

ATLANTIC WHARF

LANDSCAPE MASTERPLAN REPORT

August, 2021

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Issue date	26 08 21
Drawing status	DRAFT
Revision	02
Author	JB/FV
Checked by	JB

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On Behalf Of:



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01 Background



📍 Site Location Plan

01 Background

PURPOSE OF THIS DOCUMENT

The purpose of this document is to explain the outline landscape masterplan that has been prepared to support the wider masterplan for Atlantic Wharf.

The landscape masterplan outlines the spatial distribution of public space and design intent for those spaces. It will explain the key spaces and routes and outline the intended approach to hard and soft landscape treatment. A landscape strategy has been developed to underpin the masterplan which connects existing and proposed habitat, promotes biodiversity and prioritises a landscape lead public realm with healthy, safe and attractive places across the development. In combination with the Cardiff cities progressive active travel plans this will deliver a greener and more sustainable development. It is intended that the landscape masterplan creates the broad parameters within which the Full Application for the proposed Cardiff Arena and future Reserved Matters planning applications will be developed explore in further detail. Hence, this landscape masterplan will ensure that Atlantic Wharf is developed out as a cohesive place with a coordinated and high quality identity.

THE SITE & THE SITE CONTEXT

The site comprises the County Hall building and car park, the Red Dragon Centre building and car park, Travelodge, Hemingway Road and part of Schooner Way.

The site is strategically located in Cardiff Bay, nestled between the Wales Millennium Centre at South, Lloyd George Avenue at West and Bute East Dock at East. Great accessibility is provided by the Central Link, the A4232, Lloyd George Avenue and Schooner Way.

In order to avoid duplication of information this document refers to '0371-RIO-XX-XX-RP-A-060115 Atlantic Wharf, Butetown Masterplan' document for further information regarding the site and its context.



Aerial View of Cardiff Bay

02 Landscape Vision & Ambitions

WHY WE NEED A LANDSCAPE VISION FOR ATLANTIC WHARF

*Atlantic Wharf represents a rare opportunity to 'remake' a large swathe of a City, in this case, the Atlantic Wharf area of Cardiff Bay.
The chance to adapt such a large area comes at a time when we need an urgent and dramatic response to climate change and habitat loss.
This necessity is compounded by the renewed value that we place upon public health, healthy environments and the role that nature and open space has upon our own wellbeing.
All of these will be factors that do not just respond to challenges, but will create opportunities that will attract people in huge numbers to want to live, visit and spend time in Atlantic Wharf.*

PLACEHOLDER 3D AERIAL VIEW FROM RIO

02 Landscape Vision & Ambitions

THE OVERRIDING PURPOSE OF THE LANDSCAPE TO ATLANTIC WHARF

To achieve the ambitions of the vision it is important to embrace a **natural capital** approach to the project for better decision making during this and in the latter stages of the design process.

At the heart of a natural capital approach is the understanding that nature underpins human health, wealth, culture, identity and happiness. A natural capital approach works to illuminate this value, and helps decision makers to understand the complex ways in which natural, social and economic systems interact, impact, and depend upon one another.

This is complex however to simplify this and help us make this a truly sustainable development we refer to the seventeen United Nations Sustainable Development Goals (SDG's) to check and challenge our design thinking, the designs we produce and even how we operate. This will be necessary throughout the design process of all phases of development.

We identify the objectives established at the outline stage of the project review these through an SDG lens, quickly validating and where necessary developing these to establish a set of design principles which can be approved by the client and then used to underpin every design decision.

A net zero carbon design must be our goal.

The concept of a circular economy will be encouraged to reduce carbon during the life cycle of the development, including detailed design, specification and management. This starts with a comprehensive understanding of the site and the opportunities for the re use of site won materials, the location and design of infrastructure to manage access, movement and drainage of surface water in the most sustainable way possible and to ensure that the embodied carbon within the development can be extracted and reused when the development is expanded and ultimately decommissioned.

Opportunities for decarbonisation will be established early in the commission and embedded within the landscape strategy and then developed throughout the design stages of each phase of work.

The natural capital approach will necessitate a whole life approach and will facilitate the evolution of grounds and landscape management and maintenance that enhances skills, knowledge and career opportunities for maintenance staff as well as local communities.

Part of our role as Landscape Architects is to demonstrate lateral thinking, turn constraints into opportunities, sharing precedent examples of recent innovations and sketch our thoughts and ideas, encouraging innovation to the process.

02 Landscape Vision & Ambitions

LANDSCAPE VISION FOR ATLANTIC WHARF (WHAT WE WANT TO ACHIEVE)

The landscape of Atlantic Wharf will create **a continuous and connecting urban landscape** that will help to restore historic connections between the City, Bute East Dock, Butetown and the Bay. Once these connections were dominated by industry (whether that be rail sidings, dock basins or storage areas), later these connections were replaced by large areas of surface car parking. These historic connections will be remade by landscape that introduces extensive greenery, and comfortable spaces for living, work, spending time and active travel.

In this sense, Atlantic Wharf will be **an extension of Silurian Park and create a north - south link** from Herbert Street to the Wales Millennium Centre. It will also bring together **an east - west axis** from Bute East Dock to Cardiff Bay train station, linking to Canal Park in the west.

The landscape that forms a major part of Atlantic Wharf will be **rich and varied and composed specifically to address Cardiff's One Planet ambition**. It will contribute to wellbeing, create places for habitat and help to reduce the impact of localised flooding. We envisage a landscape of a value and on a scale not seen in Cardiff since the creation of the Cardiff Bay itself, so that Atlantic Wharf is an opportunity to leave a positive legacy for future generations.

A prominent theme that will run throughout Atlantic Wharf will be that of a *landscape that is recovering from an industrial past*. This will blend industrial elements, pioneer species and rich mature landscapes so that the landscape is a dominant feature in creating a memorable sense of place. In that sense the materials palette will be a blend of:

- pioneer species: which in nature are the first to thrive in either low nutrient, recovering or establishing soil
- ecologically rich planting: introducing colour, diversity and wildlife and provide habitat for microfauna
- large scale and strategic planting: so the scale of planting is something that distinguishes Atlantic Wharf from elsewhere
- industrial elements and relics: the use of robust hard landscape materials and street furniture that evokes industrial processes while reusing some of the extant 'industrial' public art features

The value placed in the creation and aftercare of the landscape is a vital part of what will give Atlantic Wharf its own sense of place and to make it a place that Cardiffians and visitors to our City know and cherish. **We want people to feel happier for just being there**, if we can achieve this, then they will return, spend more time here and in doing so add to the appeal not only of this place, but of the City and Wales as a whole.



Goods trucks at Cardiff Bay (image: Media Wales)

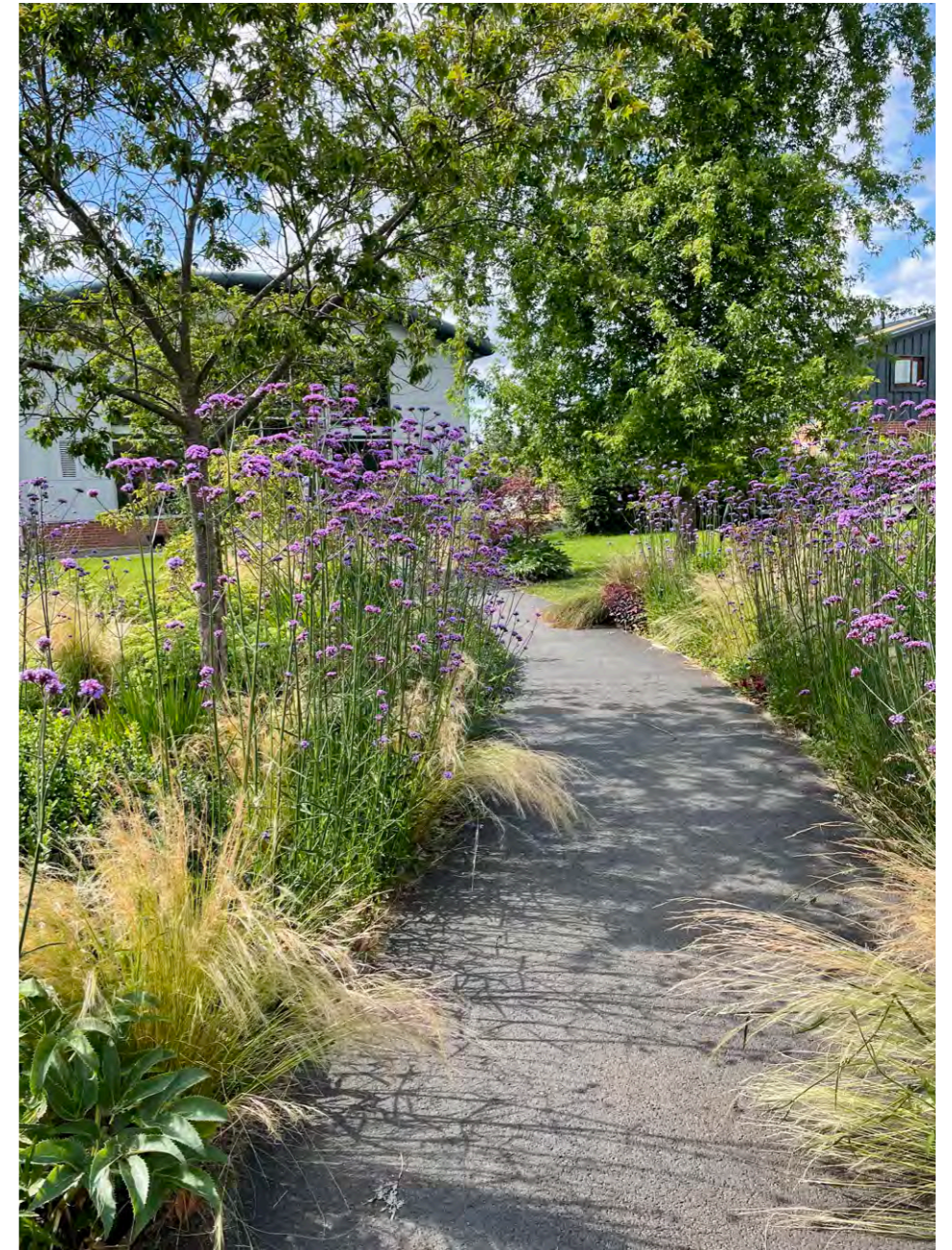


Pioneer species: leading the way for richer, more diverse habitats

02 Landscape Vision & Ambitions



The site in its industrial heyday (image: Media Wales)



