7 Tree Planting Strategy

The planting design will provide a variety of trees and planting to improve the local biodiversity, habitat creation and create seasonal interest.

There is an opportunity for key areas of the Development to be identified with a different palette of trees and planting to create a distinct sense of place and an attractive setting.

Proposed trees will be integrated into a suitable urban landscape setting that can provide Public Realm and ecological benefits. Trees will be selected according to the “right trees for right place “ principle consistent with the London Plan policy 7.21: Trees and Woodland.

The use of trees in the Public Realm is useful in establishing the character of the streets and open spaces and will help to define routes and spaces. Tree species will vary according to situation, function and scale. Larger tree species will be selected for larger open spaces for example.

The tree planting will help improve green infrastructure by connecting the existing green spaces, Southwark Park and Russia Dock Woodland. Consideration will be given to species selection to help reduce air pollution.

The tree planting strategy should:

- Provide increased species diversity, climate and disease resilience, while including locally native tree species and trees with a proven wildlife value where appropriate.
- Provide increased age diversity allowing more efficient long term management.
- Provide improved rooting conditions and irrigation with improved physiological resilience and lower maintenance costs.
- Provide climate moderation of building and spaces through summer shading/winter shelter.
- Reinforce the character/amenity of streetscapes and open spaces.
fig.122 Illustrative Public Realm plan with Tree Planting Character areas

- Heritage Link
- Redriff Road
- Park Walk
- Quebec Way & Roberts Close
- Square
- Surrey Quays Road
- Park
- High street
- Cuts
### Heritage Link

**Example Species:**
- Betula jacquemontii
- B. papyrifera
- B. pendula
- B. pubescens
- Pinus sylvestris
- Pinus nigra
- Quercus palustris

**Species:**
- Betula jacquemontii
- B. papyrifera
- B. pendula
- B. pubescens
- Liriodendron tulipifera
- Pinus radiata
- Pinus sylvestris
- Pinus nigra
- Quercus palustris

**USES:**
- Dock Edge

### Town Square

**Example Species:**
- Platanus hispanica
- Gleditsia triacanthos

**USES:**
- Green 'Ring' within the Town Square

### Park Walk

**Example Species:**
- Castanea sativa
- Corylus avellana
- Ficus carica
- Juglans regia
- Malus domestica cultivar
- Malus ‘Golden hornet’
- Malus ‘John Downie’
- Mespilus germanica
- Morus alba
- Prunus avium
- Prunus domestica
- Pyrus communis
- Sorbus aria
- Sorbus aucuparia

**USES:**
- Tree canopy
  - (with a blossom display in spring)
### PARK

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Betula pendula</td>
<td>To create a strong green structure to the Park and provide seasonal interest</td>
</tr>
<tr>
<td>Betula pubescens</td>
<td></td>
</tr>
<tr>
<td>Cedrus libani</td>
<td></td>
</tr>
<tr>
<td>Davidia involucrata</td>
<td></td>
</tr>
<tr>
<td>Euodia hupehensis</td>
<td></td>
</tr>
<tr>
<td>Gleditsia triacanthos</td>
<td></td>
</tr>
<tr>
<td>Juglans regia</td>
<td></td>
</tr>
<tr>
<td>Liriodendron tulipifera</td>
<td></td>
</tr>
<tr>
<td>Malus 'Golden hornet'</td>
<td></td>
</tr>
<tr>
<td>Malus 'John Downie'</td>
<td></td>
</tr>
<tr>
<td>Paulownia tomentosa</td>
<td></td>
</tr>
<tr>
<td>Platanus hispanica</td>
<td></td>
</tr>
<tr>
<td>Metasequoia glyptostroboides</td>
<td></td>
</tr>
<tr>
<td>Pinus nigra</td>
<td></td>
</tr>
<tr>
<td>Pinus sylvestris</td>
<td></td>
</tr>
<tr>
<td>Quercus palustris</td>
<td></td>
</tr>
<tr>
<td>Quercus coccinea</td>
<td></td>
</tr>
<tr>
<td>Sequoiadendron giganteum</td>
<td></td>
</tr>
<tr>
<td>Tilia europaea</td>
<td></td>
</tr>
</tbody>
</table>

### DEAL PORTERS WAY (HIGH STREET)

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alnus cordata</td>
<td>Street tree</td>
</tr>
<tr>
<td>Liquidambar styraciflua</td>
<td></td>
</tr>
<tr>
<td>Tilia tomentosa</td>
<td></td>
</tr>
</tbody>
</table>

### SURREY QUAYS ROAD

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidambar styraciflua</td>
<td>Street tree</td>
</tr>
<tr>
<td>Platanus hispanica</td>
<td></td>
</tr>
<tr>
<td>Tilia tomentosa</td>
<td></td>
</tr>
</tbody>
</table>
### REDDRIFF ROAD

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Platanus hispanica</td>
<td>Street tree</td>
</tr>
</tbody>
</table>

**Example species:**
- Platanus hispanica

**Uses:**
- Street tree

---

### QUEBEC WAY & ROBERTS CLOSE

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corylus colurna</td>
<td>Street tree</td>
</tr>
<tr>
<td>Pyrus ‘Chanticleer’</td>
<td></td>
</tr>
<tr>
<td>Tilia cordata</td>
<td></td>
</tr>
</tbody>
</table>

