The example below illustrates this concept where a location with the highest levels of both movement and place function would be classified as M3/P3 (characterised by the RTF as a City Hub).

3.1.2 THE MOVEMENT AXIS

Streets in the Royal Docks perform a wide range of movement functions from roads carrying very high volumes and mixes of vehicular traffic and people, to streets which only provide for local access.
The classification of a street along the movement axis is determined by its strategic importance, its impact on the overall resilience/performance of the network, the proportion of longer distance trips and the overall volume of people movement (including pedestrians).

3.1.3 THE PLACE AXIS

In addition to their role as movement corridors, streets in the Royal Docks perform a variety of functions specific to place, which include living, unlocking and functioning. They have an impact economically and on quality of life, with decision-makers and professionals increasingly recognising the importance of successful places to the growth and vitality of an area. Streets and roads are also the foreground to a specific built environment, and the most successful streets are those that respect and refer to it. As with movement, a street's allocation along the place axis is determined by its gravity, ie how attractive it is in terms of both numbers of people and how far they are prepared to travel to visit the location.

Example of Street Types mapping process

3.1.4 BRINGING THEM TOGETHER

Streets are mapped against both axes, creating separate layers illustrating movement and place. These layers are then combined into a Street Types map, to reflect the combination of local and strategic perspective in terms of the movement of people and goods and importantly where the most significant places are within an area, borough or sub-region. This step also allows both highway authorities to note the mix/balance of modes within movement, the nature of the built environment/aesthetic quality and character and success of different places.

3.1.5 A PRACTITIONER'S RESPONSE TO STREET TYPES

For Street Types along the bottom row, there could be a light touch approach given their lower significance in network terms. For a core road the focus could be to support reliable and efficient movement for the maximum number of people while seeking to mitigate the impact on communities that live alongside (for example, noise, air pollution and severance). In terms of pedestrian crossings, how long a pedestrian may expect to wait to cross a high street may be different to the waiting time on a busy core road where the focus on people movement and journey time along the corridor will be greater, and provision for pedestrians wishing to cross consequently less. At a strategic level it is the relative cost of the additional wait time for both types of movement and how appropriate it is to balance their needs. However, it is important to note that Street Types do not advocate a prescriptive response but merely highlight where competing demands for space or time may require a bespoke solution.

Speed limits can also play an important role where movement and place function need to balance, where there are high levels of pedestrian and cycling activity and where safety issues need to be tackled. A slower speed environment could deliver significant benefits in many places and for particular users, with less adverse impacts for people movement (for example vehicular flows) than other potential interventions.

3.2 MAPPING STREET TYPES IN THE ROYAL DOCKS

We have completed workshops with LBN to classify every road in the borough. The existing Street Type map is due to be completed in summer 2015, however we have included the diagram opposite showing the existing movement hierarchy in the Royal Docks. For the purposes of this project a subsection of Newham was adopted around the Royal Docks to complete a prototype future Street Type exercise.

3.2.1 EXISTING STREET TYPES

Existing Street Types will provide a benchmark against which changes in transport function can be assessed; similarly, they can set a common context across the area to support design decisions, highlight where similar schemes have been successful and illustrate where aspiration and current performance are creating a challenge for future delivery.

Currently a circuit of strategic and distributor routes serves the Royal Docks, with a patchy coverage of local streets and some significant gaps where there is very poor permeability.

3.2.2 FUTURE STREET TYPES

Mapping future Street Types helps us define where parts of the network suffer from performance problems (for both movement and place), whether solutions to those problems are scheduled for delivery or whether future growth may generate additional pressure requiring major intervention. This allows us to understand whether existing plans for mitigation are appropriate or whether more fundamental changes are required to deliver successful places suitable for a range of users.

The diagrams overleaf show the results of the future Street Type exercise for the Royal Docks. The two scenarios are largely defined by the outcomes of the work we are currently undertaking around potential new river crossings (Silvertown Tunnel and East of Silvertown).

Many Street Types will not change classification (particularly local roads) but the application of a design palette across the area will generate consistent items of infrastructure. Similarly we can use this pilot exercise to understand how best to deliver major infrastructure, such as potential new river crossings, without disrupting community cohesion in the areas unlocked by new development.

3.2.3 FUTURE STREET TYPES - SCENARIO A

Scenario A represents a future scenario whereby either:

- The current status quo is maintained and no new river crossings are delivered, or
- The Silvertown Tunnel is delivered but no new vehicular river crossing is provided to the east of Silvertown at Gallions Reach or Belvedere

With both of these variables, the North Woolwich Road - Connaught Bridge - Royal Albert Way connection would need to remain strategic in terms of its movement function in order to provide resilience when there are problems elsewhere in the network.

3.2.4 FUTURE STREET TYPES - SCENARIO B

Scenario B represents a future scenario where the Silvertown Tunnel is delivered and a new vehicular cross river connection is delivered east of Silvertown at either Gallions Reach or Belvedere (replacing the Woolwich Ferry).

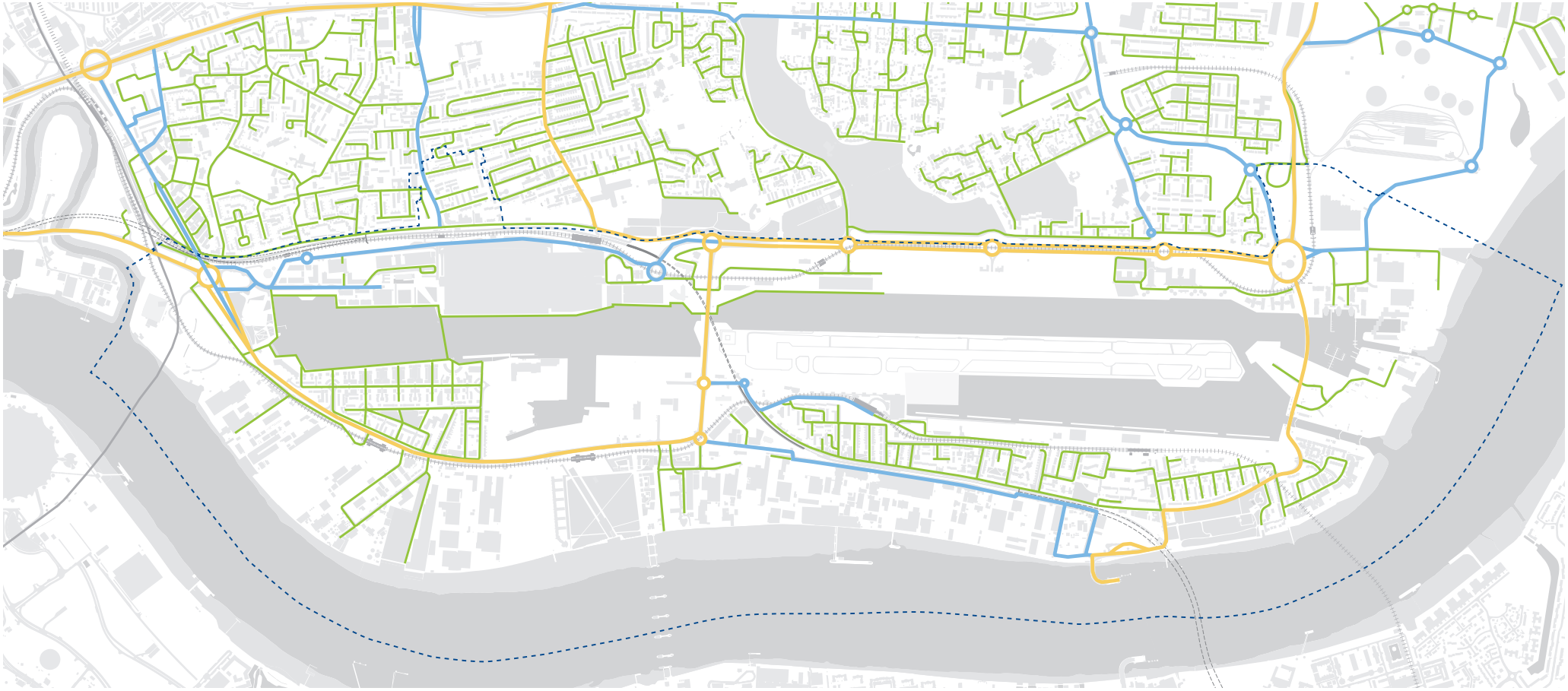
In this scenario the North Woolwich Road - Connaught Bridge - Royal Albert Way link would no longer be required for resilience as alternative routes would be provided. With the closure of the Woolwich Ferry, a section of Royal Docks Road, Woolwich Manor Way and Albert Road would also be downgraded in movement function from strategic to distributor.

