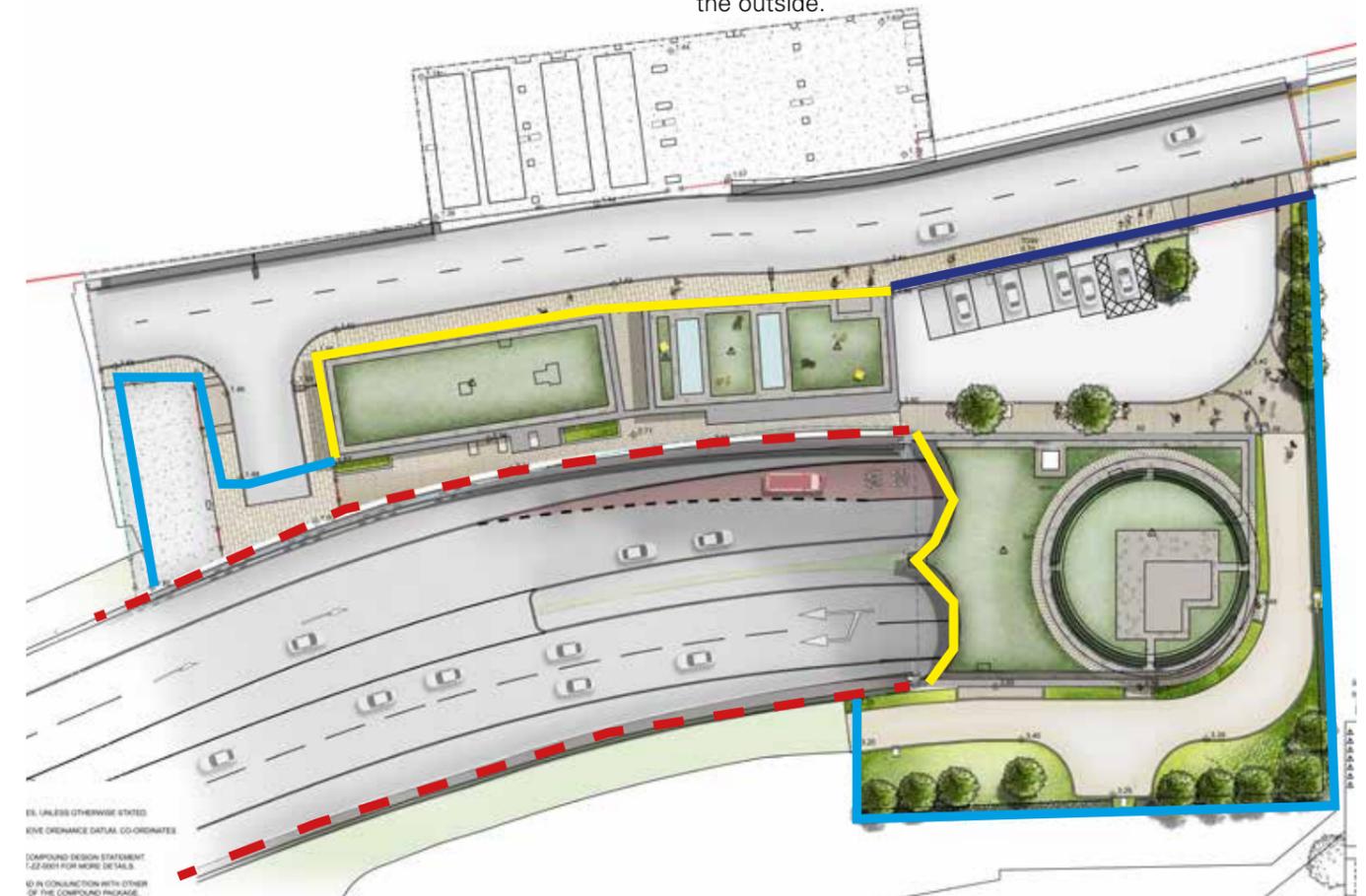


Figure 124. Fencing proposals

* This section provides a response to design guidelines where landscape affects the Scheme. Reference should be made to the architectural compound package for further details:

- Newham Portal Building Architectural Report (ST150030-DRM-PRM-17-Z14-RPT-AR-0001).

PRBD.04 has also considered PRBD.12 - **The detailed design of the portal and ancillary buildings should be developed with reference to relevant guidance on safety and security, including Secured by Design, and in particular, the section describing 'Resilient Design For Counter-Terrorism'. Particular attention should be given to the edges of the site and their impact on the safety and security of the public realm.

The designs (fencing) have incorporated the relevant safety and security guidance and reference should be made to LSCP.02.

image update

5.5.4 PRBD.11

Where an adjacent site masterplan has been prepared and approved by the statutory planning process, the detailed design of the Scheme proposals should seek to integrate with it where practicable and without prejudice to its functionality. Where the masterplan needs to evolve in order to accommodate the Scheme, TfL and the Project Company should endeavour to work with stakeholders where reasonably possible and appropriate to ensure the optimal integration of the Scheme with adjacent development.

5.5.2.2 Scheme response

Integration of the proposals into the wider setting and emerging regeneration of the area have been considered through the design process - direct reference should be made to LSCP.06 contained in this document.

The input from Stakeholders has been sought through the Design Review Process (DRP.02) - as described earlier in this document. With feedback from all relevant stakeholders reviewed and where reasonable incorporated to optimise the Scheme.



Figure 125. Thameside West Landscape - Composite Landscape Masterplan produced to include the indicative Scheme proposals in context with the surrounding masterplan and development proposals

5.5.3 PRBD.15

Where required as part of the Scheme and within order limits, noise barriers should be of high quality visual appearance, and suitable for their context including existing and committed adjacent uses.

5.5.3.1 Design development

Noise barriers have been located as per the Environmental Statement to mitigate increments in noise levels beyond permissible limits. The Scheme has sought to limit the noise barriers to the locations where they are required and to ensure they are suitable for their context.

The opportunity to utilise the noise barriers as a feature is explored through the opportunity to Public Art, that will generate a high quality visual appearance and feature for the tunnel.

5.5.3.2 Scheme response

Newham - Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002) to be used for reference in respect of visual appearance/public art.