**Example species:**
- Corylus colurna
- Pyrus ‘Chanticleer’
- Tilia cordata

**Uses:**
- Street tree

---

### DEVELOPMENT PLOTS AND RESIDENTIAL COURTYARDS

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amelanchier spp.</td>
<td>Street tree</td>
</tr>
<tr>
<td>Alnus cordata</td>
<td></td>
</tr>
<tr>
<td>Betula pendula</td>
<td></td>
</tr>
<tr>
<td>Betula papyrifera</td>
<td></td>
</tr>
<tr>
<td>Carpinus betulus</td>
<td></td>
</tr>
<tr>
<td>Corylus colurna</td>
<td></td>
</tr>
<tr>
<td>Cornus mas</td>
<td></td>
</tr>
<tr>
<td>Gleditsia triacanthos</td>
<td></td>
</tr>
<tr>
<td>Liquidambar styraciflua</td>
<td></td>
</tr>
<tr>
<td>Prunus spinosa</td>
<td></td>
</tr>
<tr>
<td>Pyrus ‘Chanticleer’</td>
<td></td>
</tr>
<tr>
<td>Tilia cordata ‘Green Spire’</td>
<td></td>
</tr>
<tr>
<td>Tilia tomentosa</td>
<td></td>
</tr>
<tr>
<td>Tilia europaea</td>
<td></td>
</tr>
</tbody>
</table>

**Example species:**
- Amelanchier spp.
- Alnus cordata
- Betula pendula
- Betula papyrifera
- Carpinus betulus
- Corylus colurna
- Cornus mas
- Gleditsia triacanthos
- Liquidambar styraciflua
- Prunus spinosa
- Pyrus ‘Chanticleer’
- Tilia cordata ‘Green Spire’
- Tilia tomentosa
- Tilia europaea

**Uses:**
- Street tree

- A mix of single and multi-stemmed trees for the courtyard garden to add visual interest throughout the years

---

### THE CUTS

<table>
<thead>
<tr>
<th>Example Species:</th>
<th>USES:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corylus colurna</td>
<td>Specimen (small squares or junctions)</td>
</tr>
<tr>
<td>Tilia cordata</td>
<td></td>
</tr>
</tbody>
</table>

**Example species:**
- Corylus colurna
- Tilia cordata

**Uses:**
- Specimen (small squares or junctions)
EXISTING TREES

This section is intended as a summary explaining the existing tree stock within the Site. For further detailed information refer to the Arboricultural Survey Report and Impact Assessment.

The existing tree stock within the Site and areas adjacent of highway and public open space are of similar age and appear to be substantially associated with the re-development during the 1980's. The existing trees include mostly common amenity tree species, of semi-mature and early mature age.

Tree surveys have taken place throughout the Site. There are a large number of trees on the Site but very few are Category A (high quality and likely to be beneficial for 40 years, with a significant number Category C (low quality and likely to need replacing after 10 years). A few trees in car park areas are Category U which are considered unsuitable to retain.

Several of the trees are located in car parking areas with trees growing in tree pits or small island planting beds. Some of these trees show stunted growth, symptoms of physiological stress or are affected by tree pests and diseases. This may be exacerbated by inherently limited and/or poor rooting conditions within the Site. Tree resistance to pests and diseases is reduced by physiological stress. Additionally, not all trees within the Site are publicly accessible, for example, the Printworks site.

Some trees, whilst not being individually of high quality, collectively provide other benefits such as screening or are considered to be valuable to the local community.

Trees along the boundary, in particular the trees along Redriff Road, Surrey Quays Road and Quebec Way, currently provide an attractive streetscape and these locations are generally where the better quality trees are located within the Site.
EXISTING TREES RETAINED, REMOVED AND PROPOSED

The Masterplan proposes a new town centre with a wide range of uses, including offices, retail, leisure, and community and public spaces as well as new homes for a range of ages, incomes and life stages. As such, the delivery of the Masterplan will include a comprehensive redevelopment of large portions of the existing external spaces. This includes the integration of new buildings, the creation of new streets, public open spaces and localised re-grading of areas to improve access and permeability.

In order to mitigate the loss of existing trees and create a healthy, green Public Realm, new tree planting will be provided as part of the proposed Development. The extent of new tree planting will be assessed based on ‘no net’ loss of canopy area at completion of the Development in 2033.

The existing trees have been assessed to establish which are the best trees for retention in the Masterplan, and to reinforce them with new tree planting in the Proposed Development.

The Tree planting strategy will include:

• Proposals for a better quality of tree canopy cover in the completed masterplan than on the site today.
• Replacing the majority of low quality car park trees with high quality trees integrated with Public Realm.
• Creating an impact from day one by providing a number of trees of semi-mature quality.
• Selecting the right trees for the right place.
• Connecting existing green spaces (better wildlife corridors).

Off-site tree planting will be required and British Land will work with Southwark Council and local stakeholder groups to help select locations. For a detailed report on the methodology and off-Site tree planting strategy, refer to the Arboricultural Survey Report and Impact Assessment.

1. Total existing tree canopy area (no development scenario by 2033) 46,608.57m²
2. Tree canopy area to be retained 9,900.00m²
3. Tree provision within the public realm 12,638.07m²
4. Tree provision off-site 24,070.50m²
5. Tree provision off-Site 24,070.50m²

TOTAL TREE CANOPY AREA RETAINED AND PROPOSED AT COMPLETION OF THE DEVELOPMENT 2033 46,608.57m²
fig. 124 Plan showing existing trees retained and removed

fig. 125 Plan showing existing trees retained and proposed
The planting strategy considers a strong narrative about climate change, support for a healthy environment and provision of valuable and attractive spaces for wildlife and people.