In both scenarios A and B the main routes around the Royal Docks that connect development plots and emerging centres or destinations, such as North Woolwich Road, would see an increase in their place function.

3.2.5 TIMESCALES

The timescale for scenario A could be short to medium-term as the major changes in Street Type definition come primarily through an upgrade in place function around development areas, while the movement function remains largely the same.

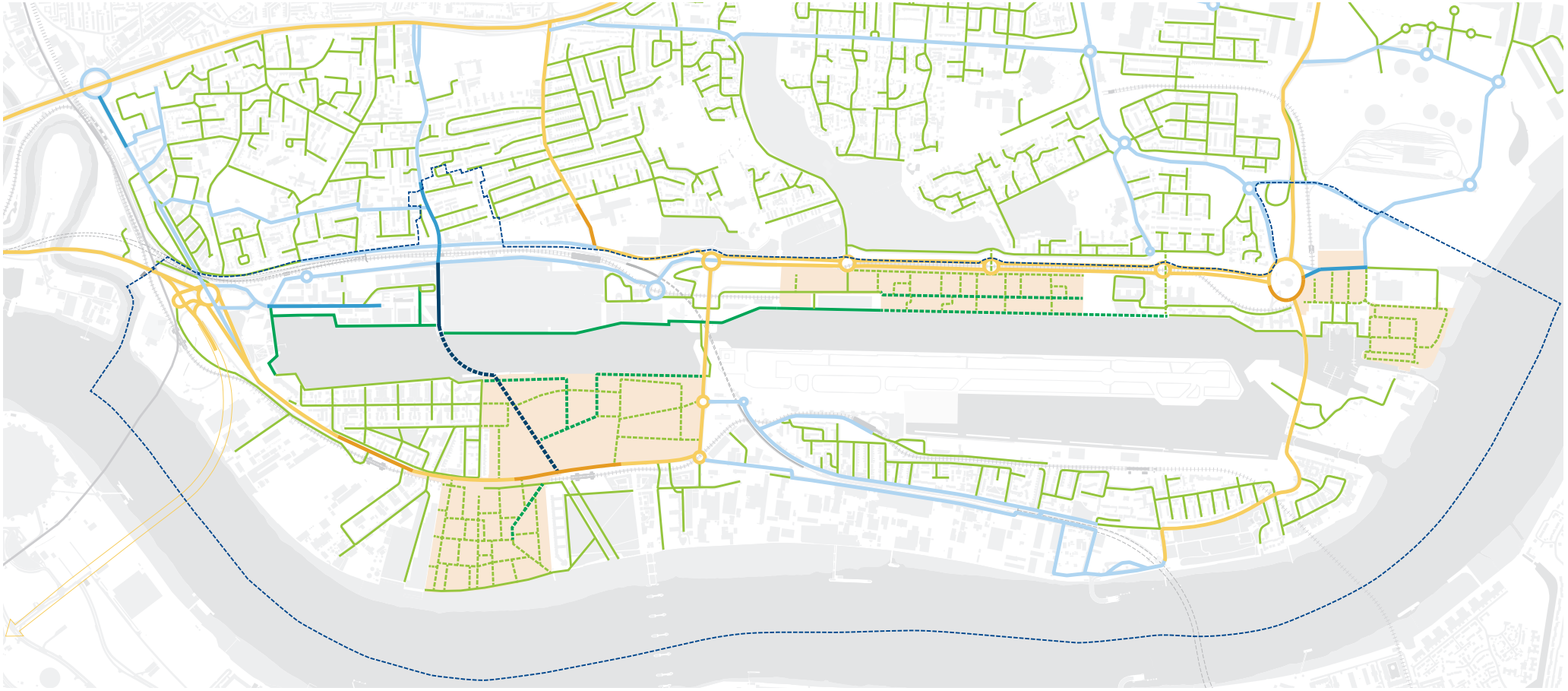
Scenario B would represent a medium to long-term scenario as the downgrading of the movement function of several strategic routes in the Docks is reliant on the delivery of new river crossings (estimated opening mid 2020s).



Royal Docks existing movement hierarchy, TfL 2015

- Strategic
- Distributor
- Local

- Study area boundary



Royal Docks future street types - scenario A

Development sites and proposed new connections

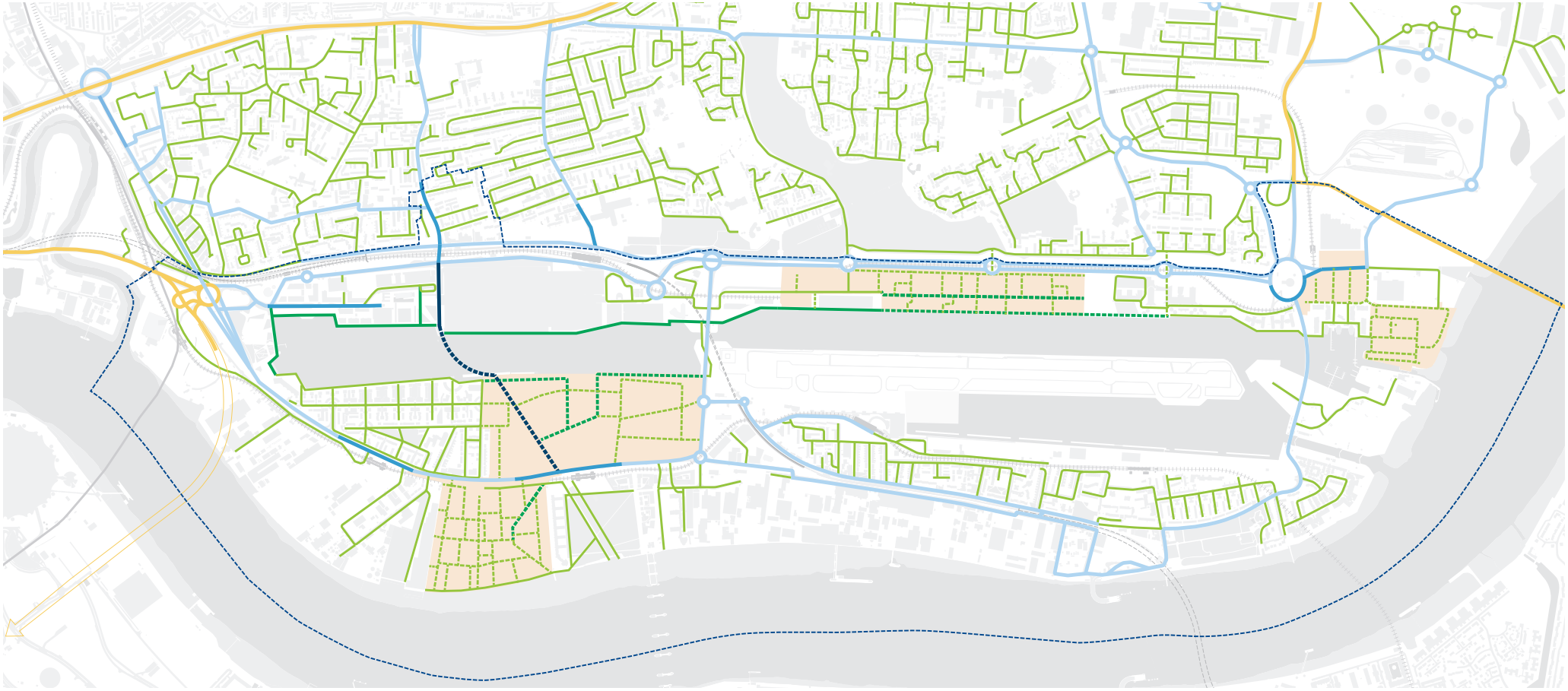
Study area boundary

Scenario A represents a future situation where:

- The current status quo is maintained and no new river crossings come forward, or
- The Silvertown Tunnel is delivered but no new vehicular crossing is provided to the east of Silvertown at Gallions or Belvedere

With both of these variables, the North Woolwich Road - Connaught Bridge - Royal Albert Way connection would need to remain strategic in terms of its movement function in order to act as a resilience route when required.