An ecologically rich and varied landscape with colour and diversity

02 Landscape Vision & Ambitions

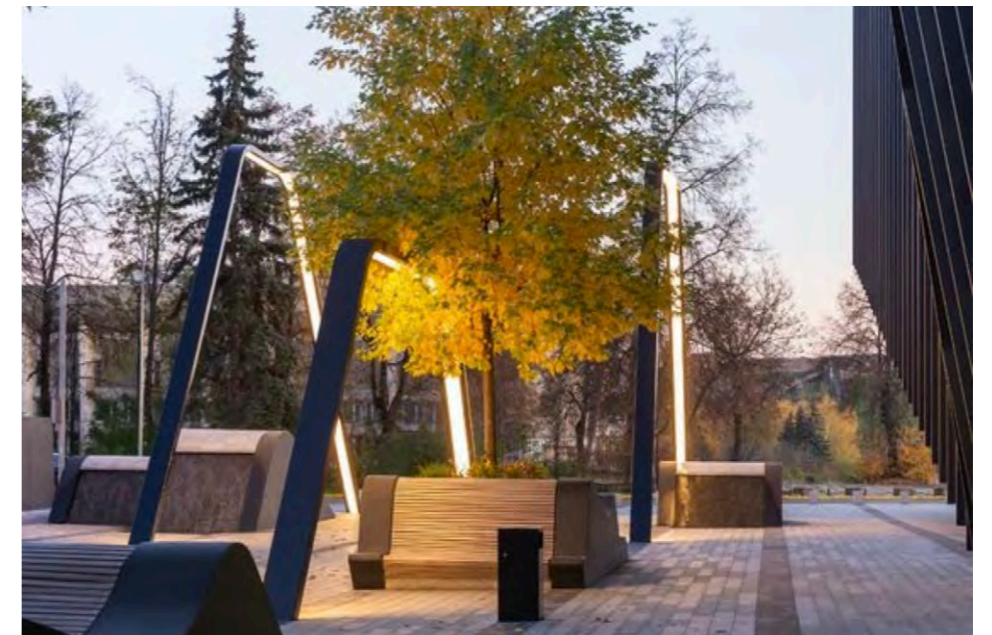
LANDSCAPE AMBITIONS FOR ATLANTIC WHARF

The Atlantic Wharf will come forward in several phases over the next seven to ten years. In that time, trends and preferences will change and there needs to be space for design teams for future phases to be able to make their own design choices. However, they should all aim to achieve the following Landscape Design Goals for Atlantic Wharf as a whole:

- **A RENOWNED DESTINATION:** Outstanding landscape and the public realm design will make Atlantic Wharf a memorable and year round international destination. Every aspect of the landscape design has to converge upon the fulfillment of this ambition, in order to create a world-class renowned vibrant and attractive space for anyone to enjoy and experience at any time of year.
- **AN ACCESSIBLE AND CONNECTED NEIGHBOURHOOD:** The design will guarantee comfortable and enjoyable pedestrians and cyclists accessibility throughout the area to support sustainable and active travel. Vehicle movement will be restricted to prioritise pedestrians and cyclists.
- **AN INCLUSIVE AND ACTIVE NEIGHBOURHOOD:** The public realm will accommodate a variety of uses and events to provide inclusive spaces for everybody to enjoy and experience, and to ensure the spaces are activated throughout the day and the year and so that they feel safe.
- **A LIVING & RESILIENT LANDSCAPE:** multi-functional Blue Green Infrastructure will be at the core of the delivery of a successful and resilient public realm. Greenery should be a dominant visual feature and will blend integrated drainage, large tree species, ornamental planting and new habitat rich environments, while also providing beautiful and diverse natural spaces for people to enjoy and socialise in. Greenery should be a dominant visual feature planting should encourage wildlife, wayfinding and should aim for year round interest.
- **A LANDSCAPE THAT SUPPORTS DECARBONISATION** by considering microclimate, integration of landscape as part of buildings and supporting the education and awareness for the wider public.
- **A RICH AND REWARDING LANDSCAPE:** the spaces between the buildings will have depth, detail and diversity. This will be achieved in the planting, hard landscape materials, street furniture, lighting and public art all working together to convey the past, present and future and which includes Cardiff varied communities in the design process



Landscape as a destination



A rewarding landscape where all aspects work together



A living and resilient landscape



An enjoyable landscape



- Boundary
 - Cardiff Arena and Travelodge Application Boundary
 - Atlantic Wharf Boundary
 - Wider Boundary (Illustrative Purpose only)
- Structures
 - Proposed Building
 - Proposed Pavilion
 - Existing Building
- Hardscape
 - Primary Pavement 1
 - Primary Pavement 2
 - Secondary Pavement
 - Reinforced Pavement
 - Mirror Pool Feature
 - Cycle Highway
 - Railway
- Softscape
 - Raingarden
 - Wildflower
 - Ornamental Planting / Shrubs
 - Urban Forest / Green Buffer
 - Amenity Lawn
 - Water
- Trees
 - Proposed Trees
 - Feature Tree
 - Retained Tree
 - Existing Tree Outside Application Boundary
- Urban Furniture
 - Bike Shelter
 - Feature Lamp
 - Bench
 - Picnic Table
 - Ping Pong Table
 - Play / Sport Provision



03 Relevant Policy Framework

GLOBAL POLICY

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides 17 Sustainable Development Goals (SDGs), which are an urgent call for action by all countries - developed and developing - in a global partnership.

They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The SDGs build on decades of work by countries and the UN dating back to the Earth Summit in Rio (1992).

As landscape architects and urban designers it is within our scope and remit to attempt to address these SDG goals and these have guided our thinking throughout this project.



03 Relevant Policy Framework

WELL-BEING OF FUTURE GENERATIONS ACT

The Well-being of Future Generations Act requires public bodies in Wales to think about the long-term impact of their decisions, to work better with people, communities and each other, and to prevent persistent problems such as poverty, health inequalities and climate change.

The Well-being of Future Generations (Wales) Act 2015 ('the Act')¹ gives a legally-binding common purpose – the seven well-being goals – for national government, local government, local health boards and other specified public bodies. It details the ways in which specified public bodies must work, and work together to improve the well-being of Wales.

The intention is that the landscape masterplan for Atlantic Wharf is prepared in a manner that will help Cardiff City Council to fulfil its legal responsibility to comply with the Act.

CARDIFF CITY COUNCIL: ONE PLANET CARDIFF (2020)

At the time of writing, the One Planet Cardiff Strategy, is in published form as a Consultation Draft awaiting finalisation in 2021 and sets out a very clear agenda for Cardiff's response to the climate emergency and the opportunities presented by the need for a green recovery that supports environmental and economic goals. The intention of this landscape masterplan is to realise a number of the 7 Key Themes that are directly related to the public realm at Atlantic Wharf. These include:

Green Infrastructure & Biodiversity

Our integral green spaces and biodiversity need to be protected and enhanced. We need to take bold steps to add to the natural green assets of the city making a healthy, clean, biodiverse environmentally positive place in which citizens and businesses can thrive.

As a consequence of this landscape masterplan Atlantic Wharf will be designed in such a way to deliver on this key theme by maximising the quality, quantity and diversity of natural green assets within the area.

Transport

We need to look closely at how we move around the city and at the infrastructure required to minimise the impact of vehicle emissions and air quality. Our plans are to replace as many single user, fossil fuelled trips as possible with sustainable low carbon modes of travel, whilst ensuring that they don't simply migrate problems elsewhere.

Due consideration will be given to the quality of spaces to support active travel and public transport access and to ensure that people are encouraged to use these instead of fossil fuelled trips.

Water

How we source, use and manage water and how we protect ourselves against drought and flooding are crucial parts of our aims to build climate resilience and the strategy outlines a series of current and future responses to this challenge.

“The time has come for us to take urgent and decisive action and the Council has already declared a climate emergency in recognition of this. The One Planet Cardiff Strategy sets out our strategic response to this emergency.”

Greening the City

Increased tree coverage and smarter maintenance and planting regimes will form important features of a future low-carbon Cardiff. Ideas for a City Tree Farm concept and biodiversity friendly land management could help to deliver this and could also bring new skills and employment. We'll be looking closely at the business models needed to bring these aspirations to life.

We recognise the ambition to increase tree coverage in the City from 19% to 25% and the Atlantic Wharf masterplan aims to contribute considerably to that figure.



03 Relevant Policy Framework

CARDIFF CITY COUNCIL LOCAL DEVELOPMENT PLAN (LDP) 2006 - 2026

The following policies from Cardiff's LDP apply to the Atlantic Wharf masterplan and are directly relevant to the landscape aspects of the proposed development.

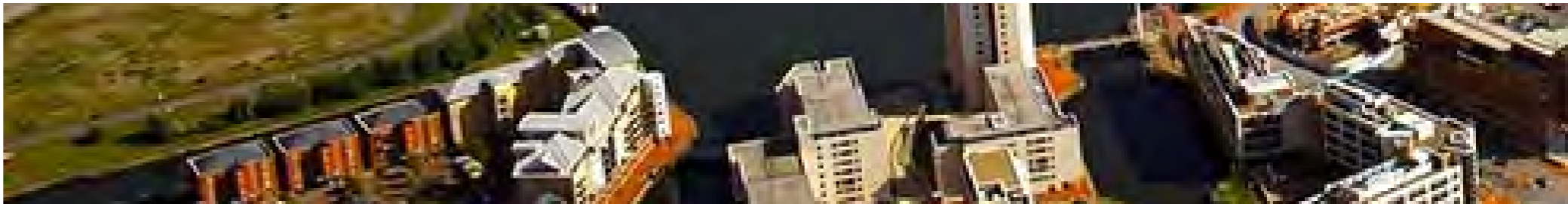
KP4 - Masterplanning Approach

Policy KP4 requires that masterplan areas are well integrated into the existing context and demonstrate a coherent phased approach to support wider infrastructure delivery in a timely manner. Masterplan developments will need to respond positively to the local context in regard to scale, massing and legibility of existing networks and ensure active travel options are practical, safe and convenient choice, as required under Policies KP4 and KP5.

RESPONSE

The public realm proposals and green infrastructure strategy design that supports the masterplan is interwoven with the design and intended use of proposed buildings and movement infrastructure.

The landscape masterplan has been specifically prepared to deal with KP4.8 and KP4.9 in that the proposed development has multi-functional and connected green open spaces which sympathetically integrate existing landscape, biodiversity and historic features of the site in a way which enhances the overall place while compensating for some loss of green space (to the south of Silurian Park).



KP5 - Good Quality and Sustainable Design

Policy KP5 further supports a wide diversity of land uses and balanced communities which provides vibrancy both during the day and achieving a night time economy. Development proposals will be expected to provide a legible and well-connected layout with natural surveillance to achieve community safety.

RESPONSE

All aspects of KP5 have been taken into consideration and applied to the strategic approach to landscape and public realm design.