The planting design aims to establish a rich mosaic of planting types across the Development to provide the basis for a rich environment that combines habitat creation, biodiversity and an attractive setting for people.

By selecting a varied species palette for pollinators, it will not only attract more insects, but will in turn be more beneficial for people.

There is an opportunity to provide growing spaces within the public realm for people to actively engage with as part of a volunteering network.

The aim is to provide soft planting that is not only decorative but also play an active part of the climate change mitigation, habitat creation and Sustainable Urban Drainage Strategy (SUDS) system and place-making.

**PLANTING FOR POLLINATORS**

Selecting a varied species palette that will create a complex layering of vegetation with complex structures and spatial forms. Planting native species and non-native species of value to wildlife, including planting for pollinators.

**PLANTING AS AN ATTRACTION FOR PEOPLE**

Complex forms will create a visual attraction. Plant species richness can be estimated accurately by people visiting urban green spaces.

(Fuller et al. 2007)

**PLANTING FOR HUMAN HEALTH**

Human psychological well-being increases with exposure to biodiversity.

(Fuller et al. 2007. Biology Letters, 3, 390–394)

Volunteering can further increase health and well-being.
CASE STUDY: OXFORD BOTANIC GARDENS

The case study illustrated opposite is a good example of a adaptive planting for the Merton Borders at Oxford Botanic Gardens.

The borders have been designed with a strong narrative about climate change and what this might mean for the types of plants used in gardens in Oxford in the future.

The complex structures and spatial forms containing lot of different species and layers, provides a good nectar source for insect pollinators.
9 SUDs Strategy

Measures to attenuate the impact of rainfall and storms onto the Development are incorporated as a positive feature into the design to improve water control and have a long term benefit for climate mitigation. Where topography allows, surface water is filtered, then drained into Canada Water Dock and Greenland Dock which will be a positive method for attenuation. Particularly in Canada Water Dock, the exiting water levels are falling and additional water will be beneficial.

SUDS Area 1

SUDS in area 1 are provided in areas of predominately hard surfacing, rills and channels can be used to drain water into a combination of tree pit attenuation and sub-base storage systems.

SUDS Area 2

Greener, more natural systems are proposed in the Neighbourhood Character Area, including rain gardens and swales allowing the water to slowly percolate through the system.
fig.127  Illustrative Public Realm plan with SUDS areas

KEY

- Potential location for tree pit storage
- Potential location for rain gardens
- Potential location for swales/rain gardens

fig.128  Example of tree pit storage
fig.129  Example of rain gardens
fig.130  Example of swales
There are opportunities to incorporate a range of living roofs such as extensive and intensive green roofs, balconies and private roof terraces. Detailed Development proposals should aim to incorporate a range of the types of living roofs highlighted below.

Benefits can include:

- Additional amenity space
- An increase in potential wildlife habitats
- A reduction in storm water run-off
- Contribute to a reduction in energy costs with increased thermal resistance and evaporative cooling.

Sedum and Grass Roofs

Extensive green roofs consist of a lightweight, shallow growing medium layer (75mm-150mm depth), supporting smaller plant species (e.g. sedum and grasses). They require little maintenance and are generally inaccessible to all but those occasionally looking after the plants or the roof. They are best suited to conditions where a minimal build-up is available or desired. These roofs can be valuable ecosystems and support a wide range of plants and invertebrates by varying the types and densities of vegetation.

Biodiverse Roofs

Designing green roofs so that they have varying substrate depths and drainage regimes creates a mosaic of micro habitats on and below the soil surface and can facilitate colonisation by a more diverse flora and fauna.

Usable Roof Gardens

Intensive green roofs require a deeper and organically richer growing medium and usually a deeper drainage layer but can support a wider variety of plants including shrubs and trees. As such they are usually designed as accessible garden terraces to form outdoor extensions to the architecture, and the structure must be designed to accommodate the additional loadings associated with this system; i.e. the weight of the plants at maturity, the build-up (saturated), and the number of people likely to use the terrace at any given time (live loads).

The type of planting and green roof system to be considered will be largely determined by the constraints or requirements of an individual building. In any event the species chosen must be hardy enough to withstand the exposed conditions inherent with roof-top planting, although careful plant selection can contribute to the attenuation of adverse micro climatic conditions.
fig.131 Example of Green Roof with sedum and grasses

fig.132 Example of Garden Terrace

fig.133 Example of usable Roof Garden with soft planting

fig.134 Example of a biodiverse roof with varying substrate levels
11 Materials Strategy

11.1 MATERIAL PALETTE

The quality of the Public Realm is derived from simplicity through the selection of a restrained palette of complementary materials and simple coordinated details. Irrespective of the material used, a high quality of workmanship is essential for the quality of finish and the longevity of the landscape. The aim is to create a cohesive, coordinated palette of hard landscape materials that are easy to use, maintain, and control.

The proposal uses surface finishes to create hierarchy, sense of place and legibility through the varied landscape character areas. Generally, warm colour tones have been selected to create a comfortable environment.

The Masterplan has been divided into a series of material palettes that respond to each appropriate Character Area and use, and also tie in with the materials palette used within the London Borough of Southwark Streetscape Design Manual.

The Canada Water Paving Palette is used predominantly around the Dock and Cuts which proposes natural stone in pedestrian and shared areas. Natural stone finishes with appropriate size and texture (plank pavers or setts) and warm colours are proposed to reinforce the character of this area and provide a high quality finish, particularly around the Dock edge.