Royal Docks Road - Woolwich Manor Way - Albert Road will also remain a strategic connection linking the A13 to the Woolwich Ferry.



Royal Docks future street types - scenario B

Development sites and proposed new connections

Study area boundary

Scenario B represents a future situation whereby:

- The Silvertown Tunnel is delivered, and
- The Woolwich Ferry is replaced with a new vehicular river crossing to the east at Gallions Reach (shown above) or Belvedere (off the map)

In this scenario the North Woolwich Road - Connaught Bridge - Royal Albert Way link would no longer be needed for resilience and could be downgraded in movement terms from strategic to distributor.

With the closure of the Woolwich Ferry, a section of the Royal Docks Road - Woolwich Manor Way - Albert Road link could also be downgraded in movement function from strategic to distributor.

CORE ROADS

3.3 CORE ROADS

Core Roads provide reliable routes for strategic movement. These routes carry people and goods through the Royal Docks to areas around London and are critical to the city's functionality.

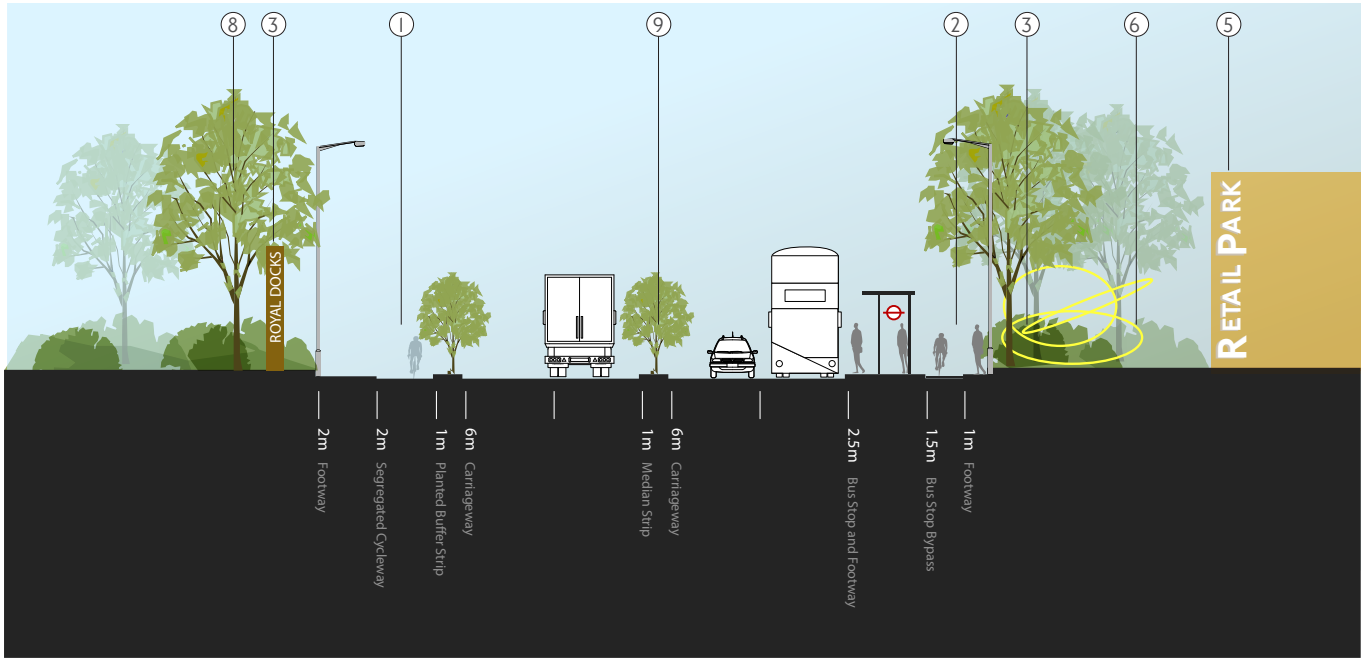
We traditionally associate Core Roads with wide corridors carrying multiple lanes of traffic, which can be intimidating for pedestrians and cyclists if appropriate mitigation is not put in place. These routes can however be well integrated places, with a positive streetscape environment that works well in both movement and place terms.

Priorities for Core Roads include:

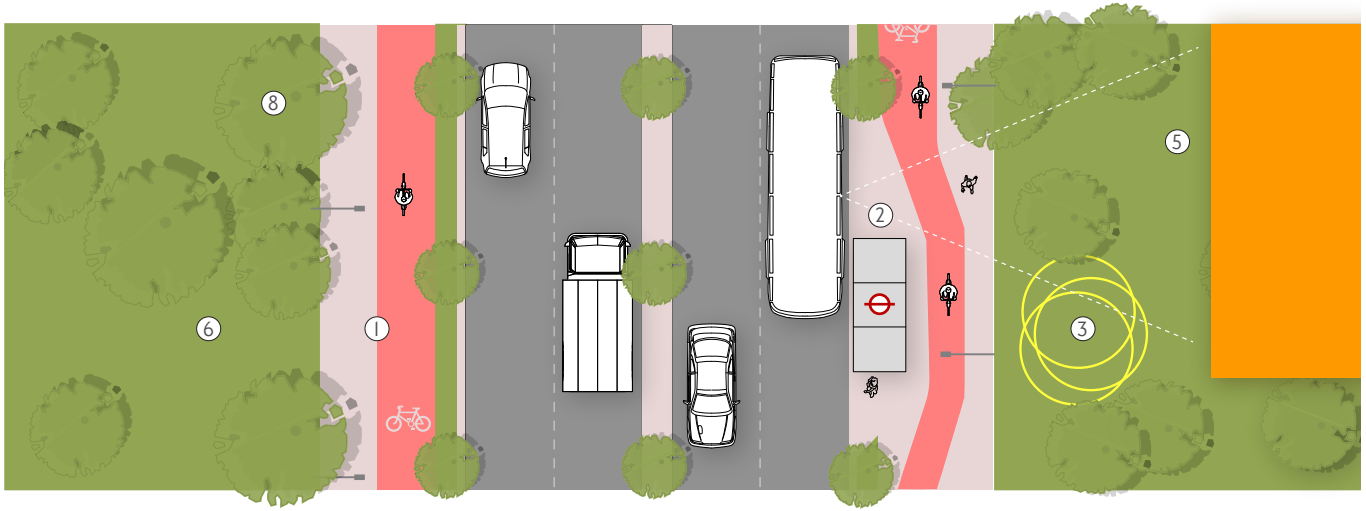
- Ensuring reliable journey times for strategic movement
- Improving the relationship between the road and the areas it passes through
- Reducing severance by providing safe and well located crossings for pedestrians and cyclists
- Improving perception of safety for pedestrians on footways and in places where people dwell such as around bus stops
- Mitigating noise and air quality impacts associated with routes carrying lots of traffic