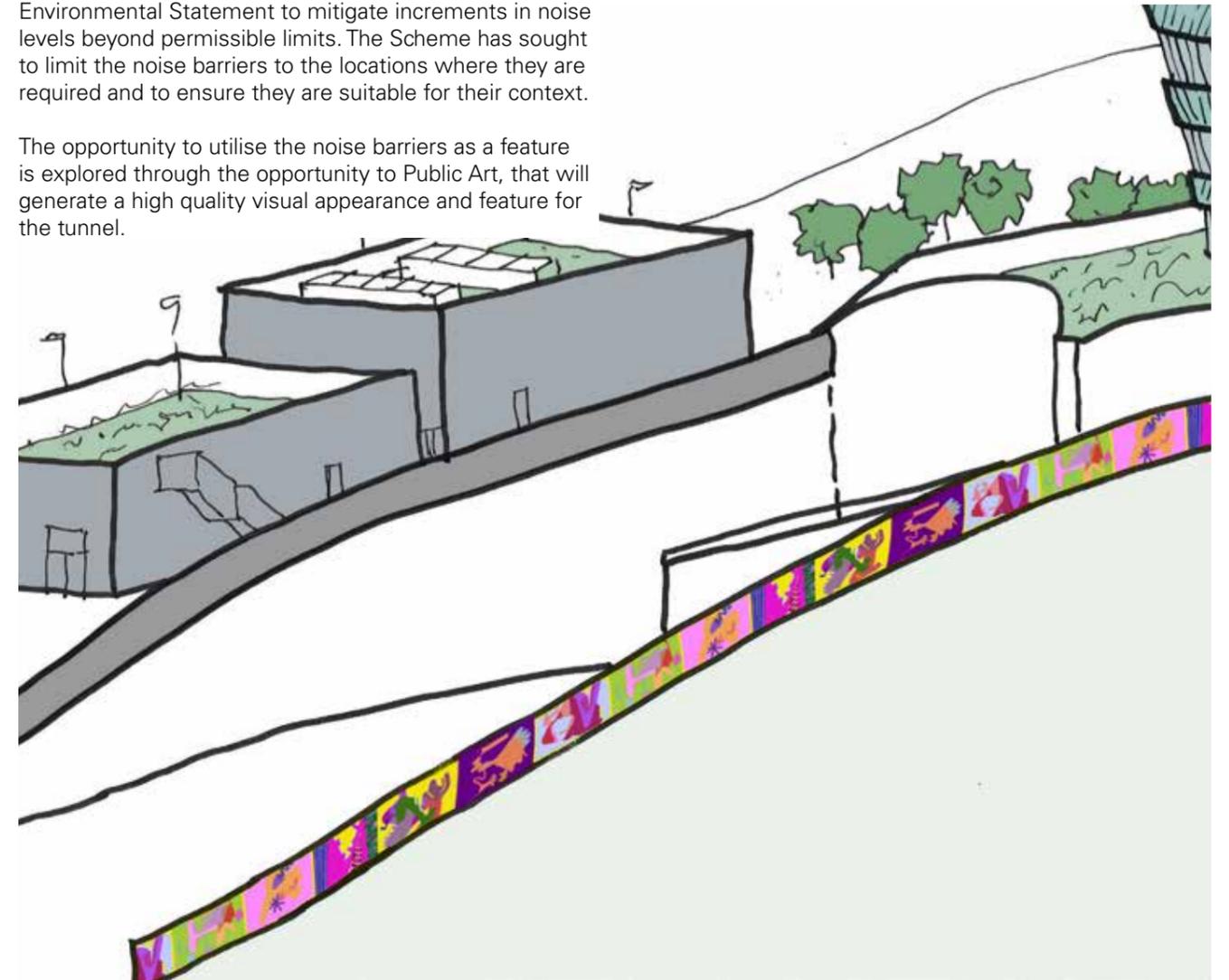


Figure 126. Illustrative Design Proposals to noise barriers

5.6 Sustainability and Environment Design Principles - Review

5.6.1 SUEN.02

The detailed design of the Scheme should ensure that the species selected for the permanent landscaping should be native and of local provenance. Brownfield habitat should be introduced wherever possible. All landscaping should be designed and carried out in accordance with the BAPMS.

5.6.1.1 Design development

The initial planting list has considered the requirements to be native and of local provenance. Coupled with the inclusion of Brownfield habitat to the Scheme as presented to, and supported by TfL.

In the development of the design species selection and location on site has been reviewed. Reference should be made to LSCP.10, 11 and 13, and SUEN.04.

Both the soft landscape and ecology sections within the landscape proposals report should be referred to understand the aesthetic and ecological intent for the Scheme. The detailed plans and the accompanying planting schedule provide information on the species selected. These proposals have been reviewed by a qualified ecologist to ensure the proposal are in accordance with the principles as set out in the BAPMS.

5.6.2.3 Scheme response

The landscape proposals section provides additional information.

Key design points to note:

- Planting reviewed with qualified ecologist.
- Planting reviewed and implemented against the guidance set out in the BAPMS.
- Open Mosaic Habitat promoted (including brownfield habitat).

5.6.2 SUEN.03

Opportunities to introduce Green Infrastructure design including biodiversity roofs and sustainable living walls should be considered within the building design and Scheme landscaping.

5.6.2.1 Design development

Green Infrastructure (GI) is inherent in the Landscape Design Principles. Initial locations have been identified for GI assets within the landscape of the Scheme and through the delivery of Green Roofs.

The developed design stage will further review the development of their location. Reference should be made to LSCP.11.

Green roofs to be provided to the proposed buildings of the Scheme.

Living walls reviewed and not deemed suitable or practicable to the Scheme, as supported by TfL.

5.6.2.2 Scheme response

The landscape proposals section provides additional information to demonstrate the intent of the Scheme - with a defined section to provide an overview of the response to GI and the implementation of ecology.

Key design points to note:

- Green roofs to be installed to all compound buildings.



Figure 127. Proposed Green Infrastructure

5.6.3 SUEN.04

All habitats that cannot be replaced on site should be offset to ensure there is an overall net gain in biodiversity.

The loss has been monetised through Natural Capital Valuation and should be provided offsite in accordance with the Scheme specific BAP in the Environment Statement Appendices (Document Reference: 6.3).

5.6.3.1 Design development

The landscape proposals have been reviewed at each stage, to promote the adherence to this design principle.

Planting proposals and habitat replacement has been selected in conjunction with a qualified ecologist.

The proposals have been presented to the DRP, TfL and the LBN, TfL welcomed the proposals and reference should be made to the landscape proposals planting schedules and relevant SUEN and LSCP design principles, in particular SUEN.02 and LSCP.11 and 13.

5.6.3.2 Scheme response

The landscape proposals have promoted both the maximisation and variety of urban greening. The proposals have identified suitable locations and opportunities for biodiversity to be reinstated within the Scheme.

Key design points to note:

- The loss monetised in respect of the DCO has been paid to the relevant LPA.
- Landscape proposals result in a net gain on site.
- Reference should be made to the ecology response in the landscape proposals.

5.6.4 SUEN.05

Where possible, building materials should be locally sourced, reclaimed, recycled and have low carbon impact. The entire life cost of all materials used should be considered.

5.6.4.1 Design development

Through the design stages the materials specified have been reviewed against relevant guidance, the DCO and presented to the DRP, TfL and the LBN.

Materials have been reviewed and the material palette developed as per the Landscape Design Guidelines (refer to LSCP.05).

Manufacturers and suppliers have been selected at this stage based on their approach to low carbon impact and materials that target a Green Guide of A+, A or B selected.

5.6.4.2 Scheme response

The landscape proposals have selected materials in accordance with all relevant available guidance and to adhere to the technical requirements as set out in Schedule 10 of the DCO

Key design points to note:

- Materials selected target Green Guide of A+, A or B.

5.7 Public Art Design Principles - Review

5.7.1 PBRT.01

Public art should be considered as part of the Scheme design process and as one way of engaging with the local community, encouraging a sense of ownership and belonging in the public realm.

5.7.1.1 Design development

The landscape proposals for the Scheme have sought to consider suitable locations for art and an allowance for an artist to be involved to work within the design parameters.

The zone defined is to the shared space moving through the TBR, connecting the proposed DLR station (Thameside development and the Silvertown Flyover). This being the area of defined public realm.

5.7.1.2 Scheme response

The landscape proposals have considered and identified suitable locations and opportunities for art to be installed within the Scheme, focused to areas of public realm.

The Newham - Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002) to be used for reference, this document identifies the opportunities, not the actual art work and the images provided here are for illustrative purposes only.