The Canada Water Clay/Brick Paving Palette is located in the predominantly pedestrian streets and smaller spaces within the Masterplan. This will provide a more intimate scale, the sense of warmth that brick surfacing provides, and reinforce the heritage of the area. Varied textures are proposed to create subtle variations between areas without losing uniformity.

The Southwark General and Town Centre Palettes are used within the main streetscapes such as Surrey Quays Road, Redriff Road, Quebec Way and the High Street. These streets form part of a wider network within Southwark and it is intended that streets are consistent within the Borough so that the Development feels integrated within its context.
fig.135 Material Strategy - Character areas

KEY
- Yellow: Canada Water Paving Palette
- Red: Canada Water Clay/Brick Palette
- Purple: Canada Water Park Palette
- Blue: Southwark General Palette
- Green: Southwark Town Centre Palette
### CANADA WATER PAVING

<table>
<thead>
<tr>
<th>Material</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural stone paving</td>
<td>Pedestrian and shared areas</td>
</tr>
<tr>
<td>- warm colour</td>
<td></td>
</tr>
</tbody>
</table>

### CANADA WATER CLAY/BRICK PALETTE

<table>
<thead>
<tr>
<th>Material</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clay/Brick paving</td>
<td>Pedestrian areas and carriageway areas with low speed</td>
</tr>
</tbody>
</table>

### CANADA WATER PARK PALETTE

<table>
<thead>
<tr>
<th>Material</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resin bonded, Self-binding gravel, natural stone paving, clay paving</td>
<td>Pedestrian areas and carriageway areas with low speed</td>
</tr>
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</table>

### SOUTHWARK GENERAL PALETTE

<table>
<thead>
<tr>
<th>Material</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete flag, concrete block, clay paver</td>
<td>Pedestrian and shared areas</td>
</tr>
</tbody>
</table>

### SOUTHWARK TOWN CENTRE PALETTE

<table>
<thead>
<tr>
<th>Material</th>
<th>Uses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural stone paving, concrete block, clay paver</td>
<td>Pedestrian and shared areas</td>
</tr>
</tbody>
</table>
11.2 STREET FURNITURE

The selection of street furniture will be considered in a comprehensive manner to ensure a common language of elements is maintained across the Public Realm and to ensure that they complement the Site wide palette of materials.
12 Play Strategy

Canada Water aims to be a place that is safe, welcoming, exciting, and enriching to children as well as adults. This play strategy sets out how the Development will give proper recognition of children and young people’s need and wish for play and recreation. The key principles are multi-functionality, design quality, permeability, and effective, sensitive management and maintenance.

The aim is to create a Public Realm that is genuinely child-friendly and inclusive, in line with the aspirations set out in the London Plan: to “ensure that all children have safe access to good quality, well-designed, secure and stimulating play and informal recreation provision” (Policy 3.6 Children and Young People’s Play and Informal Recreation Facilities).

The Development allows for sufficient publicly accessible open space to meet the benchmark of 10 sq m of playable space per child set out in the Mayor’s Supplementary Planning Guidance on play. In keeping with this Guidance, the vision is that as much of the Public Realm as possible will be in the form of ‘playable space’; space where children’s play and recreation is one legitimate use amongst a range of uses without compromising other residents and users needs and enjoyment (Shaping Neighbourhoods: Play and Informal Recreation SPG 2012).

Play facilities will not be restricted to isolated areas, instead, playful features will be threaded throughout the Public Realm, including distinctive focus points such as play equipment set in engaging landscaping, water features and open space including facilities for informal play, and incidental features that encourage children to play. Different age groups should be able to make use of the spaces through varying activities at different times of the day.

Carefully selected play equipment, facilities and non-prescriptive features such as changes of level, hard and soft landscaping, and other landscape features will create playful offers that merge into the wider open space, encouraging a wide range of play activities while also allowing the space to be used by adults.

KEY
- Doorstep play with 100m walking distance indicated
- Neighbourhood play with 400m walking distance indicated
- Youth Play with 800m walking distance indicated
The following age ranges are based on the categories within ‘Shaping Neighbourhoods: Play and Informal Recreation SPG 2012’. The playable space requirements has been calculated from the potential child occupany generated from the Illustrative Masterplan.

Playable Space for under 5s:
- Playable space required: 2,930m²
- Playable space provided: 3,370 m²

Playable Space for children 5-11 year olds:
- Playable space required: 1,820m²
- Playable space provided: 1,880 m²

Playable Space for young people 12+:
- Playable space required: 1,150 m²
- Playable space provided: 1,490m²
DOORSTEP PLAYABLE SPACE
(Under 5)

Doorstep playable spaces should be located close to home or in residential courtyards.

Play should be within a landscaped space that includes engaging play features for young children under 5, and places for carers to sit and talk.

A combination of formal equipment and informal playable features should be provided to stimulate and encourage more inventive play.

Facilities could include: sensory planting, landforms, playable edges, sandpits, climbing stones, balance edges.

LOCAL AND NEIGHBOURHOOD PLAY
(5-11 years)

Local and neighbourhood play should be located across the Masterplan to include open spaces and pedestrian links.

Play should be within a varied natural space with secluded and open areas, landscaping and equipment so that children aged up to 11 years can play and be physically active, and they and their carers can sit and talk. Some youth facilities for young people 11+yrs could be integrated within these areas to allow families with different ages to participate.
YOUTH PLAY
(Over 12 years)

Play should provided for as part of a social space for young people aged 12+ to meet, hang out and take part in informal sport or physical recreational activities.