3.3.1 DESIGN PRINCIPLES

1. Generous and uninterrupted express cycle routes should be provided, preferably separated from traffic by a buffer (with landscaping incorporated where possible). These should be well signed and integrated into the wider cycle network
2. Bus stop bypasses should be used where possible to allow uninterrupted cycle movement along these strategic routes
3. 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
4. Clear and legible thresholds should be created where connecting routes join Core Roads
5. Where possible sight-lines should be opened up to local landmarks such as the waterways, marker buildings or local destinations
6. In less built-up areas ecological corridors should be created and maintained to provide habitat for local species while also playing an important sustainable urban drainage (SUDS) function
7. Pedestrian crossings should be located on desire-lines and designed to put the pedestrian first. Guard-railing should be avoided unless absolutely needed and removed where possible
8. Planting of large shrubs and mature trees should be encouraged to help mitigate the impact of noise and improve air quality along Core Roads



Example cross section of a Core Road in the Royal Docks



CLOCKWISE FROM TOP LEFT:

Public art used as a location marker, Leyton

High-quality pedestrian crossing facilities, Euston Circus

Proposal for segregated cycleway, Bounds Green

HIGH ROADS

3.4 HIGH ROADS

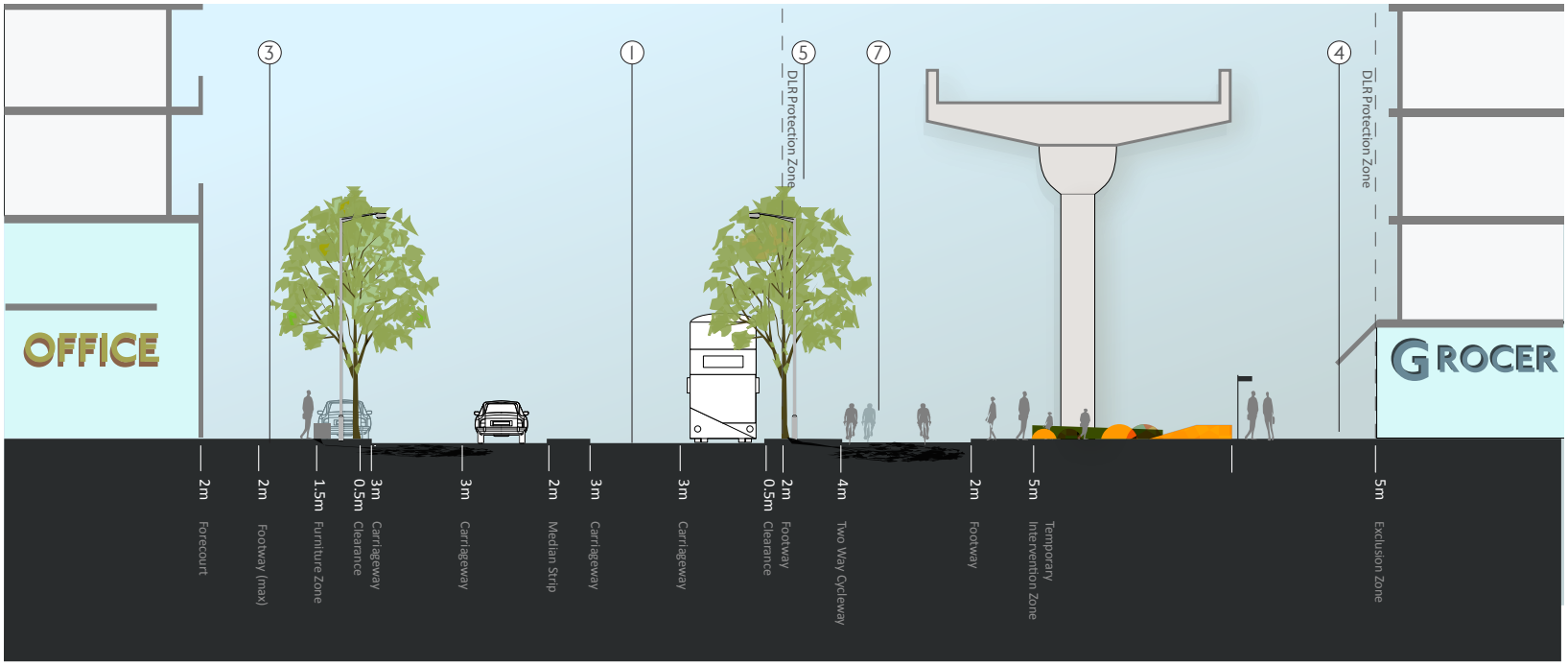
High Roads provide reliable corridors for high levels of movement while performing some important functions for local daily life in the Royal Docks. Journeys on High Roads can be both local and strategic. They support a range of uses including retail, residential, employment and civic functions by encouraging on-street activity while allowing for a relatively high movement function. The volume and types of traffic using potential new High Roads in the Royal Docks will create a challenge in providing sustainable and healthy new neighbourhoods.

Priorities for High Roads include:

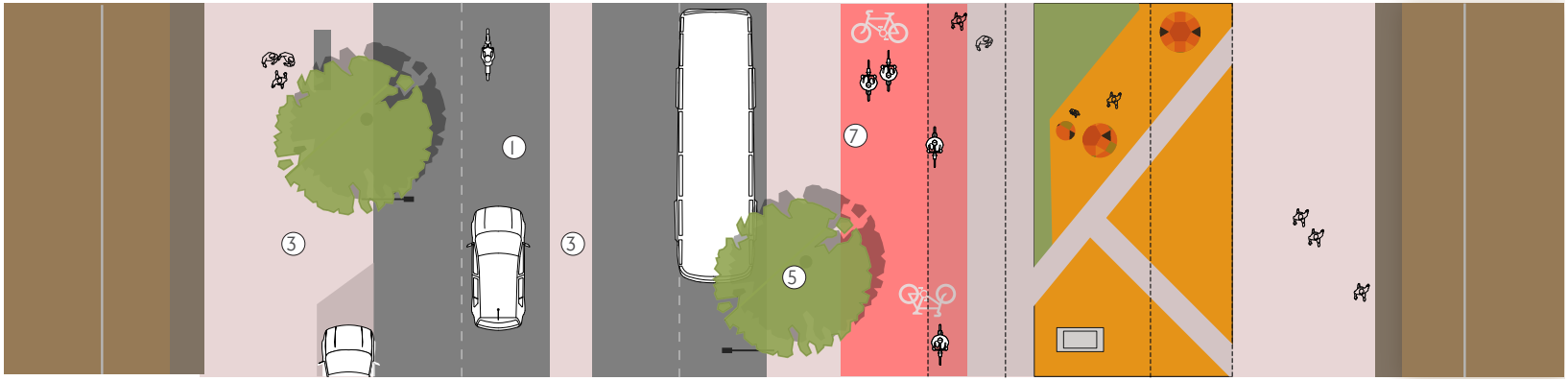
- Ensuring a consistent treatment along these corridors, helping to build their local identity and sense of place
- Creating opportunities for public life to grow and thrive, using development to define local character and investing in improvements to the public realm
- Providing good pedestrian crossing facilities at grade where there is a need
- Providing safe cycleways, fully or partially segregated, to make cycling a more attractive option for local journeys as well as more strategic travel