KP16 - Green Infrastructure

Policy KP16 identifies that proposals should integrate green infrastructure into development proposals to protect and enhance green resources. Proposed development should therefore demonstrate how green infrastructure has been considered and integrated into the proposals. If development results in overall loss of green infrastructure, appropriate compensation will be required.

RESPONSE:

This landscape masterplan explains the overall approach to the spatial distribution and integration of Green Infrastructure resulting from the proposed Atlantic Wharf development.

C3 - Community Safety/Creating Safe Environments

Design proposal should maximise natural surveillance to reduce crime through design, increase good standards of lighting and created boundaries between public and private space. The application will need consider the interconnectivity between Lloyd George Avenue, Pierhead Street, Cardiff Bay and the constituent elements of the masterplan to design a safe environment for users, in line with Policy C3.

RESPONSE:

The policy has been applied with consideration of routes and public spaces, but also by considering aspects of details, such as maintaining a clear stem when tree planting to maintain good visibility. We have also been working with a Counter Terrorism Security Advisor to ensure we can mitigate extraordinary threats related to terrorist attacks. We have outlined more detail how this can be achieved in this report.

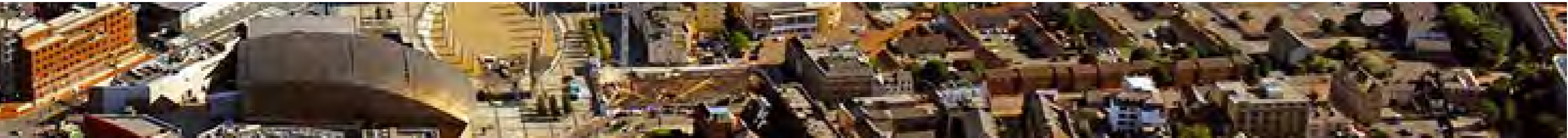
C4 - Protection Of Open Space

The aim of this Policy is to protect open space that has significant functional, conservation, environmental or amenity value. It applies to all areas of open space within the County and the objective is related to maintaining and enhancing a network of green space and corridors.

RESPONSE:

The landscape masterplan aims to demonstrate how the overall development will result in no loss of open space. Furthermore the landscape proposals will outline how the range, usability and diversity of space will be a marked improvement on the current situation.

03 Relevant Policy Framework



C5 – Provision for open space, outdoor recreation, children’s play and sport

Policy C5 deals with open space and outlines that provision for open space, outdoor recreation, children's play and sport will be sought in conjunction with all new residential developments. This policy is aimed at securing the provision or improvement of open space and other appropriate outdoor recreation and sport in conjunction with all new residential developments over 8 units and on site provision of functional open space in conjunction with all new residential developments over 14 units. The appropriate amount of multi-functional green space is based on a minimum of 2.43 hectares of functional open space per 1,000 projected population. All other open space provision will be in addition to the provision of multi-functional green space.

RESPONSE:

The landscape masterplan proposes two significant new open spaces: Atlantic Square and the Urban Arboretum. Both include space for play and outdoor recreation and will provide a resources for new and existing homes as well as visitors to the area.

EN3 - Landscape Protection

The aim of this Policy is to ensure that those features of the landscape that contribute to its character, value, distinctiveness, sense of place, and quality are protected from inappropriate development.

RESPONSE:

While the application area is not a Special Landscape Area the landscape masterplan that supports the outline planning application clearly demonstrates that there will be an enhancement to the overall sense of place, quality and distinctiveness of this area.

Trees and Development Technical Guidance Note (June 2017)

EN6 - Ecological Networks and Features Of Importance For Biodiversity

The LDP requires the protection and enhancement of features and corridors of nature conservation, biodiversity, landscape quality and the water environment. The application must demonstrate the protection of green infrastructure and must not result in a net-loss of assets, thus demonstrating the need for mitigation and enhancement, in line with Policies KP16, EN6, EN8 and The Cardiff Green Infrastructure SPG.

RESPONSE:

The landscape masterplan has deliberately set out a clear linear network of continuous environmental features and assets that will be able to support a diverse range flora and fauna in the City and dramatically improve the quality and diversity of current ecological networks in this part of the City.

It is proposed that there will be a XX% biodiversity net gain as a consequence of this development.

This would be consistent with Policy 9 - Resilient Ecological Networks and Green Infrastructure (Future Wales: The National Plan 2040) and the emerging Environment Bill.

EN8 - Trees, Woodlands and Hedgerows

The purpose of the Policy is to protect trees, woodlands and hedgerows with natural heritage or amenity value and emphasises the protection and preservation of trees and woodlands.

RESPONSE:

The landscape masterplan is based upon an arboricultural assessment and establishes how the proposals result in new trees and hedgerows. It identifies where trees are to be removed, where trees are being proposed and the overall net gain/loss.

Mitigation tree planting would be proposed as part of the hybrid planning application in line with Policies EN3 and EN8 plus Cardiff Council’s Trees and Development Technical Guidance Note. An Arboricultural Impact Assessment will be submitted in support of the full element of the hybrid planning application and an Arboricultural Report submitted in support of the outline element of the application.

EN10 - Water Sensitive Design

Part three of this policy relates to management of surface water runoff and is relevant therefore the to the drainage design of this application.

RESPONSE:

The landscape masterplan has an embedded SuDS strategy which will ensure that it is in accordance with this policy.

03 Relevant Policy Framework

CARDIFF CITY COUNCIL: I-TREE (2018)

There are a number of recommendations from this report that are relevant to the landscape ambitions for Atlantic Wharf.

- The species mix in Cardiff's urban forest should become more diversified, to build resilience to climate change, the threats posed by emerging pests and diseases, and to improve ecosystem service provision across the city.
- Bolster the number and improve diversity of mature large stature trees, given that large sized trees provide proportionally more ecosystem services than small stature trees.



Trees in Bute Park

03 Relevant Policy Framework

GREEN INFRASTRUCTURE SPG (NOVEMBER 2017)

All new developments will need to satisfy the requirements for green infrastructure as set out in Policy KP16 of the Cardiff Local Development Plan (above).

In the light of these policies, this planning submission has given significant consideration to Green Infrastructure to ensure that:

- The existing green infrastructure resource on the development site, and the potential impacts upon it, have been adequately considered
- The benefits of green infrastructure are reconciled with benefits of development
- Green infrastructure is integrated into proposals
- Opportunities for enhancement of green infrastructure, for the benefit of the community, have been taken as far as is reasonably possible.

This document is intended to demonstrate how the proposed development for Atlantic Wharf meets the objectives of the Green Infrastructure SPG (2017) (p. 8) and also to satisfy the requirements in the SPG for major developments to be accompanied by a Green Infrastructure Statement.

CARDIFF CITY COUNCIL: PUBLIC REALM REALM MANUAL (2015)

The Manual sets out guidance and design principles that should be taking into consideration during the design of all public realm schemes and carefully applied to the circumstances of each individual site in order to create high quality, innovative and inclusive streets / public spaces that are accessible to all.

It seeks to establish a reduced and consistent palette of paving materials and street furniture that will assist in the ongoing management /maintenance of the public realm and identifies a series of general principles aimed at creating more robust and durable solutions.

The design process for both Atlantic Wharf and the proposed Arena have referenced this guide.



04 Site Analysis

This section summarises the analysis that has been undertaken to support the overall landscape masterplan for the proposed Atlantic Wharf.

EXISTING GI CONTEXT

Within the vicinity of the masterplan there are existing GI resources that need to be integrated and referenced.

Silurian Park

This is an important open space within the influence of the masterplan. There will be some loss of Silurian Park as a consequence of the proposals and this will need to be compensated as part of the development.

Currently the park provides space for play, passive relaxation and habitat and includes numerous public art features that link it with the wider legacy from Cardiff Bay Arts Trust from the Cardiff Bay Development Corporation (CBDC). However, the park is not especially well connected to the rest of the Bay, as it is dislocated from the wider area by the County Hall car park and the existing Red Dragon Centre.

An important aim of the landscape masterplan must therefore be to demonstrate that:

- The open space being lost as a result of Phase 1 (the arena) can be replaced as part of the wider masterplan proposals
- Silurian Park becomes better connected to the wider area in terms of play, active travel, recreation and biodiversity
- Remains attractive for adjacent residents

Bute East Dock

The existing Dock to the east of the masterplan is a vital feature that determines both the history and current character of the area. The area is currently used, albeit not heavily, for recreation (walking, jogging, etc), although the GI is limited. Bute East Dock will need to be integrated into Atlantic Wharf masterplan in terms of use, character so that the current dockside character influences the new development areas immediately adjacent to it.

Lloyd George Avenue

Lloyd George Avenue currently incorporates extensive urban greening, which is another legacy from the CBDC. However, the remain proposals to adapt the overall character and configuration of this key corridor with potential development and possible changes to the amount of space currently allocated to public highway (roads).

The planting, while well established is monoculture planting, with very limited biodiversity or amenity value and will need to be adapted over time to:

- Meet the objectives of the Cardiff One Planet strategy
- Adapt to changing uses as aspects of the corridor are developed
- Adapt as space is reallocated from roads to other uses and forms of movement

Hence, while Lloyd George Avenue will remain a vital GI corridor linking the City Centre to the Bay, it is likely to evolve. An important aim of the masterplan is to ensure that proposed changes to GI will continue to connect to the existing and future GI on Lloyd George Avenue.