Facilities could include: Skate area, fitness trails, outdoor stage, shelters.

fig.145 Example of informal sport area
SPORT TRAIL

A sport trail could be considered between Southwark Park and Russia Dock Woodland to promote an active and health lifestyle.

OFF-Site PLAY PROVISION

There are opportunities to explore improving play provision in neighbouring areas where play is deficient, or existing facilities are in need of repair.
fig.149 Existing playspaces (sport in blue, playground in pink)
The lighting of Canada Water aims to achieve a series of objectives as follows:

- Consider the lit character and ambience of public space
- Prioritise lighting for pedestrians
- Envisage routes as a series of open spaces
- Reveal and interpret the heritage of the site
- Enhance legibility through the illumination of vertical surfaces
- Maintain a human scale along routes and in open spaces
- Use amenity and landscape lighting to create spaces to wander
- Enhance seasonal characteristics with different qualities of light
- Create an on and off peak lighting scheme by utilising smart control
- Minimise the spacing of lanterns to help reduce glare
- Promote social interaction by creating points of focus
- Develop a flexible approach to control to enable different responses
- Be sensitive towards ecology on the site

The lighting focuses on the public realm as a series of routes and open spaces that lend themselves to distinct activities and uses after dark. The lighting should respond to these distinguishing features in order to create a series of ‘places’ that have a unique character. This diverse approach also requires any future lighting scheme to also consider the following issues:

- Ecology
- Accessibility
- Safety
- Economy
- Flexibility
- Legibility
- Security
fig. 150 Illustrative Masterplan Visual
13.1 SITE CONTEXT
An assessment of the existing lighting was carried out within the site and the wider area. The following observations were made:

- There are a wide variety of light sources ranging from high pressure sodium (HPS) lamps to LED. This creates a disjointed approach and reduces the legibility of the site after dark.
- Variations in colour temperature and colour rendering creates an inconsistent lighting effect.
- Although recently upgraded, luminaires are a cool (4000k) LED source, LB Southwark’s design objective is to install 3000K in the future.
- Areas of high contrast such as around underpasses and transport connections reduce the feeling of safety and security.
- High internal lighting levels reaching up to 300lux within TFL stations with very high uniformity make the adjacent public realm areas appear underlit by comparison.
- Existing lighting levels of adjacent routes and dock edges are relatively low.
- An existing culture of theatrical and temporary event lighting currently exists in the area surrounding the Printworks building.
- Historic buildings and landmarks such as the Old Dock Offices and Redriff Road Bridge are unlit after dark.
- Unbalanced illuminance is created by mature trees blocking luminaires and a series of over-lit bus shelters and advertisement boards along routes. This makes some spaces feel unsafe.
- There is a lack of identity and character after dark.
13 Lighting Strategy

fig. 154 Redriff Road pedestrian underpass

fig. 155 Canada Water Station and Bus Terminal

fig. 156 Surrey Quays Road

fig. 157 Pedestrian path along Deal Porters Way

fig. 158 Canada Water Plaza Market and Library

fig. 159 Canada Dock
13.2 DESIGN ISSUES

The lighting will be designed to address a series of key issues which are inherent to the evolution of every public realm lighting scheme. Whilst, concise this overview aims to provide a summary of the key points that should be addressed to inform the final design and help bring about a successful and sustainable lighting solution that not only respects the adjacent surroundings but also creates an enchanting and pleasing after dark experience for residents and visitors alike.

Ecology
Artificial lighting has the potential to cause serious adverse effects to a wide variety of flora and fauna that require darkness. This includes birds, bats and insects among others. The dock edges, boardwalk and landscaped areas within the overall design provide areas for an ecosystem to become established and therefore care must be taken to ensure that the lighting design does not create an unwanted impact on the local ecology.

Wellbeing
Recent research has reinforced the strong connection between artificial light and our biological, psychological and physiological well-being. This is due to the fact that prolonged exposure to illumination after dark can alter our natural circadian rhythms, affecting patterns of sleep and our body’s overall natural clock. Although high levels of illumination are shown to cause problems it is vital to recognise that light spill and light trespass into the home can impact residents in a negative way. One of the benefits of introducing a considered lighting design specific to the site is the opportunity to carefully control levels of illumination throughout the residential areas across the site in order to direct light away from windows and private property to create a greater sense of well-being.

Accessibility
The lighting should aim to support accessibility for all through creating improved legibility, assisting with way-finding and by supporting people with disabilities – in particular those with visual impairments. The design of the artificial lighting must also support the various needs of those visiting and using the wider area after dark. This includes those with special needs and the elderly. Areas including the Town Square, Dock Edge and Park by example will host a variety of visitors and require careful consideration to support a variety of user groups. Supporting a highly accessible night-time environment should include avoiding excessive contrasts, direct and reflected sources of glare, controlling shadow and limiting the use of upward light.

Security
Good lighting can create a sense of security by improving our perception of a place and reinforcing way-finding and giving people the ability and confidence to navigate the site after dark in order to use neighbourhood amenities such as the Park, Leisure Centre and Community Square. The lighting to the site aims to take note of the recommendations of Secured by Design while also balancing the specific character of the site and taking into consideration the needs of the local community. Such guidelines as those produced by Secured by Design will be used as guidance to assist with this area of the lighting design.
Safety
One major function of lighting is to reinforce safety after dark. Safety refers to how lighting can help prevent accidents by increasing visibility of potential hazards after dark. Hazards may include potential conflict areas between vehicles, cyclists and pedestrians as well as changes in level through the use of stairs or ramps such as around the Dock Edge. A range of recommendations and standards exist that will help determine safe levels of illumination for the various routes throughout the site with the main goal of establishing a clear hierarchy of light levels to aid in way-finding and avoid areas of high contrast – very bright areas next to very dark areas- or glare such as the Printworks Tunnel and Redriff Road underpass.