3.4.1 DESIGN PRINCIPLES

1. The street cross section should limit carriageway width where possible, yet provide segregation of modes where demand suggests it appropriate due to mix of traffic speeds or volume. Two lanes of traffic in each direction will ensure smooth movement of buses, private vehicles, taxis and freight services, and safeguard opportunities for bus priority measures in the future
2. On-street servicing should only take place within controlled hours
3. De-cluttered streetscape with wide footways and regular crossings. Wide median strips can be used to facilitate informal crossing in areas of high footfall. Medians can also be used for visual narrowing, breaking up the impact of wide areas of carriageway
4. Local retail, lobby entrances and forecourts should be encouraged at regular intervals to enhance on-street activity
5. Generous tree planting should be used to frame the street corridor, create a more human scale and provide shade and shelter for pedestrians
6. Bus stops should be well integrated into the streetscape in well-considered locations, in order to maximise on their role as generators of on-street activity
7. Continuous segregated cycleways should be connected into the wider cycle network designed with regular breaks, for drainage and the required pedestrian and vehicular access, and to allow cyclists to exit and enter as required. Any gap for cyclists should be at least two metres wide to allow for passage of all types of cycle
8. Consider cycle hire docking stations on wide footways



Example cross section of a High Road in the Royal Docks



FROM TOP:

Providing a mix of active and passive ground floor uses, Hamburg

Clearly defined segregated cycleways, Hamburg

Streetscape improvements including lighting to contribute to sense of place, Stratford High Street

CONNECTORS

3.5 CONNECTORS

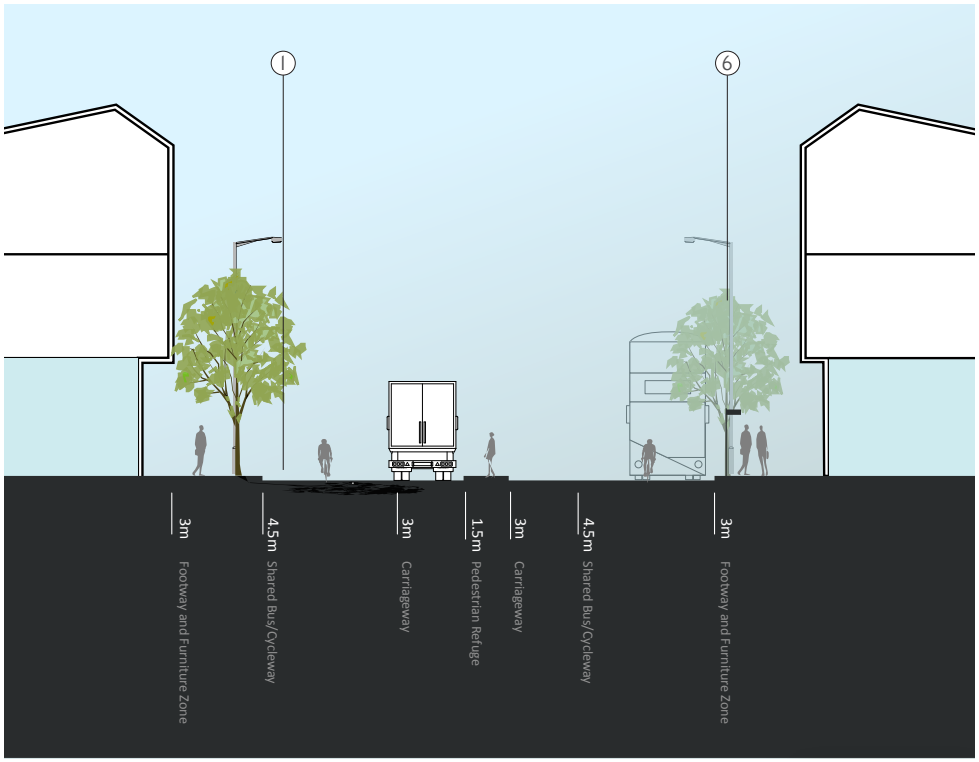
Connectors provide important links between established and emerging 'places' within the Royal Docks. Over time as former industrial sites are developed for other uses the place function of some Connectors may increase in attraction to the extent that they become High Streets. A range of modes use Connectors and these routes provide opportunity for more strategic cycleways through the Royal Docks area.

Priorities for Connectors include:

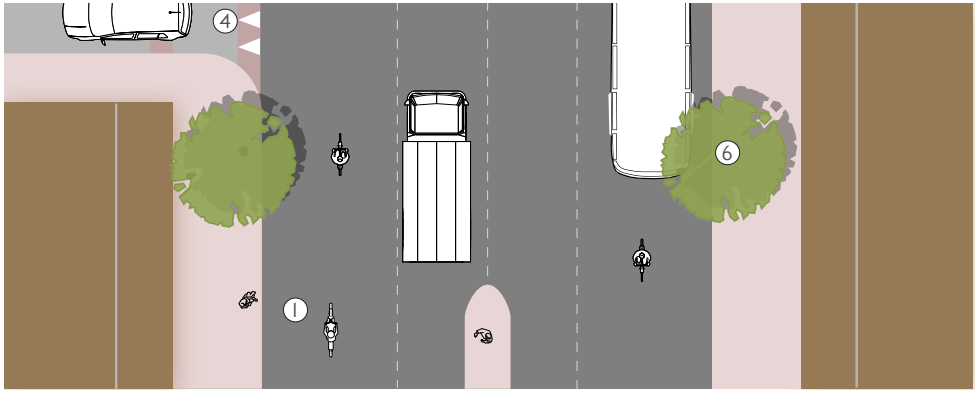
- Enhancing their movement role as efficient all mode corridors connecting neighbourhoods along clear, de-cluttered streets
- Improving legibility and wayfinding, ensuring that those using Connectors are made aware of destinations in the wider area
- Ensuring that movement flows smoothly, avoiding issues of congestion at peak hours
- Providing well lit pedestrian routes which encourage walking as a form of active travel
- Locating bus stops in well lit areas with overlooking where possible

3.5.1 DESIGN PRINCIPLES

1. Connectors should provide direct cycleways which are appealing to cyclists for local and longer distance journeys. These can be shared facilities on carriageway or segregated facilities as appropriate to the location
2. Well designed junctions will ensure safe and efficient movement of vehicles and cyclists
3. High-quality, regular pedestrian crossing facilities should be provided
4. Better transitions with the local street network will improve the relationship between Connectors and the surrounding neighbourhoods. Side road entry treatments should be used to give priority to pedestrian movement
5. Seamless transition to High Streets should be achieved, with intensity building along the corridor. High-quality signage will improve wayfinding to local destinations and public transport hubs
6. Street trees will help to mitigate the environmental impact of the traffic and create a high-quality 'avenue' feel to these routes, enhancing their role as the approach routes to more intense destinations. Species of tree chosen will be informed by the width and scale of the street



Example cross section of a Connector in the Royal Docks



CLOCKWISE FROM TOP LEFT:
Legible London finger post, TfL
De-cluttered streetscape, Harrow
Upgraded pedestrian crossings, Bloomsbury
Full cycle segregation, Copenhagen