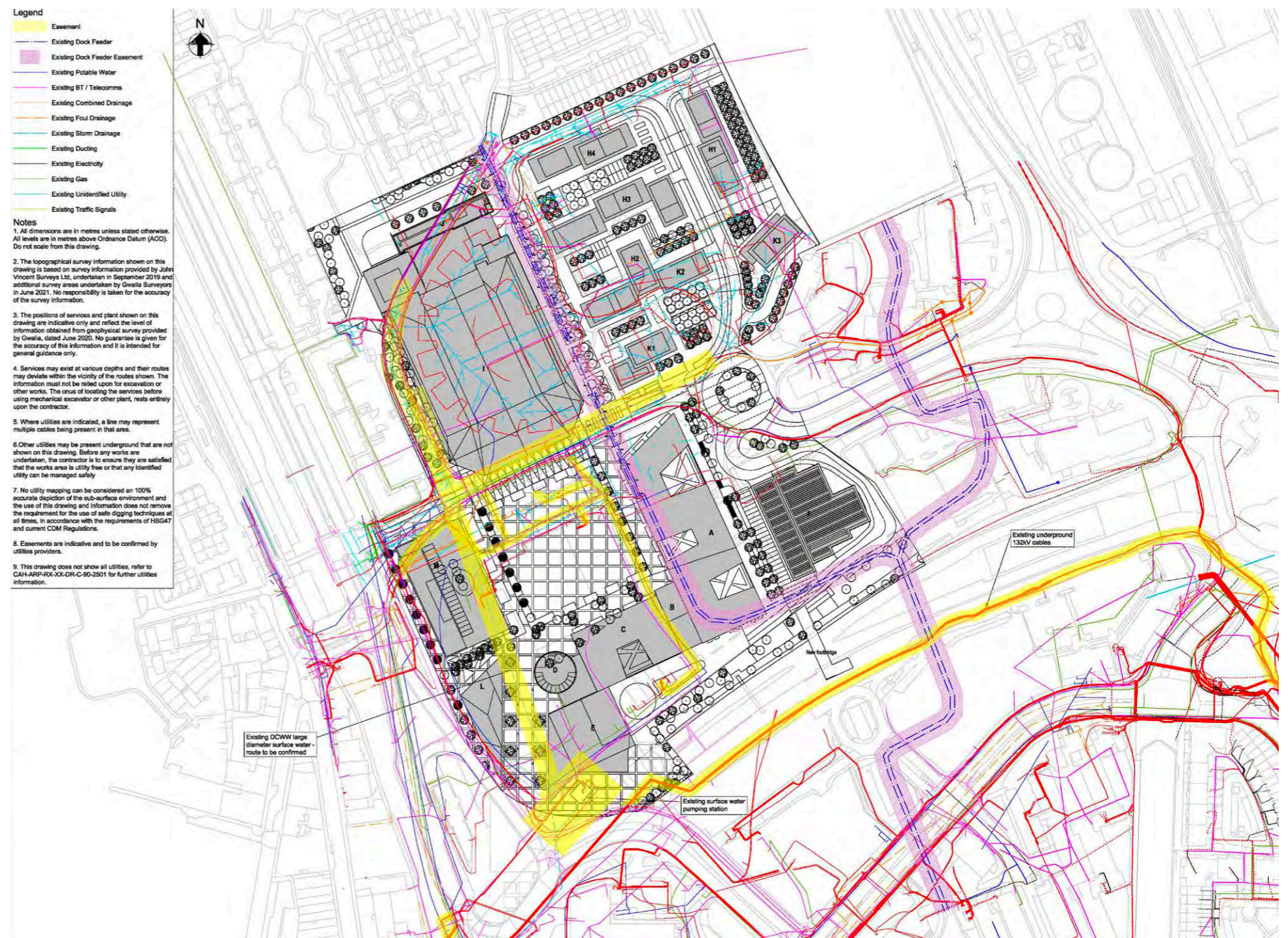
Silurian Park

04 Site Analysis

UNDERGROUND SERVICES AND OBSTRUCTIONS

The development of the landscape design to support the outline planning application has to take into account the existing location of existing subterranean constraints in the form of utilities apparatus, drainage infrastructure and easements associated with the above that would either prevent or complicate proposed planting or hardworks.

The following plan highlights the known underground services and obstructions and has informed the development of the landscape proposals.



⌚ Major Utilities and Drainage Constraints Plan (Source: CAH-ARP-RX-XX-DR-C-90-2500, Arup)

04 Site Analysis

EXISTING GREEN INFRASTRUCTURE

Assessment of Existing GI

The existing landscape features have been identified in accordance with the Green Infrastructure SPG. This includes highlighting the following:

GI SPG ASSESSMENT CRITERIA	TREES	OTHER GI
NECESSARY TO RETAIN	N/A	There are no areas of existing GI that need to be retained in situ which cannot be replaced via compensatory measures
PREFERABLE TO RETAIN	There are several Category B trees identified on the plan	There are no areas of existing GI that need to be retained in situ which cannot be replaced via compensatory measures
CAN BE REMOVED OR ALTERED	All other trees	Amenity / buffer planting
CATEGORY A OR PROTECTED TREES	There are no Category A or Protected trees within the area.	N/A
CAN BE REMOVED AND REPLACED VIA COMPENSATORY MEASURES	Existing tree stock comprised of several non-native species (which are less disease resistant and usually of lower biodiversity value). It is the intention to ensure that more trees are planted than are removed and that wherever possible the replacements will be native species	The part of Silurian Park that needs to be removed will need to be replaced and compensated for as part of the overall development



Lloyd George Avenue



County Hall



Southern entrance of the Red Dragon Centre



Silurian Park looking towards Schooner Way

04 Site Analysis

EXISTING GREEN INFRASTRUCTURE

The outcome of the above assessment is that the existing GI is largely functional. The primary role of the vast majority of soft landscape is to mitigate the visual impact of surface car parking or the rear of buildings that are in visually prominent locations (such as Lloyd George Avenue). Whilst there is a significant quantity of GI, the existing soft landscape has a limited role, is not multi-functional and has little to no amenity value.

However, there is some elements that are worthwhile to consider as part of the landscape masterplan:

Continuity: the overriding requirement of existing GI is for buffer planting, hence the edges of the existing development create continuous GI that is useful as an ecological resource. This continuity would need to be recreated and enhanced as a result of the masterplan

Species interest: there are certain trees that, whilst not of high arboricultural value, are of interest and opportunities to retain and integrate such trees should be sought.

The Green Area Assessment of the existing Green Infrastructure elements is reported in the table at page 92.



⌚ Existing Green Infrastructure (Source: Phlorum)

04 Site Analysis

EXISTING GREEN INFRASTRUCTURE

Existing ecological features of value

The existing ecological value is relatively limited. Our collaboration with Phlorum, the ecologists supporting the planning application, has emphasised that the existing landscape in the Atlantic Wharf application area is of low ecological value. This is on the basis that the existing landscape is characterised by structural landscape treatment to car parks, highways and inactive building edges.

While this visually counterbalances large areas of existing surface car parking or blank facades, it offers limited opportunities for habitat or biodiversity. This planning application is therefore an opportunity to not just increase the quantity of greenery in the area, but ensure that qualitatively it represents a major biodiversity net gain on the existing situation.

Existing arboricultural features of value

The tree survey has not highlighted any protected or Category A trees, no Category U trees and is dominated by Category B and C trees.

The site was comprehensively redeveloped circa 1980, having previously been part of the East Bute Dock Facility. The current development consists predominately of the County Hall office building and associated car parking and service roads. The engineering works and landscaping associated with the existing development involved creation of numerous raised earth bunds to be boundary of the car parking area and sloping banks around the County Hall Building. These areas were then planted with a relatively limited selection of tree species, the creation of earth bunds, with the importing and compacting of soil does not create optimum conditions for subsequent tree growth. In addition, attempting to retain trees growing on raised bunds within any comprehensive redevelopment of the site will be problematic, the constraint in terms of existing and proposed levels and impact on trees will be difficult to address. Therefore with regard to its location the potential for retention of this tree within this re-developed site is considered to be very low.

The poplar trees growing within this site are amongst the largest trees on site and consequently have some visual amenity value. However due to their relatively fast rate of growth and species characteristics poplar trees are prone to limb or complete structural failure and as their vigour declines the risk of structural failure increases. Managing mature poplar trees within areas of high public access is problematic, pruning which might serve to reduce the risk of limb failure results in relatively weakly attached regrowth and decay within pruning wounds. The long-term future of the poplar trees growing within this site regardless of any development is considered to be limited.

An aim of future detailed planning applications should be to consider the integration of Category B trees, where possible to do so, although it is likely that the majority of the existing tree stock of the area will need to be replaced during the construction of the proposed development.



Existing Green Infrastructure on Hemingway Road

04 Site Analysis

EXISTING PUBLIC ART

The plan (below/opposite) identifies all of the existing pieces of public art that are currently within the area as the basis for consideration of the role of public art in the landscape and as part of the future Atlantic Wharf.

The public art features, notably the reclaimed lifting hooks on Hemingway Road, make references to the history of the area. These items would need to be repositioned appropriately within the landscape during development of the masterplan. Similarly the remnant granite dock walls, located to the south of the existing Red Dragon Centre could be redeployed within the public realm during future phases of detailed design.



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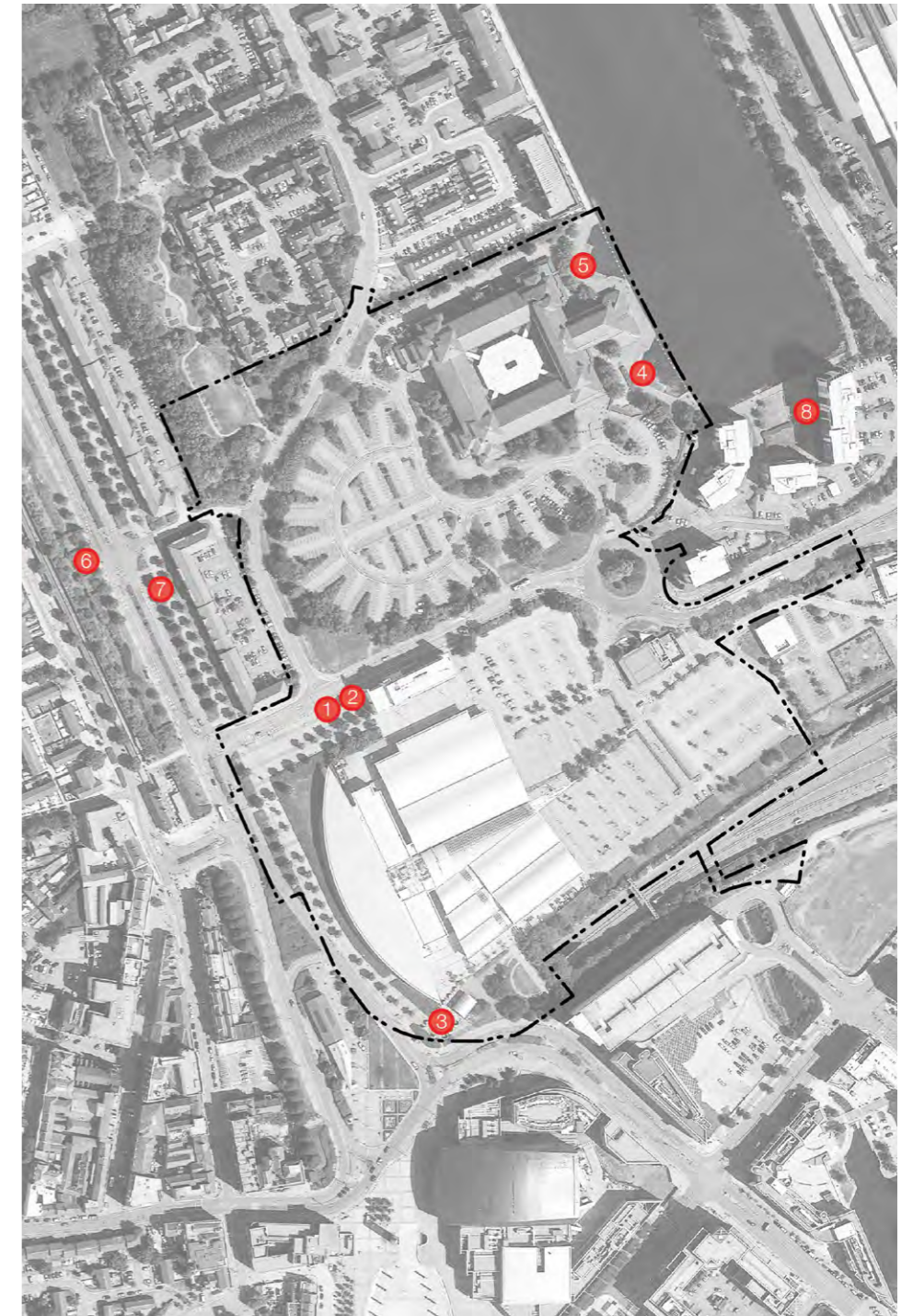
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⌚ Existing Public Art

05 Atlantic Wharf: A Multi-functional Landscape

The landscape masterplan for Atlantic Wharf is based upon a multifunctional approach to the design and integration of landscape and natural features within this part of Cardiff.