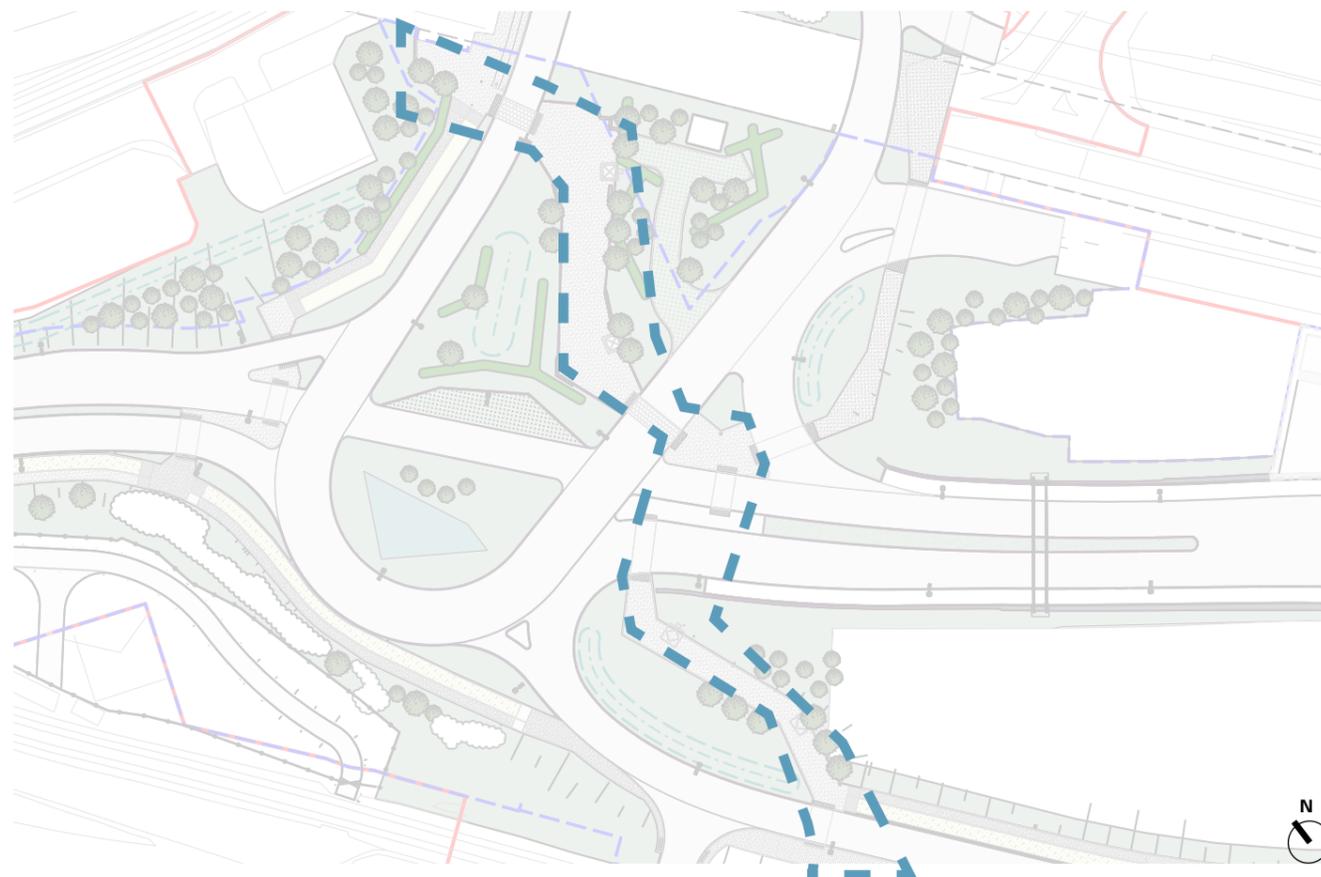


Figure 128. Plan of zonal art strategy - focusing art on or adjacent to the public realm



Figure 129. Precedent - Art installation to public footways - Sayers Street, Elephant & Castle, London (Art Features, Lighting and Sculpture)

5.7.2 PBRT.02

Consideration should be given to both temporary and permanent art.

5.7.3.2 Scheme response

The public art opportunities are divided into temporary (such as vinyl art print or art canvas for the noise barriers) and permanent (such as paint for Newham flyover walls). An extensive permanent art opportunity is also the proposed pattern to the retaining walls and could be achieved through decorative silicone form liners.

The Newham - Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002) is to be used for reference. This document identifies the opportunities, not the actual art work and the images provided here are for illustrative purposes only.

5.7.3 PBRT.03

The integration of public art should be considered as part of any night-time functional lighting Scheme.

5.7.2.1 Scheme response

The proposals have considered and identified suitable locations and opportunities for public art to be installed within the wider lighting proposals of the Scheme.

The Newham - Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002) to be used for reference, this document identifies the opportunities, not the actual art work and the images provided here are for illustrative purposes only.

5.7.3.1 Design development

The proposals for the Scheme have considered suitable locations for public art in respect to lighting.

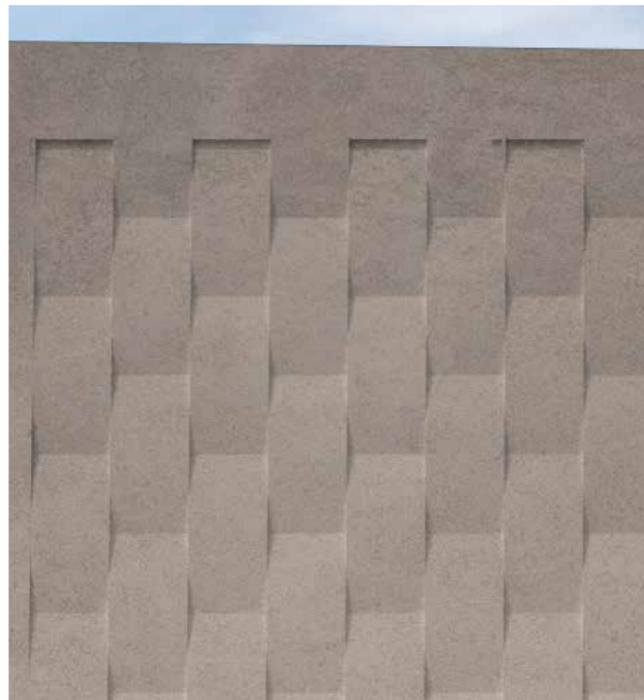


Figure 130. Material patter nation to the portal walls

5.7.4 PBRT.04

Where barriers are required for noise or visual mitigation, where practical they should be designed so that they also provide opportunities for public art or for signage and safety measures

5.7.4.1 Scheme response

The noise barriers are proposed to have flat surface on the back face (not traffic facing) in order to facilitate the potential integration of public art or signage. Additionally it is proposed that fixed temporary canvas and/or temporary vinyl print are the preferred choices of material instead of paint for maintenance reasons.

The Newham - Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002) to be used for reference, this document identifies the opportunities, not the actual art work and the images provided here are for illustrative purposes only.

5.7.5 PBRT.05

Public art should be designed to provide functional as well as aesthetic enhancement to the Scheme and its context. For example safety, security and wayfinding.

5.7.4.2 Scheme response

Public art locations are carefully examined and are proposed in order to minimise the opportunities for vandalism and anti social acts, such as graffiti on the retaining walls or the noise barriers. By introducing public art in areas such as the Newham flyover, the general feeling of safety, security and way-finding is enhanced.

The Newham - Silvertown Tunnel - Urban Realm Design Principles (ST150030 DRM PRM 17 Z13 RPT AR 0002) to be used for reference, this document identifies the opportunities, not the actual art work and the images provided here are for illustrative purposes only.