HIGH STREETS

3.6 HIGH STREETS

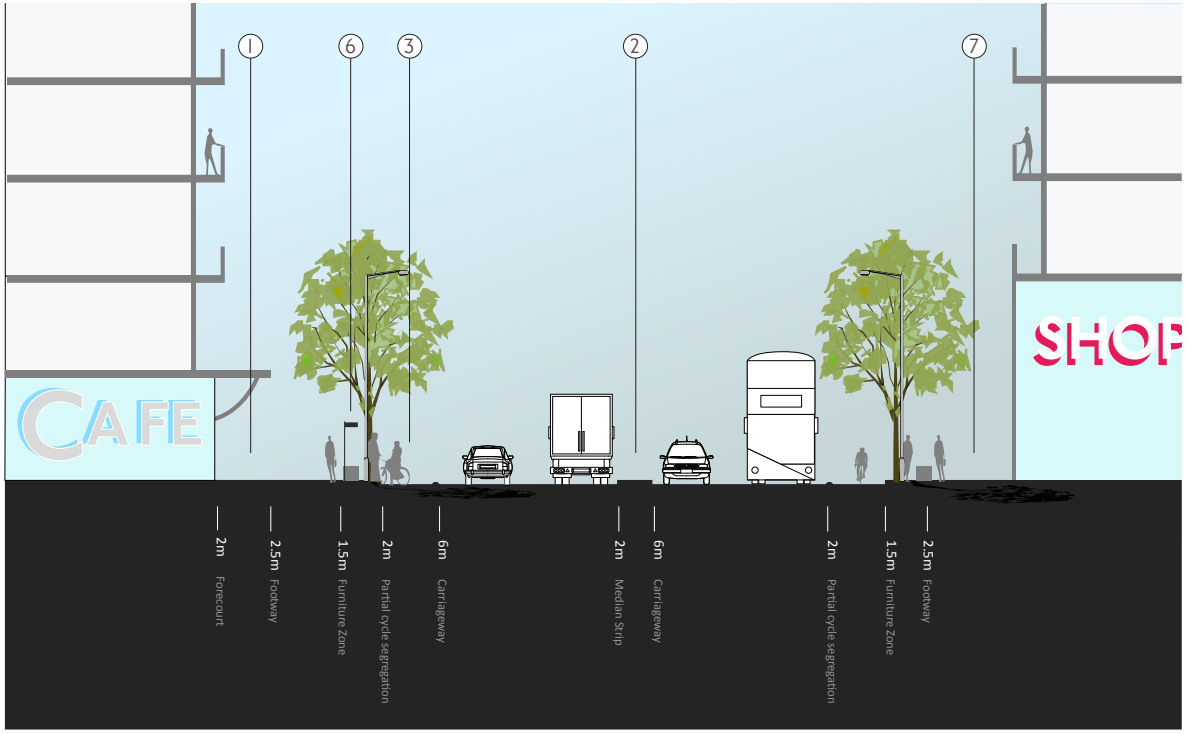
High Streets provide the setting for daily life, playing host to a range of activities including local retail, services and social infrastructure. High Streets in the Royal Docks may be focused around DLR stations or gateway locations where there is strong opportunity to harness increased pedestrian activity.

Priorities for High Streets include:

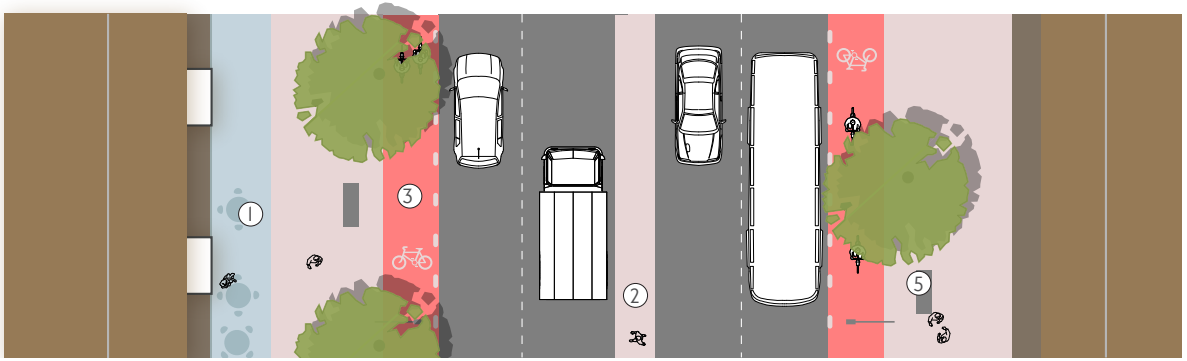
- Enhancing their place function in the Docks as localised centres of activity
- Attracting footfall and anchoring it with the development of a high-quality public realm and active uses that meet the needs of the local community
- Calming movement in these areas to improve the environment for pedestrians and cyclists
- Integrating public transport infrastructure into a cohesive streetscape

3.6.1 DESIGN PRINCIPLES

1. Active and engaging uses fronting the street and provision for outdoor seating where this can enhance the character and experience of the street
2. Wide pedestrian crossings surfaced in a contrasting coloured material, with median strips where appropriate to facilitate additional informal crossing. Medians can also be used for visual narrowing, breaking up the impact of wide areas of carriageway
3. Continuous, dedicated cycle provision seamlessly connecting into the wider network. Traffic calming measures to improve safety in areas where cyclists share the road with motorised traffic
4. Provision of additional facilities for cyclists, including cycle parking located in close proximity to public transport hubs and other destinations. Explore the use of median strips to accommodate cycle parking reducing clutter on the footways
5. Generous landscape and street furniture zones with seating and tree planting to provide shade, shelter and places to rest
6. Use of a high-quality signage system such as Legible London to improve wayfinding through the area
7. Hard landscaped public areas should be designed with the flexibility to allow for a range of active uses such as street markets or events
8. SUDS features such as bio-retention pits should be integrated into the design of landscaping within the public realm



Example cross section of a High Street in the Royal Docks



CLOCKWISE FROM TOP LEFT:

Generous footways providing opportunity for overspill uses and activation of the public realm, Southwark

Design of the streetscape to facilitate ease of pedestrian movement and crossing, Barking

Enhancing sense of place through the use of materials, Bexleyheath

Clear and de-cluttered footway, Twickenham

Use of widened median strip for cycle parking, High Street Kensington

CITY STREETS

3.7 CITY STREETS

City Streets provide world-class, pedestrian friendly environments with excellent connections to the wider transport network.

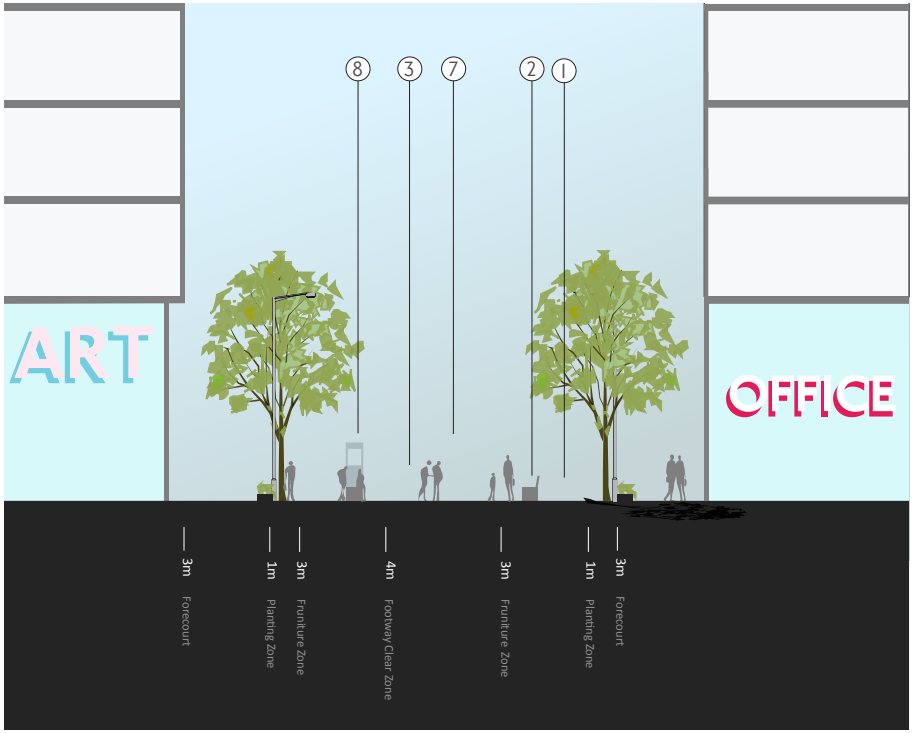
City Streets in the Royal Docks will be widely known for their concentration of commercial and cultural on-street activity. They will link major destinations and public transport hubs and become focal points for visitor activity in the area as well as providing places for the local community to come together.