Atlantic Wharf will be both a major destination for Cardiff and Wales, a residential neighbourhood for existing and new residents and a place that can support a diverse habitat for flora and fauna. The proposed multi-functional approach to the design of the spaces between the buildings will help support all of these requirements in a manner that makes it a thriving, green and healthy place.

ECOLOGY STRATEGY

The ecology strategy is derived entirely from the Landscape Vision & Ambitions. This is derived from the fact that Atlantic Wharf will be a connected landscape that is biodiversity rich via continuous linear habitat features.

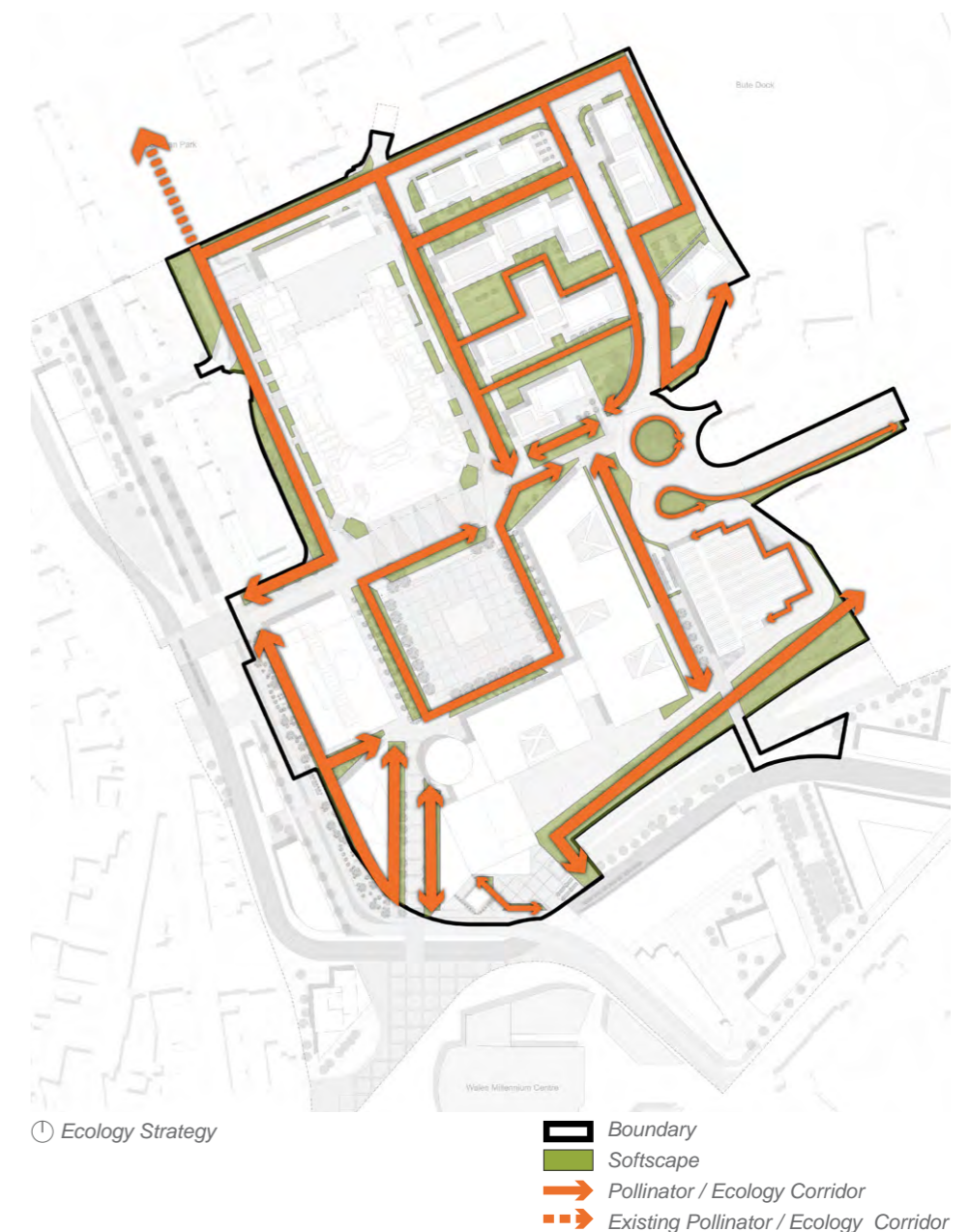
The ecology strategy for Atlantic Wharf will:

- gain 436 trees as a consequence of this development, with XX% of these being large mature trees planted in soil
- result in 1820 linear metres of continuous landscape corridor
- achieve a biodiversity net gain of XX

The site analysis and collaboration with the ecological consultants, Phlorum, has identified a paucity of existing habitat rich environments in the application area. These proposals are fully intended to radically enhance the ecological carrying capacity of the area for the benefit of current and future generations.

We can achieve this by:

- Connecting the landscape through linear features
- Where possible use native species that is recognised by indigenous flora, but also resistant to native diseases
- Select plants that offer specific benefits as pollinators, habitat and food for animals (e.g. midwinter berries for birds)
- Use features in the hard landscape (e.g. small changes in level) that offer crevices and gaps as habitat for invertebrates
- Using a variety of tree heights, tree ages and canopy types to support biodiversity and sequester carbon for the long term
- Reusing site won soil, storing it appropriately and reusing it to retain its inherent qualities
- Integrating a mixture of substrates into detailed design (gravel, sand, bare soil) to support a community of invertebrates
- Integrating 3780 sq.m of green roofs



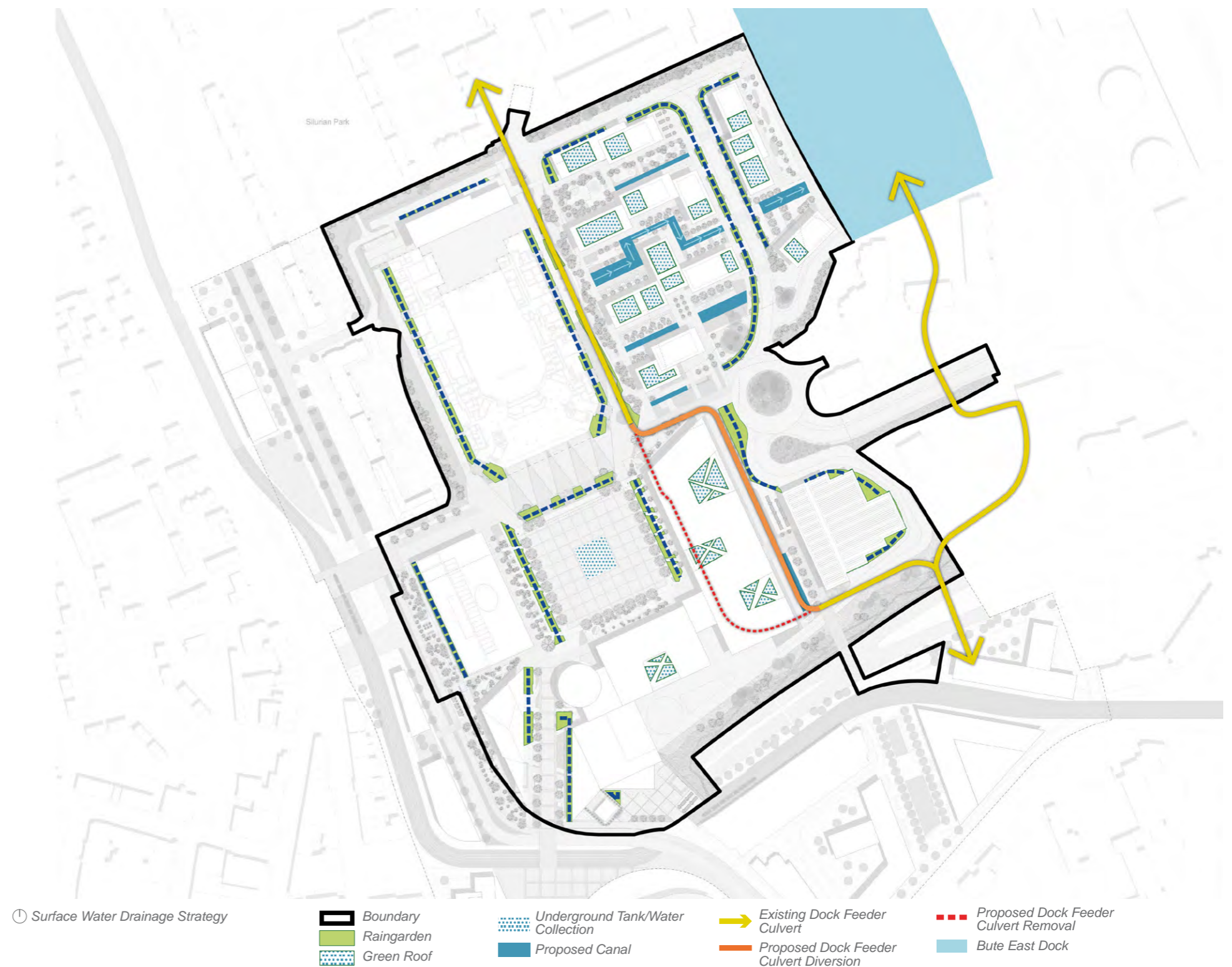
05 Atlantic Wharf: A multi-functional landscape

SURFACE WATER DRAINAGE STRATEGY

The masterplan proposes a network of raingardens which will be designed to collect water from adjacent impermeable surfaces or roof runoff via downpipes. Once the water is in the raingardens, carefully specified substrate and plant specification will allow the water to either evaporate or percolate slowly through the lined gravel substrate layers, which will ensure that any outflow has been treated. The raingardens, wherever possible, will be connected to existing bodies of water, such as Bute East Dock, which will be used by ABP to manage water levels in the docks.