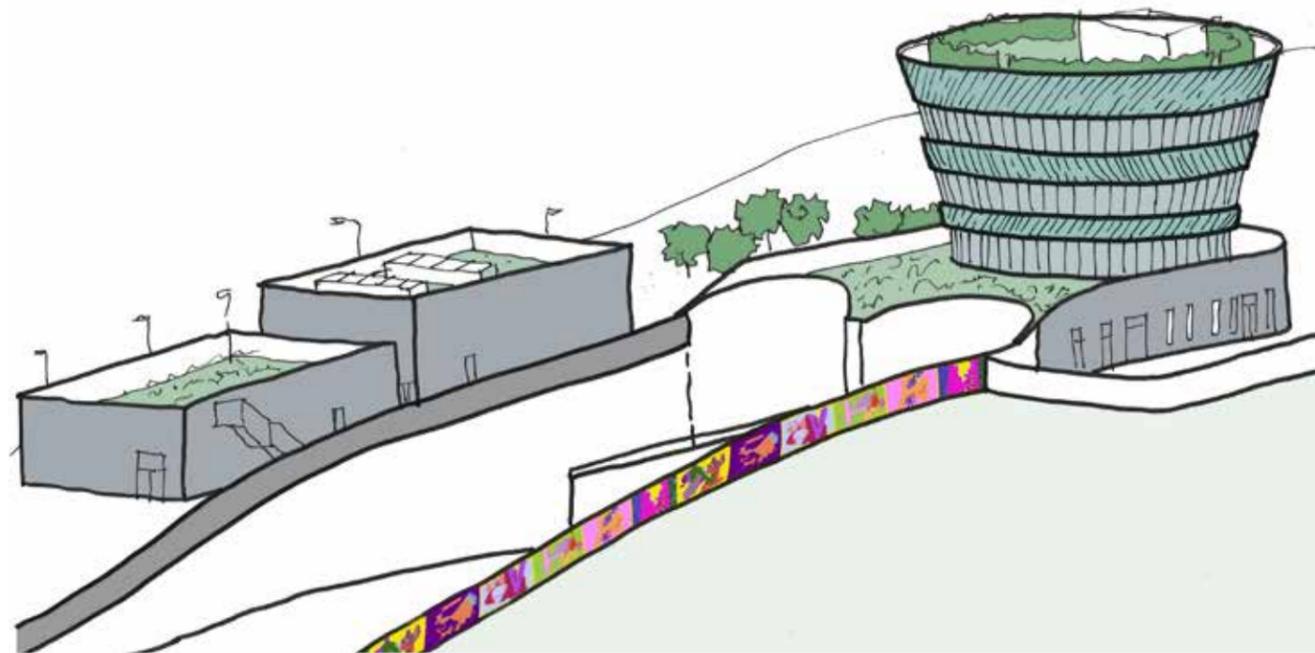


Figure 131. Material approach to drawing public art into the acoustic barriers

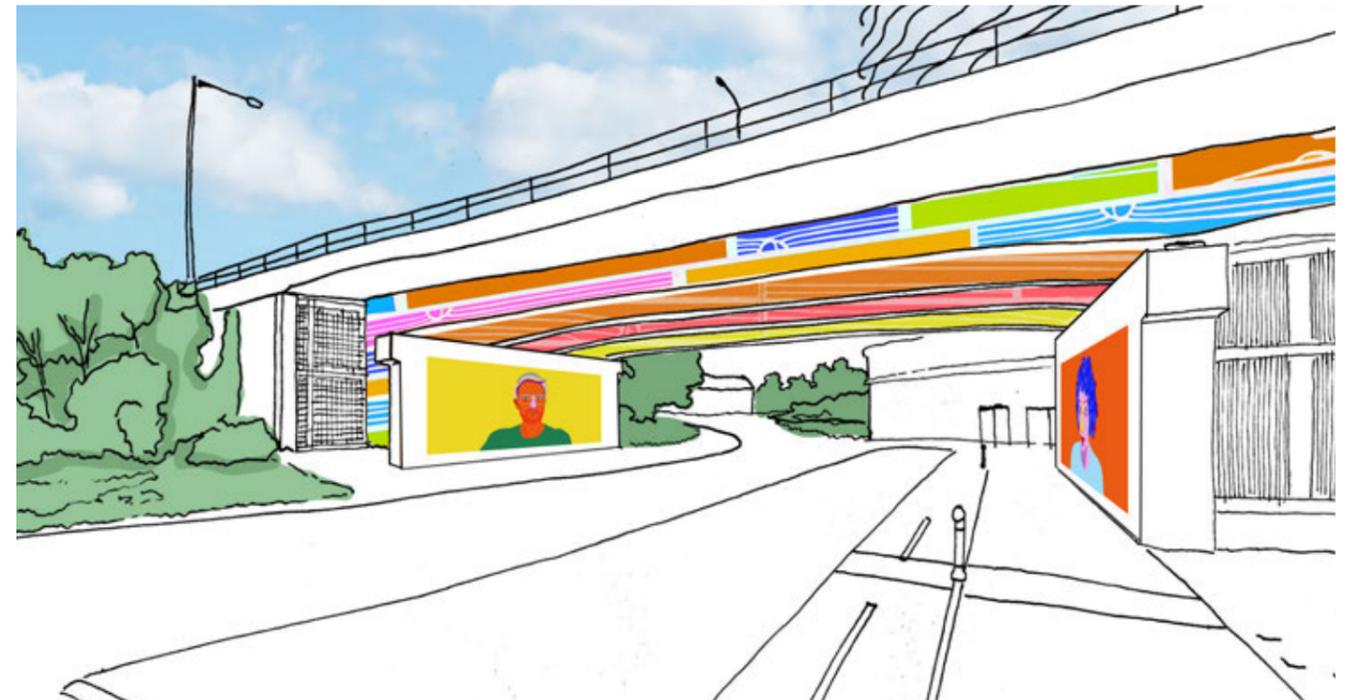


Figure 132. Illustrative examples of public art to the Scheme

5.8 Advertising and Commercial Activity Design Principles - Review

5.8.1 ACDA.01

Advertising hoardings should not cause a negative impact on the character or function of the public realm.

In particular it should not add to clutter, hinder desire or sight lines, create unusable spaces, dominate the space or produce security risks whether real or perceived.

5.8.1.1 Scheme response

The Scheme does not implement any advertising hoardings.

5.8.2 ACDA.02

Modern LED advertising screens should be dynamic in form.

5.8.3.2 Scheme response

The Scheme does not include any LED advertising and so this Design Principle is not applicable.

5.8.3 ACDA.03

Advertising screens could also be used where appropriate as a canvas for public art.

5.8.3.1 Scheme response

The Scheme does not include any advertising screens and so this Design Principle is not applicable.

5.8.4 ACDA.04

Advertising hoardings should not cause a negative impact on the character or function of the public realm.

In particular it should not add to clutter, hinder desire or sight lines, create unusable spaces, dominate the space or produce security risks whether real or perceived.

5.8.4.1 Design development

The landscape design does not propose to allow for any advertising hoardings at the design stage.

The developed design stage will further review and consider the impact of hoardings as and if they become known or required.

5.8.4.2 Scheme response

The Scheme does not implement any advertising hoardings.

In development of the design no requirement has been raised for advertising hoarding.

In discussion with the LBN it has been requested for its 'Welcome to Newham' sign to be removed and not replaced.

It is not proposed to replace roundabout advertising signs (as per the figure below) to promote the design aesthetic of the planting scheme of the landscape proposals.

It is not proposed to allow for or install any advertising hoarding to the Scheme.



Figure 133. 'Welcome to Newham' Tidal Basin Roundabout

5.9 Signage & Wayfinding Design Principles - Review

5.9.1 SGWF.01

Clear lines of sight should be maintained throughout pedestrian environments to optimise ease of accessibility, enhance network legibility and wayfinding, and reduce dependence on signage and auditory information.

5.9.4.1 Design development

Wayfinding for pedestrians, cyclists and motorists is integral to transport infrastructure and has been considered in the concept design stage of the Scheme.

Through the design stages reviews have been undertaken to monitor potential obstructions to movement, that would harm the legibility of the network, especially for pedestrians and cyclists. This includes for both physical and/or visual obstructions.

LSCP.02 has been adhered to applying Secured by Design principles, ensure clear sight-lines for users through the public realm for safety. This approach has been complemented through the application of LSCP.08 in the placement of trees to reinforce public realm, character and strengthen movement patterns.