Priorities for City Streets include:

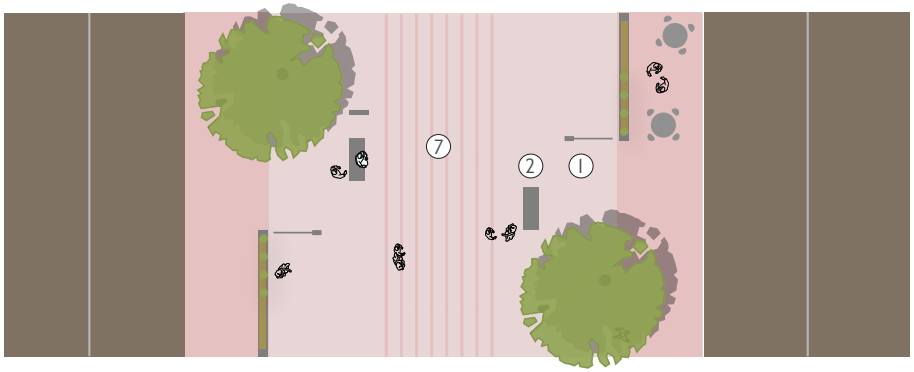
- Attracting people through active and animated streetscapes
- Providing a world class public realm which supports the free movement of people along major desire lines
- Creating a lasting memory of the Royal Docks as a place to live, visit and do business in

3.7.1 DESIGN PRINCIPLES

1. Generous footways and pedestrian areas, allowing for high volumes of footfall in an uncluttered streetscape
2. Regular seating opportunities to provide places for people to rest and experience the street
3. Clear definition of pedestrian priority, especially at junctions with adjoining streets where crossings should be surfaced to prioritise pedestrian and cycle movement
4. Clear connections to public transport infrastructure
5. Design of the street should allow for flexibility in terms of use at different times of day. Servicing and deliveries should be carried out outside of peak hours
6. High-quality cycle provision should be ensured, with well signed alternative routes in pedestrianised areas where cycling isn't accommodated
7. In pedestrianised areas, a clear area of footway should be retained for emergency vehicle access
8. Good sight-lines will be important as well as wayfinding information such as Legible London, in order to improve links between destinations



Example cross section of a City Street in the Royal Docks



CLOCKWISE FROM TOP:

Shared surface street; Southampton

Pedestrian priority, supporting high levels of footfall, New Road, Brighton

Destination space creating opportunities to sit and spend time, The Cut

Clear sight-lines supported by orientation of buildings, paving design and landscaping, More London

LOCAL STREETS

3.8 LOCAL STREETS

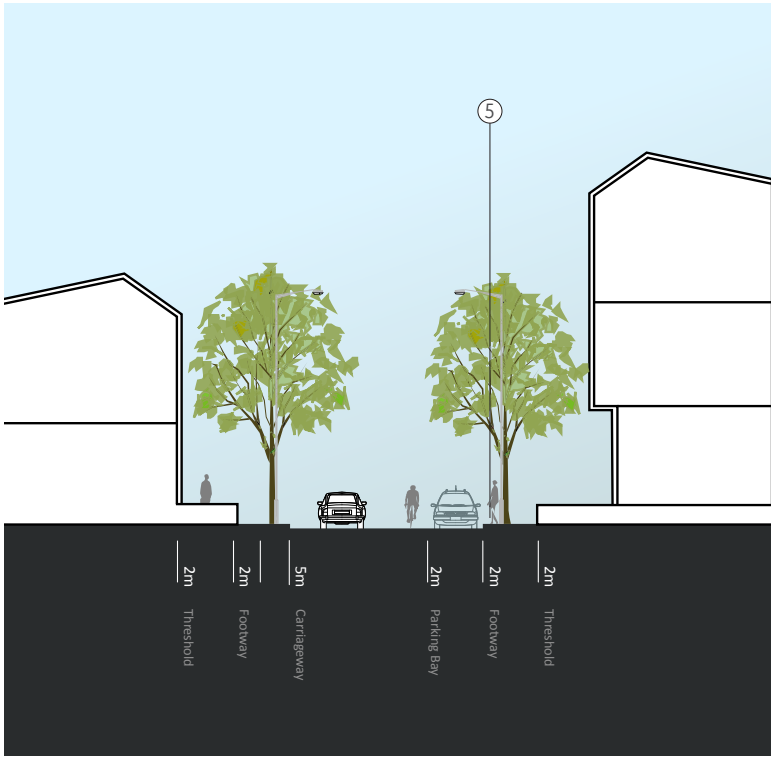
Local Streets in the Royal Docks should give priority to pedestrian and cycle movement with slow-moving vehicles predominantly accessing homes or local amenities. Local Streets provide a finer network of permeability, stitching together neighbourhoods and providing access to the River and Dock edges.

Priorities for Local Streets include:

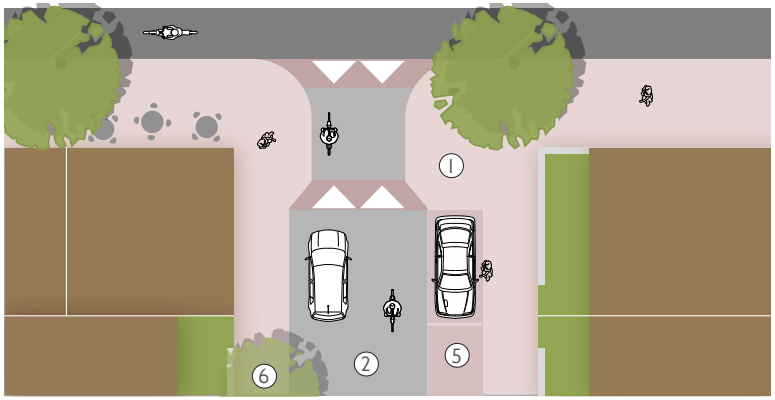
- Calming movement of motorised traffic. Cycling should be at a leisurely pace, cars moving at the speed of cyclists and all giving way to pedestrians, creating an accessible and safe pedestrian environment for all ages and abilities
- Providing places for the community to congregate and interact, including provision of informal play or the creation of pocket spaces where appropriate
- Providing well signposted links to local destinations including the River edge and the Docks

3.8.1 DESIGN PRINCIPLES

1. Threshold treatments such as build-outs or raised side road entry treatments will mark the transition in scale, character and intensity. Traffic calming through change in surface treatment will improve the environment for pedestrians
2. Streets should be narrow with two-way movement and no centre line to increase vigilance and awareness of all other road users
3. Filtered permeability should be explored on specific streets to give space back to pedestrians and cyclists
4. Public transport should be easily accessible with connections well signposted to make this a more attractive option for local residents
5. Local Streets should provide some residential parking including car club provision
6. Tree planting and soft landscaping (including SUDS) should be incorporated into the streetscape where possible



Example cross section of a Local Street in the Royal Docks



CLOCKWISE FROM TOP:

Shared space in a residential environment, Cambridge

Royal Docks streetscape improvements, Pier Road

Filtered permeability, Southwark

Well integrated on-street parking, Hafencity Hamburg

TOWN SQUARES

3.9 TOWN SQUARES

Town Squares in the Royal Docks should provide a neighbourhood and community focus. These are places for people to come together, supported by local retail, services and leisure facilities.