The Full Planning Application for the Arena incorporates a system of raingardens linked to Bute East Dock. However, Future Reserve Matters Applications resulting from the Outline Application will need to determine whether scaling this solution (connection to Bute East Dock) is technically feasible.

The anticipated area of raingardens to be associated with Phase 1 (the Arena) is **1660 sq.m**, while it is likely that the whole proposed Atlantic Wharf development could result in **5870 sq.m** of sustainable drainage in the form of raingardens.



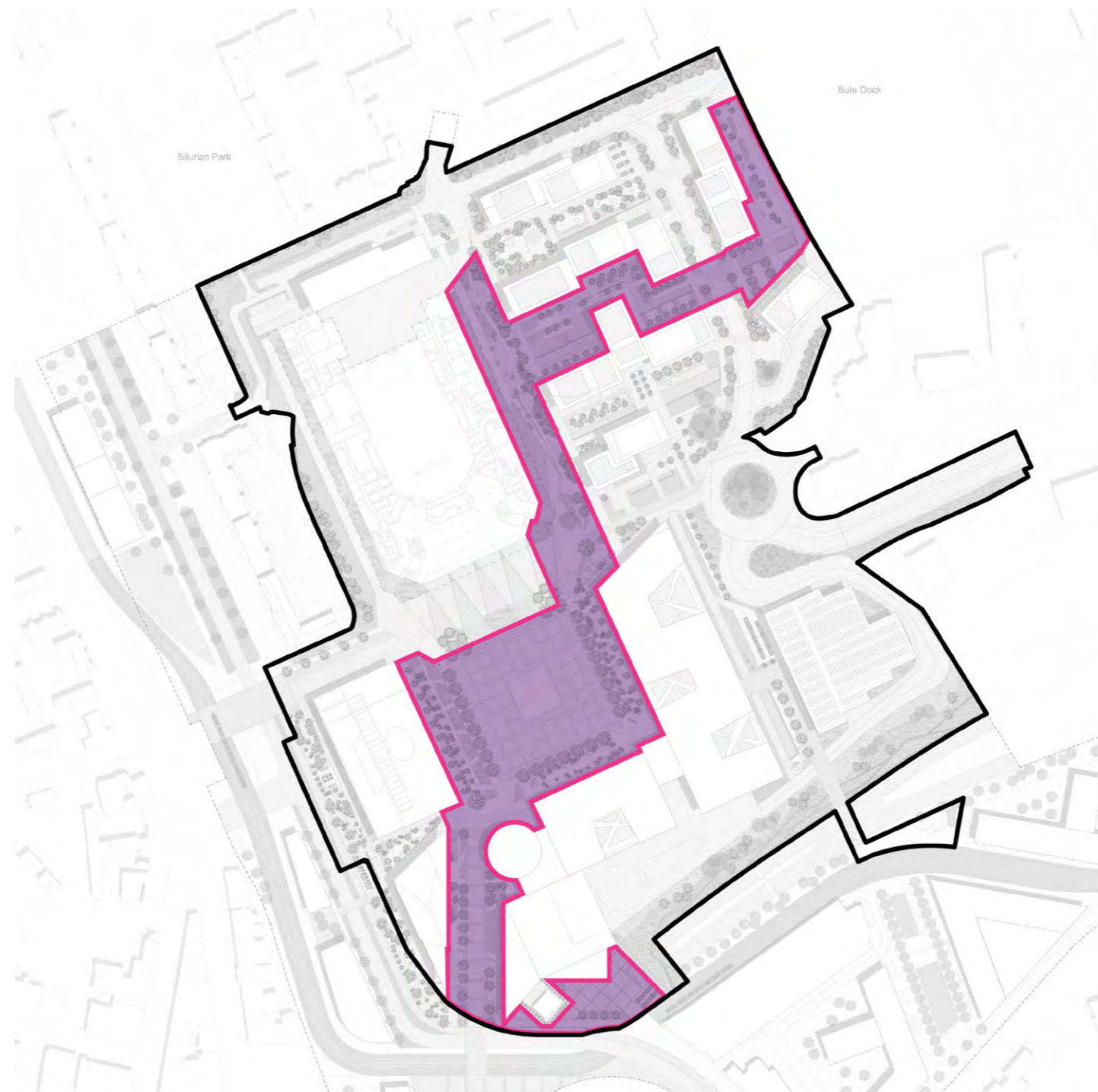
05 Atlantic Wharf: A Multi-functional Landscape

EDUCATION & ENGAGEMENT STRATEGY

The landscape approach we have advocated will have greater impact if the decision making is communicated to the people who will live, visit and use Atlantic Wharf.

Therefore we are envisaging an interpretative landscape where using physical interpretation boards, QR codes and augmented reality that there can be a rich and rewarding experience. This could, for instance, include information regarding :

- raingardens: why they look the way they do, how they work and how much water they intercept
- tree species: why they have been selected and the species that rely upon them for habitat and food, the amount of carbon they sequester, etc
- Ground cover planting: species information and purpose (e.g., as support for pollinators)
- Habitat features: such as gabion baskets filled with slate/timber for invertebrates, bug hotels, etc



① Education and Engagement Strategy

Boundary
Integrated Education and Engagement Elements into the soft and hard landscape



05 Atlantic Wharf: A multi-functional landscape

MOVEMENT STRATEGY

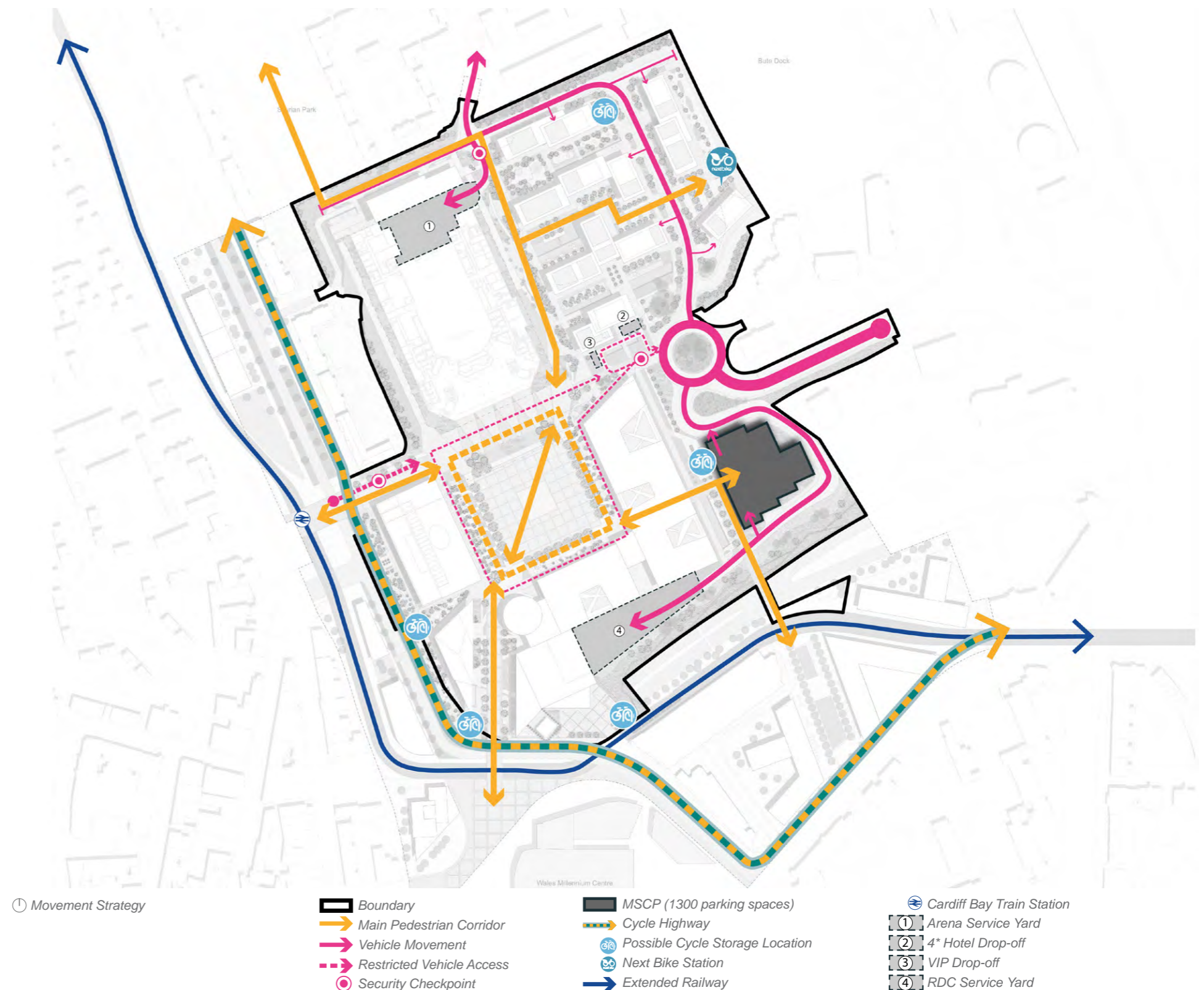
The movement strategy, lead by WSP, is based upon prioritising the most sustainable forms of transport. The strategy is to:

- keep vehicles to the fringes of Atlantic Wharf, except for access at set periods of the day
- Provide safe places for pick-up and drop off (but not a taxi rank)
- Permit cycles closer to the centre of the area in segregated off road areas but encourage people to park their bikes before reaching Atlantic Square
- Create safe spaces for pedestrians everywhere, but prioritise pedestrians in the centre of the development

Achieving this is vital to able to create a vibrant, accessible and secure public realm.

The movement strategy diagram highlights:

- A landscaped 'green' metro line, with strategic crossings to permit safe pedestrian access
- The location of public highways, which should be designed to accord with the latest ideas in street design (e.g. the revised Manual for Streets (3rd 'revision') and should incorporate a design speed of 20mph. There is no need for vehicles to be driving any faster in the proposed development.
- The location of a 1300 space multi-storey car park
- Time limited access for servicing for Atlantic Square
- Access points for buildings with underground / semi basement / ground floor parking



05 Atlantic Wharf: A Multi-functional Landscape

GREEN INFRASTRUCTURE STRATEGY

At the high level the GI Strategy is based upon trying to secure consistent, connected linear GI that directs the movement of people, creates an interesting and comfortable environment, mitigates climate change and supports the migration of flora and fauna.

At a more detailed level is proposed a GI Strategy that makes certain distinctions in terms of the performance criteria for GI. These are as follows.

‘Showcase’ Planting Areas

These areas of the development will be front-and-centre for visitors, and will provide a vibrant and ornamental (while still having a natural aesthetic) backdrop to the key sights within the scheme.