Formal signage has been restricted to the use of Legible London (Midiliths and finger posts) at key junctions (refer to SGWF.04), to provide relevant information to users. This approach has complemented the implementation of LSCP.03.

The design development the Scheme has considered this design principle and that of the complimentary signage and wayfinding principles:

SGWF.02: The detailed design of the Scheme should avoid unnecessary traffic signage, especially where it would act as a roadside distraction or visibility hazard or provide confusion to pedestrians and cyclists.

- Traffic signage provided as necessary to promote safe and secure functioning of the road network and complies with the requirements of the Project Agreement Schedule 10.

and

SGWF.05: Wayfinding and other traffic signs should be in accordance, where practical, with relevant design standards and guidance.

- Traffic signage provided is in accordance with relevant design standards and guidance and complies with the requirements of the Project Agreement Schedule 10.

5.9.4.2 Scheme response

The landscape proposals have considered all relevant complementary guidance, in particular LSCP.02, 03, 05, 08 and adhered to the guidance set out in LSCP.15.

Key design points to note:

- Signage restricted to key decision points and arrival points to minimise street clutter.
- Secured by Design principles implemented to the landscape (planting scheme) to ensure clear lines of sight and that wayfinding will not be obstructed.
- Traffic signage provided as necessary to promote safe and secure functioning of the road network and complies with the requirements of the Project Agreement Schedule 10.

5.9.2 SGWF.02

The detailed design of the Scheme should avoid unnecessary traffic signage, especially where it would act as a roadside distraction or visibility hazard or provide confusion to pedestrians and cyclists.

5.9.2.1 Scheme response

The signs for the scheme have been reviewed to minimise the number and size as much as possible to avoid confusion.

For highway directional signage refer to the proposed future Signage Strategy to be submitted.

Cyclist and pedestrian wayfinding have been provided at key junctions only refer to the landscape plans for locations.

5.9.3 SGWF.03

Wayfinding should only be illuminated or reflective if it is essential to the use and operation of the scheme and its interaction with the surrounding area.

5.9.3.1 Scheme response

Signs have been illuminated in accordance with the requirements of the Traffic Signs Manual. Under the manual the signs listed below must be illuminated throughout the hours of darkness by internal or external lighting when placed within a street lit area:

- warning and regulatory signs for railway and tramway level crossings;
- height restrictions and warnings at low bridges or structures;
- warning of requirement to "Stop" or "Give Way" ahead;
- speed limit terminal signs on trunk or principal roads;
- regulatory signs including "stop", "give way", "no entry", compulsory / banned manoeuvres;
- vehicle restrictions (including for low and narrow bridges) and terminal signs indicating ;
- vehicle restrictions or bus / tram only; and
- motorway entry, exit and cantilever / gantry-mounted signs.

Under the Scheme it is not the intention to light any further signage or wayfinding, refer to the highway directional signage for the proposed future Signage Strategy to be submitted.

Key design points to note:

- Legible London signage used.

5.9.4 SGWF.04

The Scheme design should provide wayfinding guidance to aid navigation and encourage people to walk, while avoiding excessive use of pedestrian signs and causing clutter. Wayfinding signs should therefore:

- **be located where pedestrians start their journey and at key decision points and landmark destinations;**
- **be located to minimise physical intrusion into the streetscape, but be sufficiently visible so as to serve their intended purpose; and**
- **be local authority signs where pedestrian routes cross the Transport for London Road Network (TLRN).**

KEY

- Legible London Finger Posts
- Legible London Midiliths



Figure 134. Plan of wayfinding locations

5.9.4.1 Design development

Wayfinding guidance for pedestrians and cyclists and motorists has been considered at the concept stage of design.

The development of the Scheme has sought to deliver wayfinding instruments, utilising the Legible London totems and way-markers.

Formal signage has been restricted to the use of Legible London (Midiliths and finger posts) at key junctions (refer to SGWF.04), to provide relevant information to users. This approach has complemented the implementation of LSCP.03.

Midilith totems have been placed adjacent existing or anticipated transport nodes (the bus stop to Silvertown Flyover and the location of the proposed DLR station), to be located where users will start localised journeys. Finger posts are located at key decision points along the pedestrian/cycle network.

Signage has been located in locations where the footways exceeds 2.0m to ensure compliance with LSCP.04. Where totems are provided significant widths of pavement (4.0m plus or areas defined as public realm) have been utilised to ensure the minimisation of physical intrusion.

The information on the locations to be included on the signs is to be agreed with the local authority.

5.9.4.2 Scheme response

The landscape proposals section provides additional information to demonstrate the intent of the design proposals to include for the placement of signage and promote wayfinding through landscape.

Key design points to note:

- Signage restricted to key decision points and arrival points.
- Signage located adjacent to footways to minimise intrusion and flows of users.
- Legible London signage used.

Plan of wayfinding locations

5.10 Lighting Design Principles - Review

5.10.1 LTNG.01

Wherever possible, lighting designs should adhere to TfL's Streetscape Guidance and should enhance place making nighttime use, economy and enjoyment and provide safe passage for all users.

5.10.1.1 Scheme response

The lighting designs for the Scheme have adhered to the relevant TfL Streetscape Guidance to provide suitable illumination to support all users.

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001. This report sets out the lighting class selection (lighting intensity) for public realm lighting and lighting column heights.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001. This report ensure the proposals for the Scheme are reviewed to ensure lighting levels are adjusted to meet guidance and the safe requirements of users.

5.10.2 LTNG.02

The need for lighting to reduce the risk of accidents, help prevent crime and the fear of crime, should be balanced where practicable with the need to promote terrestrial and aquatic biodiversity.

5.10.2.1 Scheme response

Lighting levels have been derived from industry standards and complemented through a risk assessment across the proposals to step lighting levels either up or down to address fear of crime and/or promote biodiversity.

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001.

5.10.3 LTNG.03

In pedestrian areas, dark patches and high light/dark contrasts should be avoided where they impair visibility.

5.10.3.1 Scheme response

Lighting levels have been derived from industry standards and complemented through the application of uniformity parameter with adherence to BS 5489-1 down to reduce and remove areas of high contrast.

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001.

5.10.4 LTNG.04

In order to reduce visual clutter, lighting should be into seating, steps, walls, furniture and other similar design features where feasible to do so.

5.10.4.1 Scheme response

The lighting designs for the Scheme have integrated design features where feasible-this is best reflected in the use of the footbridge to provide lighting - though it has not been deemed suitable to include additional lighting into site furniture beyond future illumination of the wayfinding TfL Legible London Midilith.

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001.

5.10.5 LTNG.05

Lighting units should be high quality and robust. The ease of their future maintenance should be a relevant consideration to the choice of detailed light fittings.

5.10.5.1 Scheme response

The lighting designs for the Scheme have adhered to the relevant TfL Streetscape Guidance and relevant specifications.

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001.

5.10.6 LTNG.06

Lighting units should be selected to be coherent, consistent, and contribute to place making. They should also limit light pollution, improve energy efficiency and ensure equipment longevity

5.10.6.1 Scheme response

The units selected refer to TfL guidance and the existing palettes surrounding the Scheme.

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001.

5.10.7 LTNG.07

Notwithstanding the above requirements to reduce light pollution, lighting designs, wherever possible, should take into account the contribution made by lighting to create a sense of place, while complying with Streetscape Guidance or making an exception to the guidance where shown to be necessary.

5.10.7.1 Design development

Existing lighting provision has been reviewed and considered in the development of the Scheme, including how new lighting will tie into the existing road network.

Lighting will facilitate safe and secure wayfinding for all, users (pedestrians, cyclists and motorists) and is integral to the successful delivery of transport infrastructure.

The lighting of the Scheme has been developed through the design stages, in respect of these modes, to ensure effective CCTV, promoting the reduction of accidents or personal injuries, reducing fear of crime.