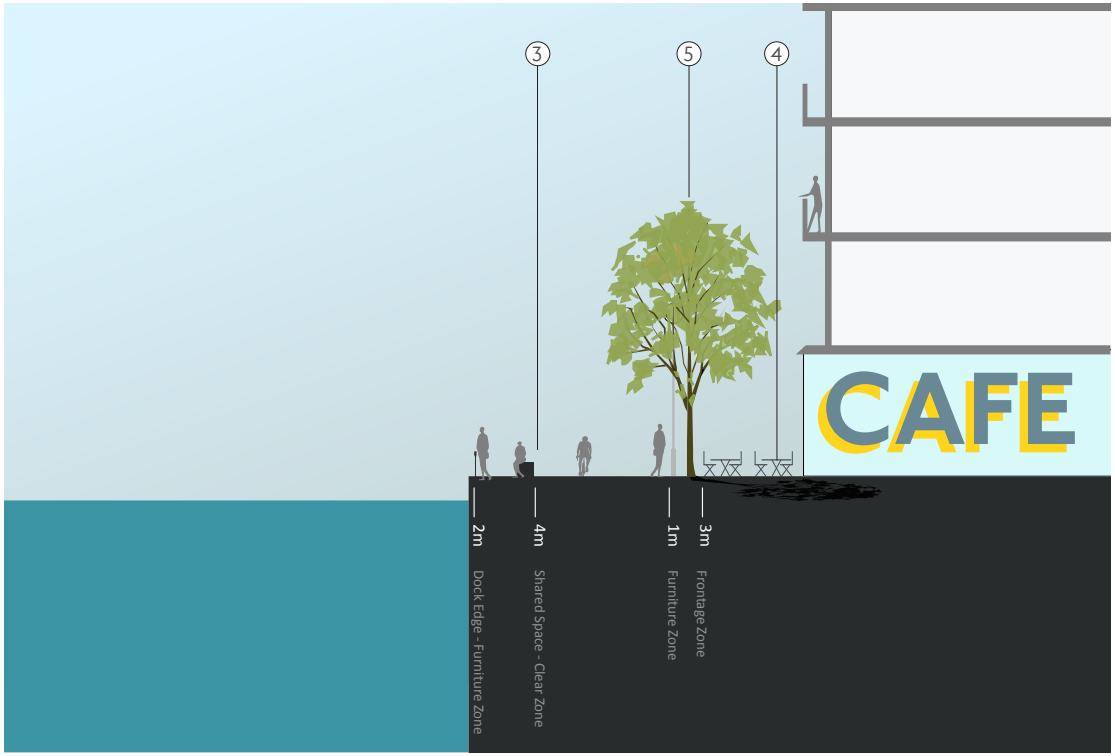
Largely situated along the Dock edges, they create an attractive backdrop to daily life and should provide continuous walking and cycle routes which link neighbourhoods and places of interest around the Docks.

Priorities for Town Squares include:

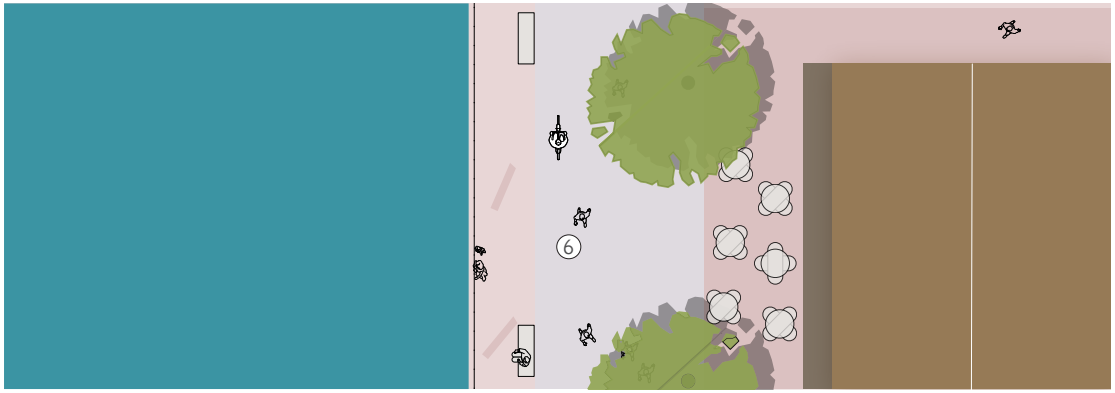
- Creating a safe and secure environment which people enjoy spending time in
- Ensuring good connections to the wider movement network, in particular walking and cycle routes and public transport infrastructure
- Calm movement speeds to ensure all road users feel at ease
- Enhancing the relationship to the Dock edges

3.9.1 DESIGN PRINCIPLES

1. Where new development fronts on to a Town Square there should be a clear definition between private and public space with a threshold treatment to the street
2. Cycle parking should be provided at regular intervals, co-located with pockets of activity or destinations
3. Seating, located at regular intervals, will provide opportunities to rest and spend time in these areas
4. Activity from retail, food and beverage uses should be encouraged to provide outdoor seating as a means to further animate the street
5. Tree planting will help to provide shade and shelter
6. Smooth surfacing should be used for all cyclable surfaces to ensure a comfortable ride



Example cross section of a Town Square in the Royal Docks



CLOCKWISE FROM TOP LEFT:

Surfacing of cycleways in smooth materials, Hafencity, Hamburg (Image: GLA)

Pockets of activity located on the waterways, Malmo, Sweden

Strengthening the relationship to the waterway, Copenhagen, Denmark

4.0 CYCLING

4.1 STREETS FOR CYCLING

Any streetscape proposals in the Royal Docks must take into account the growing role of cycling in London and the importance of accommodating high-quality cycleways into new and existing new streets and spaces:

- Cycling should be given the same consideration as all other modes when designing for the movement of people
- Cycle infrastructure should cater for existing need while facilitating the future growth of cycling in London
- Cycling infrastructure should meet the needs of all types of cycle trip, from long commutes to slower local journeys

All designers of cycling infrastructure in London should refer to the 2014 London Cycling Design Standards (LCDS).

The six core principles of the LCDS are set out below:

Safety (perceived and actual): Each encounter with motor traffic is a potential conflict. Cyclists and motor vehicles have different mass, velocity and other traits. Routes and junctions need to take these differences into account and ensure adequate separation between modes is provided

Directness: Cycle tracks must be designed to ensure direct connections with minimal deviation and must permit unimpeded cycling

Coherence: The cycle route network must be complete, continuous and well-signed. Every home, workplace, amenity and travel mode must be accessible by bicycle and cyclists must be able to choose from various routes

Comfort: Nuisances to cycling such as repeated stopping and starting, bottlenecks, difficulty of wayfinding and poor surfacing need to be minimised

Attractiveness: Cycle infrastructure must be pleasant to use. It should be designed to be well-used by lots of people, well-lit and with minimisation of the physical and psychological obstacles to cycling

Adaptability: Cycle networks should meet present and future needs and be able to extend and evolve over time

4.2 CYCLING LEVELS OF SERVICE

A Cycling Level of Service (CLoS) assessment has been developed in order to set a common standard for the performance of cycling infrastructure. As it is focused on 'rideability', the experience of cycling and the performance of links and junctions, CLoS does not differentiate between Street Types, however infrastructure appropriate to the Street Type may be a prior consideration. Some of the main considerations for cycle provision in the Royal Docks will include:

- Type of movement
- Volume of traffic
- Vehicle speeds
- Activity on the street (both currently and in the future)
- Alternative routes in the vicinity

Cycleways in the Royal Docks should meet a minimum CLoS score of 70 per cent on all links. Care must be taken to ensure an equally high CLoS score is maintained through junctions as well as on links.

4.3 CYCLING PROVISION IN NEW DEVELOPMENTS

Any proposals impacting on the street environment in the Royal Docks should clearly demonstrate how they have responded to the wider cycle network (existing and proposed) through:

- The provision of well designed new cycleways which connect into the strategic cycle network
- Designing local connections to provide high-quality cycle provision on quieter routes, connecting local destinations such as schools or public spaces
- Provision of secure cycle parking at busy locations including public transport hubs, community and cultural destinations and public spaces
- Residential and commercial developments will be required to provide a high standard of cycle parking, as well as changing and showering facilities to ensure that it is possible for anyone to travel easily in the area by foot or by bicycle
- New developments should safeguard space for potential future extensions of Mayor's Cycle Hire or other cycle hire provision, to support residential and leisure trips

The following pages set out a series of examples showing how high-quality cycling provision can be accommodated within typical street cross sections.