The planting will feature a higher proportion of flowering perennials within a base mix of grasses and ferns to maximise colour and interest through the seasons. **The showcase planting areas may be more likely to contain non-native plant species in order to create visual impact and aesthetic appeal.**

‘Dynamic’ Planting Areas:

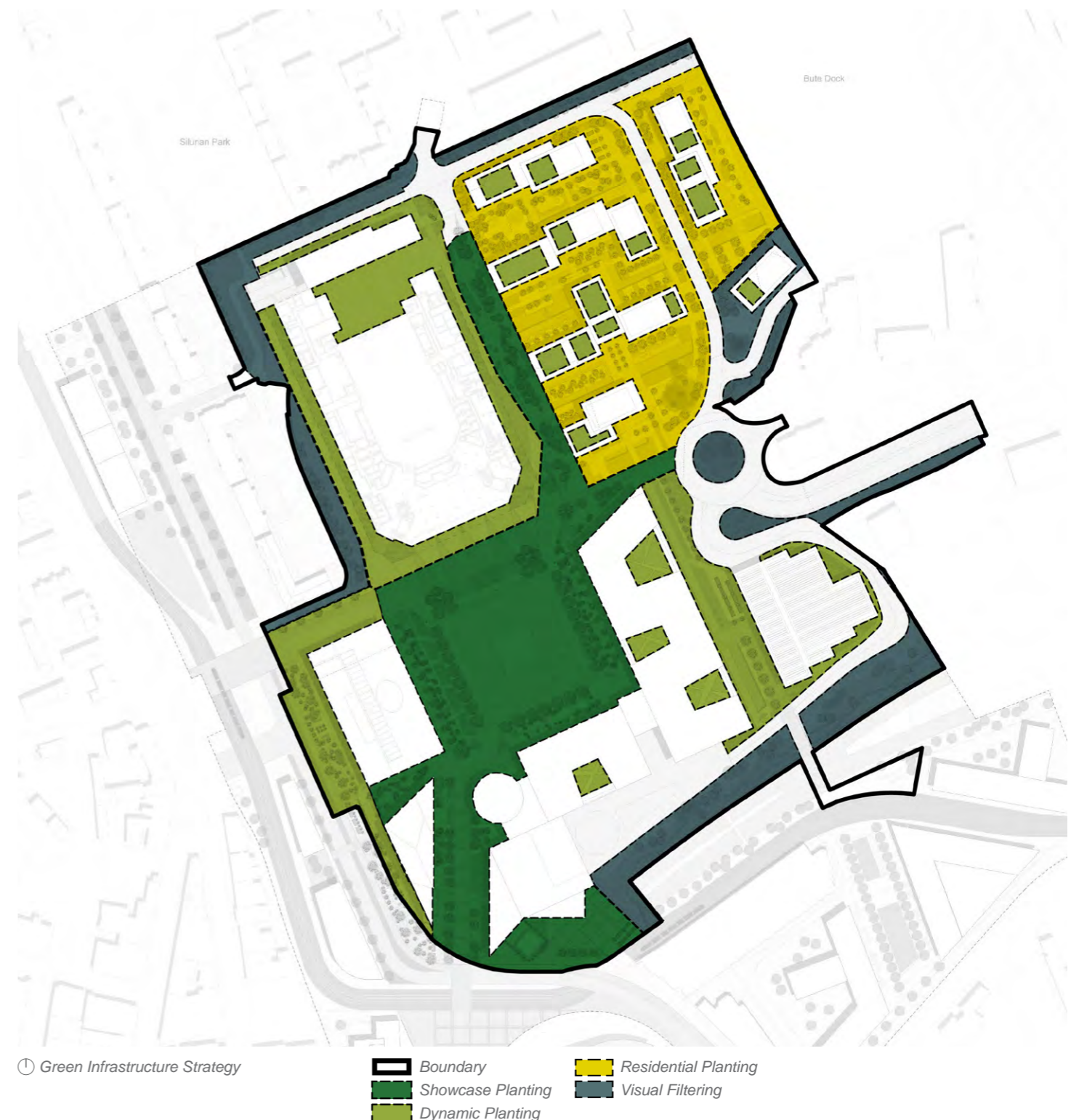
These are zones of the development which fall outside the ‘Showcases’ but still play a prominent role in movement through the scheme. The planting mix will have a greater focus on ornamental grasses and species with foliage that will sway in the breeze coming off the Bay to emphasise the textural and sensory qualities of naturalistic planting. Flowering perennials will still feature but will not play a prominent role. **Native and non-native species will be utilised. As a rough guide there should be a preference for the former over the latter wherever possible.**

‘Residential’ Planting Areas:

Principally used for areas of new residential development, the aspiration is to give future landscape designers the freedom to express their design flair in the planting while staying within the broad naturalistic planting style **and using a palette rich in native species.**

Visual Filtering

Applying to boundary areas of the development, these act as visual filters into the scheme but also as important ecological features. The use of native trees, native understorey planting and wildflower planting creates a natural sense of enclosure while also creating wildlife corridors.



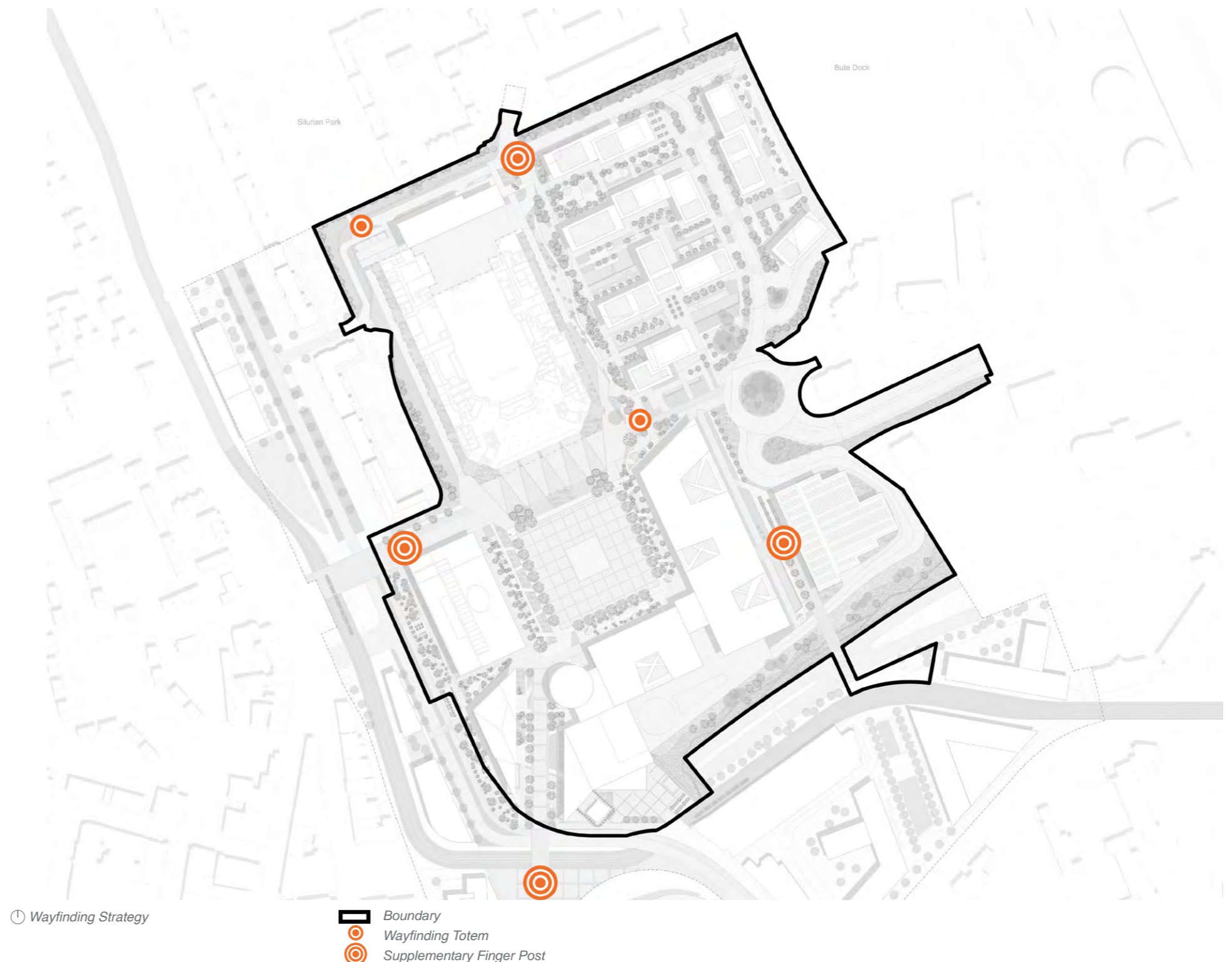
05 Atlantic Wharf: A multi-functional landscape

WAYFINDING

The wayfinding strategy is to be a simple addition to an otherwise legible layout of streets and routes. It is proposed that wayfinding related objects (finger posts and totems) in the public realm are used sparingly, partly to reduce street clutter, but partly in recognition that these pieces will supplement digital wayfinding that will become even more ubiquitous in society (e.g. Google and Apple Maps and Apps such as Waze) during the time it takes for all of the phases to be completed. Notwithstanding the increase in personal GPS on phones and watches, in key locations wayfinding will be relevant and helpful to the public. It is recommended that such locations include:

- The entrance to Atlantic Wharf from the junction of Lloyd George Avenue and Hemingway Road.
- The arrival point from the multi-storey car park
- The 'gateway' as one walks from Plas Roald Dahl towards Atlantic Square

At each location it is recommended that a totem is added, with each piece designed so it is an integral part of the oversall street furniture palette (see p.XX) but also so they that can be adapted and kept up to date as each phase is completed.