5.10.7.2 Scheme response

The lighting designs for the Scheme have integrated with the landscape designs

Reference should be made to the following Lighting Reports for detailed information:

- Street Lighting Design Report ST150050-ARU-ELC-ZZ-ZZ-RPT-LE-0001.
- Street Lighting BS 5489 Calculations is ST150050-ARU-ELC-ZZ-ZZ-CAL-LE-0001.

5.10.8 LTNG.08

Lighting proposals should contribute to the legibility of the proposed streetscape with clear distinctions made between vehicle, cycle and pedestrian environments.

5.10.8.1 Design development

Existing lighting provision has been reviewed and considered in the development of the Scheme, including how new lighting will tie into the existing road network.

Lighting will facilitate safe and secure wayfinding for all, users (pedestrians, cyclists and motorists) and is integral to the successful delivery of transport infrastructure.

The lighting of the Scheme has been developed through the design stages, in respect of these modes, to ensure effective CCTV, promoting the reduction of accidents or personal injuries, reducing fear of crime.

Lighting has been provided to the road network to support traffic movements. This high level lighting adheres to the Schedule 10 requirements of the DCO. TfL Streetscape guidance DMRB and current British Standards.

The proposed lighting installation on the TLRN will need to be CMS compatible.

This requirement has been balanced against their environmental impact - with the approach to provide lighting that meets rather than exceed the Schedule 10 requirements.

Materials chosen - lighting columns have been selected to acknowledge a Best value lighting solution for the network, to minimise maintenance complexity and ensure the Scheme promotes legibility and connectivity with its surroundings - tying into the road infrastructure approaches.

These are compatible with the TLRN lighting palette where appropriate and practicable.

5.10.8.2 Scheme response

The lighting elements within the landscape proposals have considered against relevant complementary guidance, in particular LSCP.03 and adhered to the guidance set out in LSCP.15.

Key design points to note:

- Lighting column offset from footways, to minimise clutter and reinforce legibility.
- Lighting columns used to light all users, to minimise clutter and reinforce legibility.

5.11 Silvertown Portal Design Principles - Review*

5.11.1 Introduction

The detailed design of the new tunnel portal at Silvertown should have regard to the need to coordinate in design terms with emerging adjacent future uses such as the Thames Wharf DLR station, mixed-use redevelopment and associated landscaping.

5.11.2 Principles overview

Codes	Design Principle (Synopsis)	Design Principle Response (Synopsis)
SILPO.01	If locating ancillary buildings adjacent to the tunnel portal impedes the development of adjacent development sites, the possibility of locating buildings and other uses under the Silvertown Way slip road should be explored.	The buildings have been located within the Non-Linear Work Limit of Deviation
SILPO.02	The detailed design of the tunnel portal and buildings should facilitate high quality pedestrian and cycle links between Royal Victoria DLR station and the proposed Thames Wharf DLR station.	A legible street network has been generated that supports movement east west across the area - to ensure clear connections between the DLR stations.
SILPO.03	The detailed design of the tunnel portal and buildings should not compromise the existing link under Silvertown Way.	The buildings have been located within the Non-Linear Work Limit of Deviation
SILPO.04	The detailed design of the approach road and portal structure should not prevent the future construction of a direct, pleasant foot and cycle bridge by a third party at a later date over the portal approach in between the proposed DLR station on Dock Road, Silvertown Way and Tidal Basin Roundabout.	The scheme does not negate the delivery of such a crossing structure by a third party.
SILPO.05	The detailed design of the portal structure should not prevent the future provision of an environmental canopy by a third party over the portal at a later date.	The scheme does not negate the delivery of such a structure by a third party.
SILPO.06	The design of the access road to the tunnel compound should be designed to support access to the currently disused spaces under the Silvertown Way flyover to unlock these spaces for future development.	The scheme supports the design guidelines

* This section provides a response to compound specific design guidelines. Reference should be made to the architectural compound package for further detail:

Newham Portal Building Architectural Report (ST150030-DRM-PRM-17-Z14-RPT-AR-0001)

5.11.3 SILPO.01

If it is found that locating ancillary buildings and uses adjacent to the tunnel portal would impede the optimum development of adjacent development sites, the possibility of locating buildings and other uses under the Silvertown Way slip road should be explored. This would be subject to appropriate access, maintenance, safety and security requirements.

5.11.3.1 Scheme response

The buildings have been located within the Non-Linear Work Limit of Deviation as per drawing STWTN-ATK-GEN-XXXX-DR-Z-3083 (Revision: P04), Author: Atkins

(Work 17 Boundary - Non-Linear Work Limit of Deviation).

The area in red denotes where parking is to be utilised under the Silvertown Way.

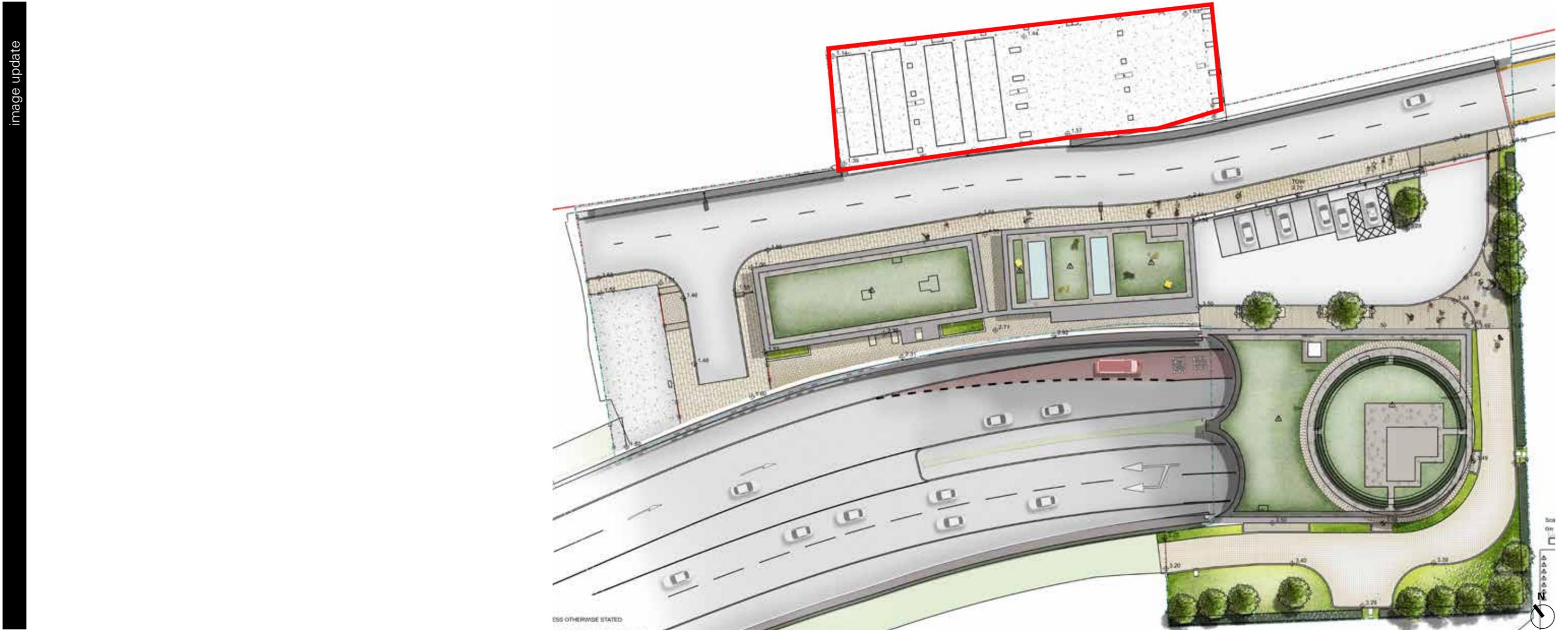


Figure 135. Plan of compound area with access road

5.11.4 SILPO.02

The detailed design of the tunnel portal and buildings should facilitate high quality pedestrian and cycle links between Royal Victoria DLR station and the proposed Thames Wharf DLR station.