Legibility
A well-lit environment helps visitors and residents navigate and find their way through the use of memory maps and intuitive wayfinding. Creating a legible after-dark environment requires a careful balance of horizontally and vertically lit surfaces, by example within the narrow routes in the cuts. Lighting should promote vistas, encourage pedestrian movement and create landmarks that in turn can help support wayfinding and assist in the differentiation of routes and their associated destinations.

Economy
The future development of Canada Water sees the area becoming very busy throughout the year and after dark. The various retail and food and drink locations such as those around the Dock Edge and building to be located at the Printworks which will call Canada Water home will become part of a blossoming night-time economy that is sure to make the area a destination after dark. The lighting can help create a welcoming atmosphere that enhances feelings of safety and security, encouraging people to visit and explore the area.

Flexibility
A successful lighting design can support a successful night time economy that caters to various activities throughout the year. The Development should allow flexibility for seasonal activities and special events, most notably within the Town Square. This will help to create a strong sense of identity and help reinforce the local community by directly contributing to the well-being of future residents and the existing community.
13.3 DESIGN OBJECTIVES

The Lighting Vision has been developed to guide the illumination of open places and routes within the Masterplan using a number of key objectives as follows:

- Create a pleasing character and ambience after dark
- Give priority to lighting for pedestrians
- Envisage routes as a series of linked open spaces
- Promote social interaction by creating points of focus
- Maintain a human scale along routes and in open spaces
- Use amenity and landscape lighting to help create spaces to wander and dwell
- Enhance legibility through the illumination of vertical surfaces
- Complement seasonal characteristics with different qualities of light
- Develop a flexible approach towards control to enable different responses
- Be sensitive towards the heritage and ecology of the site
13 Lighting Strategy

fig.162 Lighting can help enhance heritage and character of site

fig.163 Varied lighting promotes diverse activities and ambience

fig.164 Warm white light helps create welcoming ambience after dark.

fig.165 Lighting reinforces routed and promotes views
13.4 **LIGHT LEVELS**

Very often the lighting of a space is focused on horizontal illumination that relates to current European and British Lighting Standards. These standards generally quantify the amount of light that reaches a horizontal plane. While horizontal illumination will provide the required functional lighting to navigate a route safely, it may not deliver a pleasing spatial experience. The introduction of vertical illumination to natural or man-made elements such as trees, artworks or textured surfaces can help reveal spatial characteristics while also improving legibility, perceived brightness and adding visual interest to a space. In addition, vertical illumination can help provide diffuse reflected light to peoples’ faces, helping aid facial recognition and heighten perceptions of security. A balanced combination of both horizontal and vertical illumination will help create a successful after dark experience within Canada Water.

Lighting standards have been suggested as part of this Lighting Vision. Such standards apply to roadways, pedestrian paths and cycle routes and have been drawn from current British Lighting Standards including BS EN 13201-1:2004, BS EN 13201-2:2003, BS EN 12464-2:2014 and BS 5489-1:2013. The standards have been informed by those for the existing adoptable highway as defined and implemented by Southwark Council. The adjacent diagram illustrates potential lighting classes that could be used across the Masterplan to create a hierarchy of routes.

![Illustrative Lighting Levels Diagram](image)
13 Lighting Strategy

- P4 - Eav.5lx/Emin.1lx
- P3 - Eav.7.5lx/Emin.1.5lx
- P2 - Eav.10lx/Emin.3lx
- P1 - Eav.15lx/Emin.5lx
- CE4 - Eav.10lx/0.4Uo
- CE3 - Eav.15lx/0.4Uo
- CE2 - Eav.20lx/0.4Uo
- ME3 - min.1cd/m²/Eav.15lx/0.4Uo
13.5 COLOUR

A coherent colour strategy along routes and open spaces will help introduce a cohesive environment within the public realm and create a hierarchy of routes and destinations. The mixed use nature of the site will showcase varying shades of white light from occupancy lighting of commercial and residential buildings as well as the retail and F+B destinations at ground floor level. The following describes the proposed colour strategy with regards to colour temperature, saturation and colour rendering.

Colour Temperature

Along with light intensity, the lit environment is a composition of various colours of light. Different hues of white light (colour temperature) will help differentiate routes and accentuate unique spaces such as the dock edge. Warmer white light (2700K) is proposed along neighbourhood roads or side streets with the wider development illuminated in a warm white (3000K) base illumination. Feature elements such as trees and landmarks will be illuminated in a colour of light that enhances each element and celebrates its individual characteristics.

Dynamic White

Recent advances in LED technology have resulted in the development of luminaires with tuneable colour capability able to deliver a range of white light or coloured lighting. This offers the opportunity to illuminate selected paths and spaces in a variety of colour temperatures throughout the year in response to seasonal changes or events.