5.11.4.1 Design development

The Schemes layout for the tunnel portal and buildings is dictated by the DCO. through the design development the Scheme has focused on ensuring a coherent approach to the street network in reference to the guidance set out in the LSCPs.

The location of the compound and portal is such that it does not impact on facilitating the key pedestrian and cycle links that are promoted by the Scheme between the Royal Victoria DLR station and the proposed Thames Wharf DLR station.

To the south - the road network has been improved (refer to LSCP) to deliver a better pedestrian and cycle network, introducing in particular a segregated off carriageway cycle lane along Dock Road.

To the north - the road network has been improved (refer to LSCP) to deliver a better pedestrian and cycle network, introducing in particular a segregated off carriageway cycle across the TBR, and a shared route through the TBR.

Both interventions improve the existing network, through improved surfacing widening of infrastructure installation of, off carriageway, installation of additional off carriageway cycle routes and the provision of signalised crossing points, to ensure safe and secure road crossing for pedestrians and cyclists.

5.11.4.2 Scheme response

A legible street network has been generated that supports movement east west across the area - to ensure clear connections between the DLR stations. This network is supported with the used of Legible London signage as wayfinding. Reference should be made to the the LSCPs responses in this document.

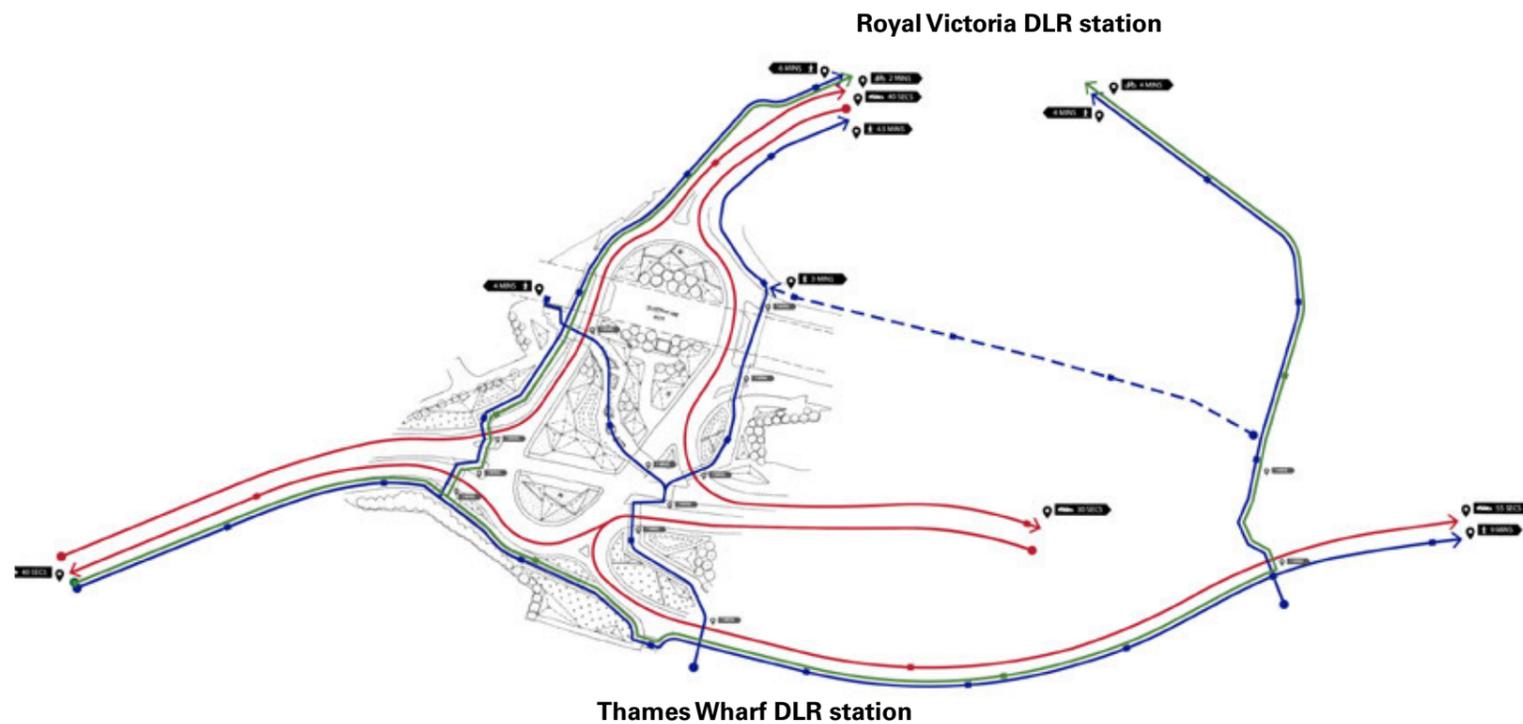


Figure 136. Schematic plan to demonstrate movement of Scheme users

5.11.5 SILPO.03

The detailed design of the tunnel portal and buildings should not compromise the existing link under Silvertown Way (at the south of the site) from Dock Road and the proposed Thames Wharf DLR station to Royal Victoria Dock.

5.11.5.1 Design development

The location of the tunnel buildings (in yellow on the plan) and portal (in blue on the plan) is such that it does not compromise the existing link under Silvertown Way (to the south of the site).

The scheme provides for an improved Dock Road with better pedestrian and cycle network, introducing in particular a segregated off carriageway cycle lane of 3.0m and a dedicated footpath to both sides - 2.0m.

These improvements will facilitate movement from through the Scheme between the Royal Victoria DLR station and the proposed Thames Wharf DLR station.

5.11.5.2 Scheme response

The buildings have been located within the Non-Linear Work Limit of Deviation as per drawing STWTN-ATK-GEN-XXXX-DR-Z-3083 (Revision: P04), Author: Atkins.

(Work 17 Boundary - Non-Linear Work Limit of Deviation).

The tunnel portal and buildings are located to the north of the Silvertown Way pedestrian Link to ensure connections are maintained between Dock Road the Docks and between DLR stations.

Reference should be made to LSCP.06 and SILPO.02 in this report.