This allows the delivery of white light of varying colour temperatures (warm to cool). Unlike traditional luminaires which are made to deliver a fixed colour temperature typically 3000K (warm white) or 4000K (neutral white), tuneable white LED technology allows a single luminaire to deliver a range of colour temperatures.

fig.167 Illustrative Lighting Colour Temperature Diagram
13 Lighting Strategy

- 2000K
- 2700K
- 3000K
- 4000K
- 6500K
- > 16000K
- Dynamic White
- Coloured Lighting
Colour Rendering

LED’s generally provide high quality colour rendering, which means colours are seen more accurately by the human eye. This is an important factor with regards to security and CCTV, which require good colour rendering in order to more accurately identify elements should there be an incident. In contrast, areas of low colour rendering create a more uniform and homogeneous space as colours and materiality become muted. It is proposed that a combination of areas with high and low colour rendering are introduced into the site to contrast and complement one another. The Extended Dock Edge for example will benefit from a lower colour rendering mimicking a moonlit water’s edge which will help accentuate the sparkle and glimmer of passive light sources that resemble the reflections on the water’s surface.
13 Lighting Strategy

Low Colour Rendering
13.6 SCALE

The scale of lighting should be sympathetic to the route or space that it is illuminating in consideration of the intended users and their requirements. A variety of mounting heights are proposed across the site in order to differentiate routes and create intimate areas of pause. The proposed mounting heights have been informed by the immediate surroundings, which feature a wide variety of luminaire heights and styles. Pedestrianised routes should feature appropriately sized luminaires mounted at a human scale creating a more welcoming environment while enhancing views where required. The diagram opposite indicates recommended mounting heights.
13.7 **PEDESTRIANISED ROUTES**

The lighting aims to enhance and distinguish the three main pedestrian links, which are composed largely of pedestrianised paths and spaces. In keeping with the public realm masterplan we have labelled and characterised each as follows:

**Waterside Link**
This link connects the Leisure Centre and Old Dock Offices in the East with the Printworks in the West. The proposed lighting approach for this link focuses on illumination of the horizontal plane from industrial style multi functional columns which also serve as illuminated totems to help support wayfinding.

**Dock Link**
The major link connecting Canada Water and Greenland Dock will feature a new boardwalk as well a series of narrow routes in the Cuts as well as an existing pedestrian tunnel. The lighting aims to enhance the sequence of compression and decompression of spaces by enhancing the vertical surfaces along these routes helping to direct views across the site but also upwards.

**Park Link**
With a focus on landscape and planting, the Park Link will undergo a changing image and character in response to the seasons. Fluctuating between small intimate spaces and large spaces with various functions, the lighting aims to introduce a fluid approach which is akin to a meandering path. Glowing lanterns mounted at a constant height along the route will create visual continuity. Lower mounting heights are proposed at seating areas to deliver localised light and create a welcoming environment.

[fig.170 Illustrative Route Diagram]
13 Lighting Strategy

Waterside Link

Dock Link

Park Link
13.8 **TYPICAL ROUTES**

Aside from the three main pedestrianised routes, a variety of vehicular routes traverse the site as well. The following section diagrams illustrate proposed lighting approaches for these routes in response to their scale required lighting function.

![Figure 171: Typical Section Primary Vehicular Route](image)
13.9 OPEN SPACES

Dock Office Square

- Positively illuminating the Leisure Centre entrance can help create positive end views from adjacent routes encouraging pedestrian movement.
- Introducing vertical illumination to various elements such as the canopy structure and play equipment can help create a welcoming ambience.
- Using a historically sympathetic lighting approach to illuminate the Old Dock Offices’ facade will help improve perceived brightness of the space and enhance the prominence of this historic landmark.
- The lighting should provide functional light to pathways and illuminate the landscape to create a welcoming space.
- Providing low level lighting to seating areas can help create intimate spaces to dwell.

fig.174 Illustrative Sketch Visual
Dock Edge

- The use of warm amber lighting to the boardwalk will help create an immersive experience and site landmark.
- The lighting aims to minimise spill light into ecological zones and waterfront area.
- Introducing cool ‘moonlight’, delivered from low level sources, will promote views across waterfront.
- The use of passive and contrasting materials will allow lower light levels to be introduced around waterfront.
- By extending the use of passive sources from the waterfront into the cuts, pedestrian movement will be encouraged through the area and this will create visual interest on vertical surfaces.
- Care must be taken to avoid illuminating surfaces that compete or compromise views towards the water’s edge.
Town Square

- The introduction of a consistent luminaire style and mounting height along routes will help reinforce wayfinding.
- Providing vertical illumination to trees improves perceived brightness of the area and enhances feelings of security.
- It is proposed light levels are reduce away from perimeter routes in order to create a visually interesting space with balanced areas of light and dark. Low light levels allow for elements such as illuminated fountains and reflecting pools to become features.
- Low mounting heights at seating areas will help create welcoming and intimate zones for pause.
- Including a provision for easy installation and removal of temporary event or seasonal lighting will allow flexibility and reduce costs.

fig.176 Illustrative Sketch Visual
13 Lighting Strategy
Park

- Well illuminated routes will help support feelings of safety and security without negatively impacting ecology.
- Providing accent lighting to play features and the skate park will promote their use after dark.
- Introducing a warm illumination to the pavilion will create a lantern-like effect enhancing its character and supporting wayfinding and legibility.
- The continuation of the Park Link luminaires through the space will aid to connect adjacent routes.
- Lighting to perimeter routes along the building to be located at the Printworks should allow for flexible focusing in response to varying activities and functions.
This section is a summary of the security strategy prepared by QCIC Limited in consultation with the Metropolitan Police Security Design Advisors.

The level of perceived security in the built environment is based on a number of factors that provide reassurance to the population that the public realm as well as individual buildings are managed and supported by conditioning of street management and routing.

The intention is that the Development is privately managed, however it is a key principle that the Development is seen to integrate seamlessly into its surrounding environs.