image update

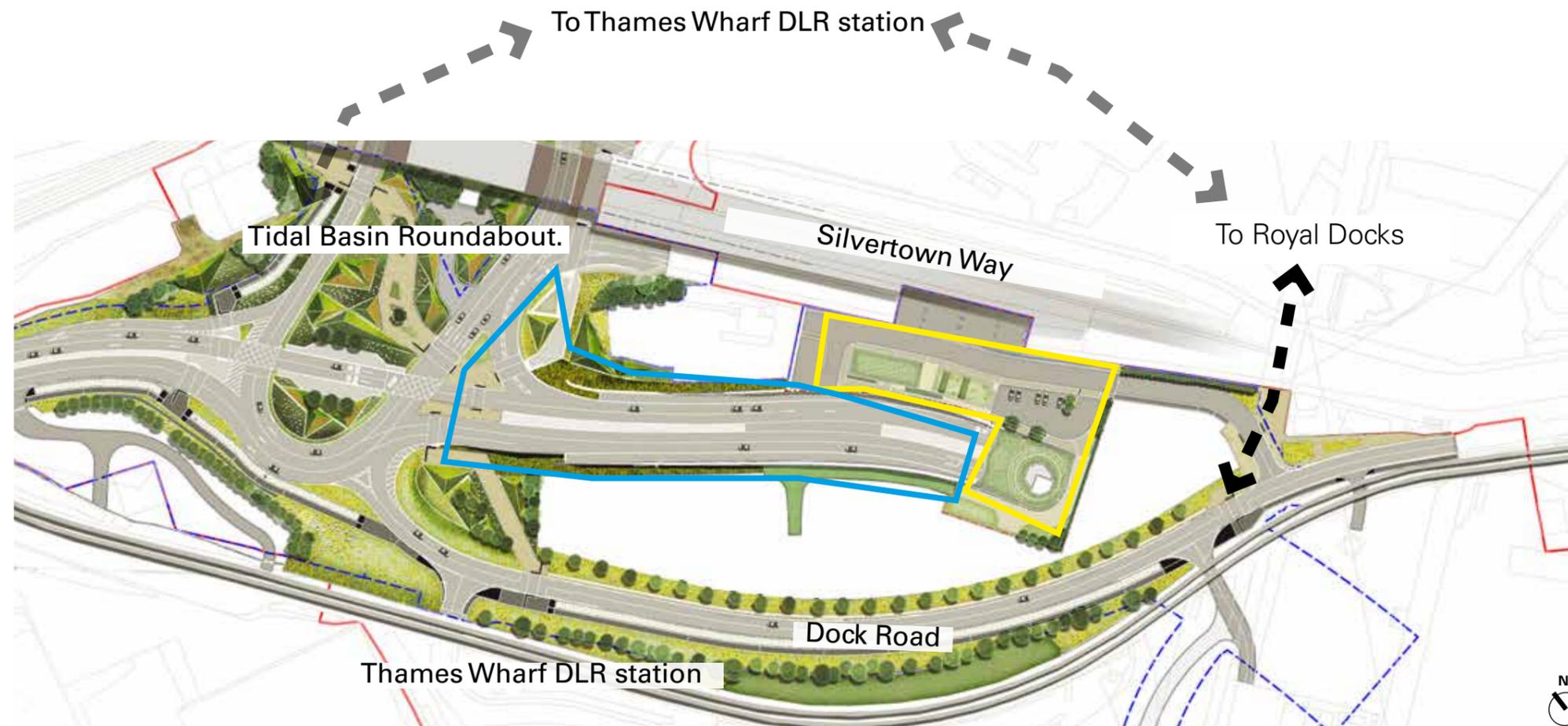


Figure 138. Plan of compound area with access road

Figure 137. Plan of compound area with access road

5.11.6 SILPO.04

The detailed design of the approach road and portal structure should not prevent the future construction of a direct, pleasant foot and cycle bridge by a third party at a later date over the portal approach in between the proposed DLR station on Dock Road, Silvertown Way and Tidal Basin Roundabout.

5.11.6.1 Scheme response

The scheme does not negate the delivery of such a crossing structure by a third party.

5.11.7 SILPO.05

The detailed design of the portal structure should not prevent the future provision of an environmental canopy by a third party over the portal at a later date, in order to provide additional visual screening of the road. This would require all appropriate permissions and additional air quality modelling.

5.11.7.1 Scheme response

The scheme does not negate the delivery of such a structure by a third party.

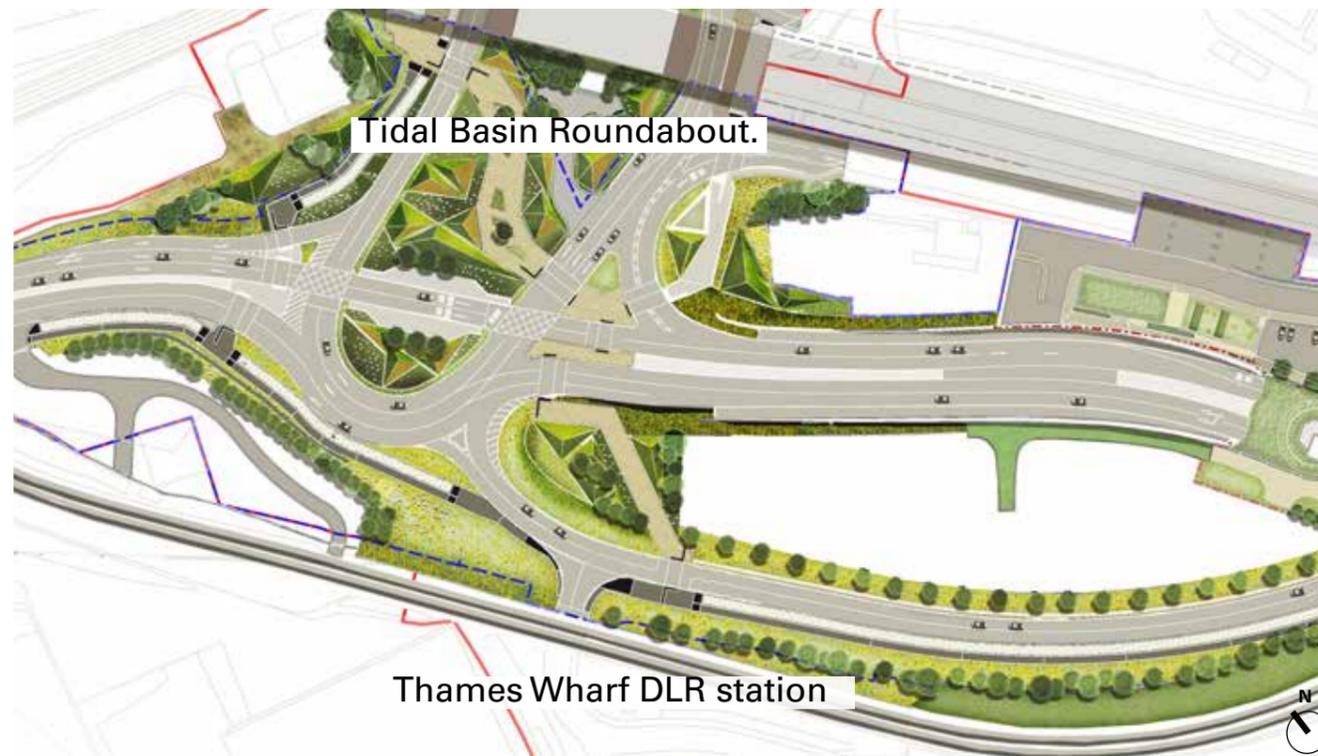


Figure 139. Plan of area

image update

5.11.8 SILPO.06

The design of the access road to the tunnel compound should be designed to support access to the currently disused spaces under the Silvertown Way flyover to unlock these spaces for future development.

This should include consideration of the most appropriate street layout to enable the access road to be safely used by pedestrians, cyclists, service vehicles and local access.

It should also consider the potential for additional connections under the flyover.

5.11.8.1 Design development

The location of the compound and portal is such that it does not impact on facilitating the delivery of a new road (to be named) to access the tunnel portal compound.

The road has been sited adjacent to the Silvertown flyover (to the east) and the tunnel portal compound. (to the west). This layout allows for future access to and use of the currently disused spaces by a third party.

It is proposed to utilise these disused spaces for vehicular parking to service the compound.

The Scheme proposals ensure to not negate the delivery of additional connections under the flyover.

The scheme provides to the pedestrian footpath to utilise the controlled crossing at the Dock Road Junction, with a footway located on the western side of the new access road, to removes uncontrolled crossing of pedestrians and unnecessary movement to the east adjacent the Silvertown Way flyover.

Connections beneath the flyover are not deemed suitable as part of a pedestrian street network, primarily due to safety concerns and the arrival to the back of house of buildings on the east of the flyover, generating a unsafe and unattractive route. The proposals though do not negate the development of routes by a 3rd party in the future.

5.11.8.2 Scheme response

The scheme supports the design guidelines, utilising SILPO.01 to utilise access to an area under Silvertown Way.



Figure 140. Plan of compound area with access road