PUBLIC REALM

The streetscape should provide:

- Natural surveillance
- Natural access control
- Defensible space in residential areas
- Support maintenance and operational activities

There are three Character Areas which will require varying degrees of management according to their predominant land uses.

Town Centre including the area around the Dock – Predominantly retail, leisure and public amenities at lower levels and commercial office space at upper levels. The area around the Dock is principally leisure, food and beverage, and ecology. This also provides one of the primary pedestrian routes into the site.

Central Cluster – Retail, supermarket, and leisure at lower levels and residential and office space at upper levels.

Park Neighbourhood including the Printworks – Primarily food and beverage, leisure or residential entrances at ground level. Seeking to create a ‘natural’ residential street style environment, with the potential exception of the Printworks, which could accommodate significant workspace, education and cultural uses on upper floors.
KEY
- Town Centre
- Central Cluster
- Park Neighbourhood

fig.178 Character Areas
SITE ACCESS

The intention is for the Development to be highly permeable and to integrate seamlessly with its surrounding environment rather than creating an ‘island site’. Consequently, there is no intention to provide any kind of enforceable perimeter from either a pedestrian or vehicles access perspective.

Points of entry to Canada Water

- 17 pedestrian entry points
- 6 vehicular entry points

The vehicle access into the High Street is intended to be restricted to:

- Buses
- Waste management
- Deliveries
- Licensed Taxis
- Emergency vehicles.

Enforcement is planned to be by use of CCTV with Automatic Number Plate Recognition (ANPR) to alert the Masterplan Security Team.

Pedestrian access to logistics yards accessed from the High Street to the rear of buildings in Zone B and Plot A2 will be restricted by use of gates and fences.

All other roads will remain unrestricted.

MITIGATING VULNERABILITIES

There are seven main elements of design that can reduce vulnerabilities and consequently strengthen resistance to threats whilst assisting in providing safe and secure spaces, they are:

- Access and Movement – places that are well designed for movement of traffic (people and/or vehicles), in all anticipated periods of occupancy. This includes the provision of defined routes and signage which prevents inadvertent access into controlled or high risk spaces.

- Structure – places that are designed to provide separation between different users, thus preventing conflict.

- Surveillance – places that provide good natural sight lines where people and activity can see and be seen. This will go a long way to dissuading antisocial activity. The use of CCTV can enhance surveillance but the area of coverage must be maintained.

- Ownership – places that define boundaries and promote a sense of community, ownership and responsibility. This will enhance the feeling of a safe and secure area.

- Physical Protection – places that provide necessary and well-designed security features commensurate with requirement.
• Activity – places that cater for the anticipated level of human activity which will enhance the deterrence of crime.

• Management and Maintenance – places that create opportunity for and ease of maintenance and management. Places that are poorly maintained will defer back to areas of increased crime and poverty.

RISK MITIGATION STRATEGY

Having established the threats to the development and analysed the risks to people and property the following mitigation measures are recommended depending on the level of threat.

• Quick Police response
• Prior event planning
• Appropriate lighting
• CCTV
• Security patrols
• Passive surveillance
• Limit secluded area
• Local Vigilance
• Provide Anti-vehicle measures
HOSTILE VEHICLE MITIGATION

The application of Hostile Vehicle Mitigation (HVM) measures around the site will focus on the protection of crowded public spaces, such as the Town Square, in order to protect against a vehicle as a weapon (ramming) attack. It is not the intention to provide HVM protection to individual buildings.

The HVM measures in the locations indicated on the plan opposite do not necessarily require impact tested HVM measures, tested in accordance with technical standards, PAS68:2013. Instead, hard landscape features, such as the examples shown below are preferred, which are proposed to reduce the visual impact on the site. Pedestrian permeability in key areas should be considered in the development of HVM measures.

It is not proposed that HVM measures are provided along the high street kerb lines to protect the buildings or pavements. Instead, street furniture will be provided, in the form of benches, planters and trees to provide an obstacle to anyone seeking to carry out a Vehicle as a Weapon attack. These measures need not be impact rated HVM measures.

Whilst this section is intended to provide guidance on the design and development of security systems for the Masterplan across the period of the development, it is important to recognize that the threat landscape in which the site sits is likely to change during that time. More importantly, the development of the Masterplan will affect the threat profile. As a result, the security strategy will be kept under constant review and updated on a regular basis.
KEY

- Vehicular restricted areas where vehicle obstacles may be required to restrict entry.

- Specific locations where HVM measures are required at entry points to public spaces where people are likely to congregate in large numbers.

fig.182 Location of HVM Measures
15 Conclusion

The Public Realm has been an integral part of the master-planning process and has grown and developed over a period of years within a framework of consultation and planning policy. An Illustrative Masterplan has been developed throughout the pre-planning application process and has served as a vehicle for building consensus between all stakeholders.

All of the design principles and concepts that form the basis of the Development Specification, Parameter Plans and Design Guidelines have been extracted directly from the Illustrative Masterplan.

This document has set out how a well designed Public Realm can contribute significantly to the quality of the built environment and play a key role in defining the image and perception of a place. The Public Realm has a key role in the creation of sustainable, inclusive, and mixed communities. The proposals illustrated in this Masterplan are based on a number of integrated principles to produce an attractive, distinctive and inclusive place that maintains and reinforces the area’s character and identity.

This Public Realm strategy has aimed to bring these principles together in a cohesive manner that will contribute to the overall character of the Development, integrating it within the context of Canada Water to create a lively, diverse and safe series of places where people will want to live and visit. This is in accordance with the comprehensive approach within Southwark Council’s Canada Water Area Action Plan (2015).