05 Atlantic Wharf: A Multi-functional Landscape

PUBLIC ART STRATEGY

The public art strategy is based upon several interlocking themes:

- Enriching the experience of Atlantic Wharf by using temporary art installations using sound and light to create a multi-sensory and immersive experience
 - Innovative or striking planting that is a proxy for object based public art. This could be a set piece specimen tree, or group of trees, or could be artworks embedded / embellished into trees - this is fitting for the challenges we face in the context of climate change and habitat loss
 - Educational information that explains the design rationale behind certain landscape features so that people can make the link between the design of their environment and climate change / habitat loss
 - Using Atlantic Square as a venue for major temporary exhibitions and touring installations, e.g Jeff Koon's famous Puppy, or The Seed, devised by British artist, set designer and artistic director Es Devlin
 - Redeploying any displaced legacy public art features from the days of the Development Corporation and Cardiff Bay Arts Trust
- We want to secure a programme of artworks, rather than static pieces so that will encourage people to return to the area repeatedly for a variety of different experiences

However, this implies that we are not opting to procure and install large permanent objects, which is currently the strategy. This is because:

- These types of pieces can take up valuable space and budget that can be used for planting which directly addresses the One Planet Cardiff Strategy. Public art splits opinion in a way that planting, especially large mature trees, does not. We are focussing our energy on bringing in large trees and showing certain trees in key locations in ways that are memorable, educational and captivating
- Cardiff Bay is already well provided with sculptural pieces in the public realm and we do not see Atlantic Wharf as competing with that. A different approach to public art will achieve this



Public art integrated into trees, as adornment as well as emphasis upon planting over art

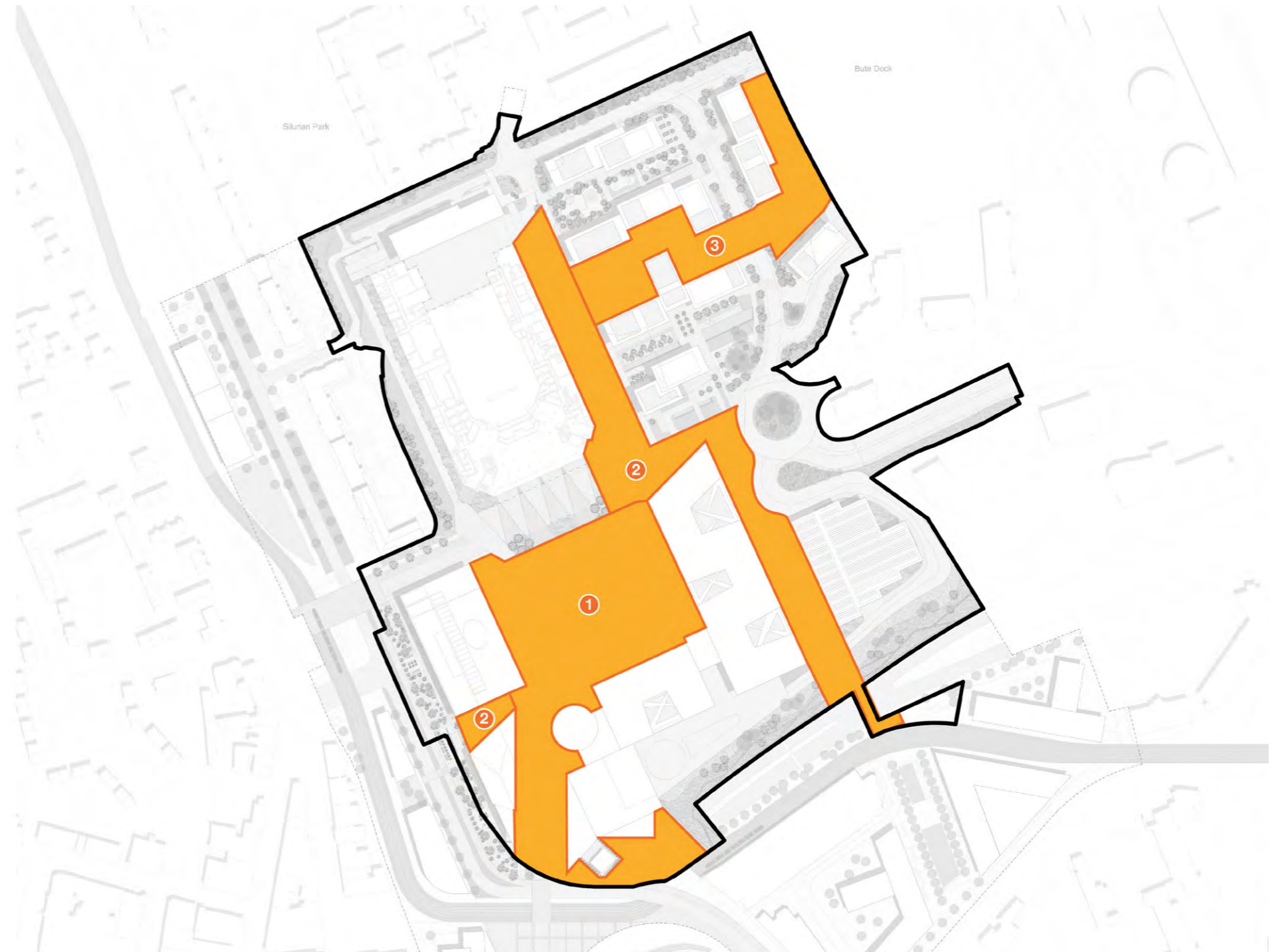


Temporary as opposed to static artworks to encourage repeat visits and interest

05 Atlantic Wharf: A multi-functional landscape



Above: 'Imminence' a temporary and interactive AV piece by Novak in Bloomberg Arcade, London
Below: 'Puppy' by Jeff Koons. A temporary travelling art attraction, of the sort that could one day be accommodated within Atlantic Square



- Boundary
- 1 World-class Art Installation
- 2 Integrated Art Installation (landscape)
- 3 Integrated Art Installation (water)
- 4 Potential AV art installation

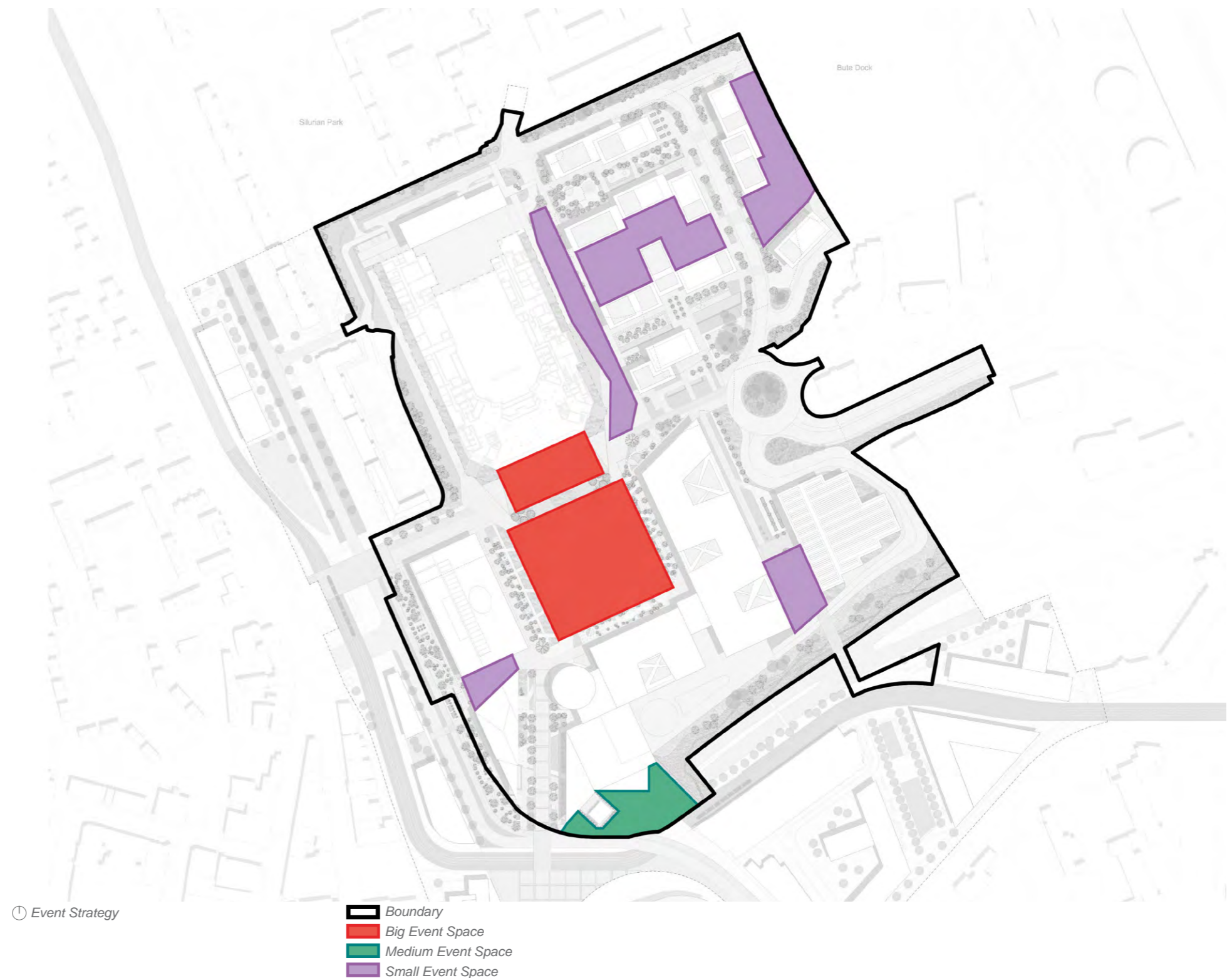
05 Atlantic Wharf: A Multi-functional Landscape

EVENT STRATEGY

Major Events

The event strategy contains a number of components, all of which are based upon conversion of open public space into managed space that is temporarily semi-private. This includes:

- The conversion of Atlantic Square from a public plaza to an closed events space where numbers need to be managed (either on a ticketed or unticketed basis, such as Winter Wonderland, Eisteddfod, Cardiff Half Marathon Finish, outdoor gig as part of an outside broadcast, creation of a temporary fanzone for future sporting event, etc)
- The conversion of Arena Plaza from an open concourse and a crowd management zone (when Arena is in event mode) to a closed space for a managed event (e.g., an exhibition 5-a-side match). This would leave Atlantic Square open to the public, while still enabling semi-private events to happen



05 Atlantic Wharf: A multi-functional landscape

Medium Sized Events

The use of the space to the south of the proposed Wales Millennium Centre Academy is an ideal space for staged outdoor performances (such as outdoor cinema, live music and theatre, smaller fanzone type events).

The space is enclosed, has good access to F&B and has the advantage of having adjacency to the WMC Academy but also with its own 'back-of-house' access for sound, lighting, costume and production teams as shown in the masterplan.

Regular Events

There are a wide range of incidental spaces in the masterplan, for instance:

- 'Footbridge walk' (to the east of the proposed Red Dragon Centre)
- The Urban Arboretum
- Hemingway 'Walk'; and the
- East - West link from Lloyd George Avenue to Atlantic Square

All of these spaces could support the Major and Medium events with spill out space (e.g., merch stalls of the type that accompany an event such as the Velothon) as well as more regular seasonal events such as street food festivals, pop up food trucks, etc



Top image - U2 concert in Trafalgar Square.
Bottom image - Street artists performing in Bath.



Top image - Cardiff Christmas Market.
Bottom image - King's Cross Canal Corridor.

05 Atlantic Wharf: A Multi-functional Landscape

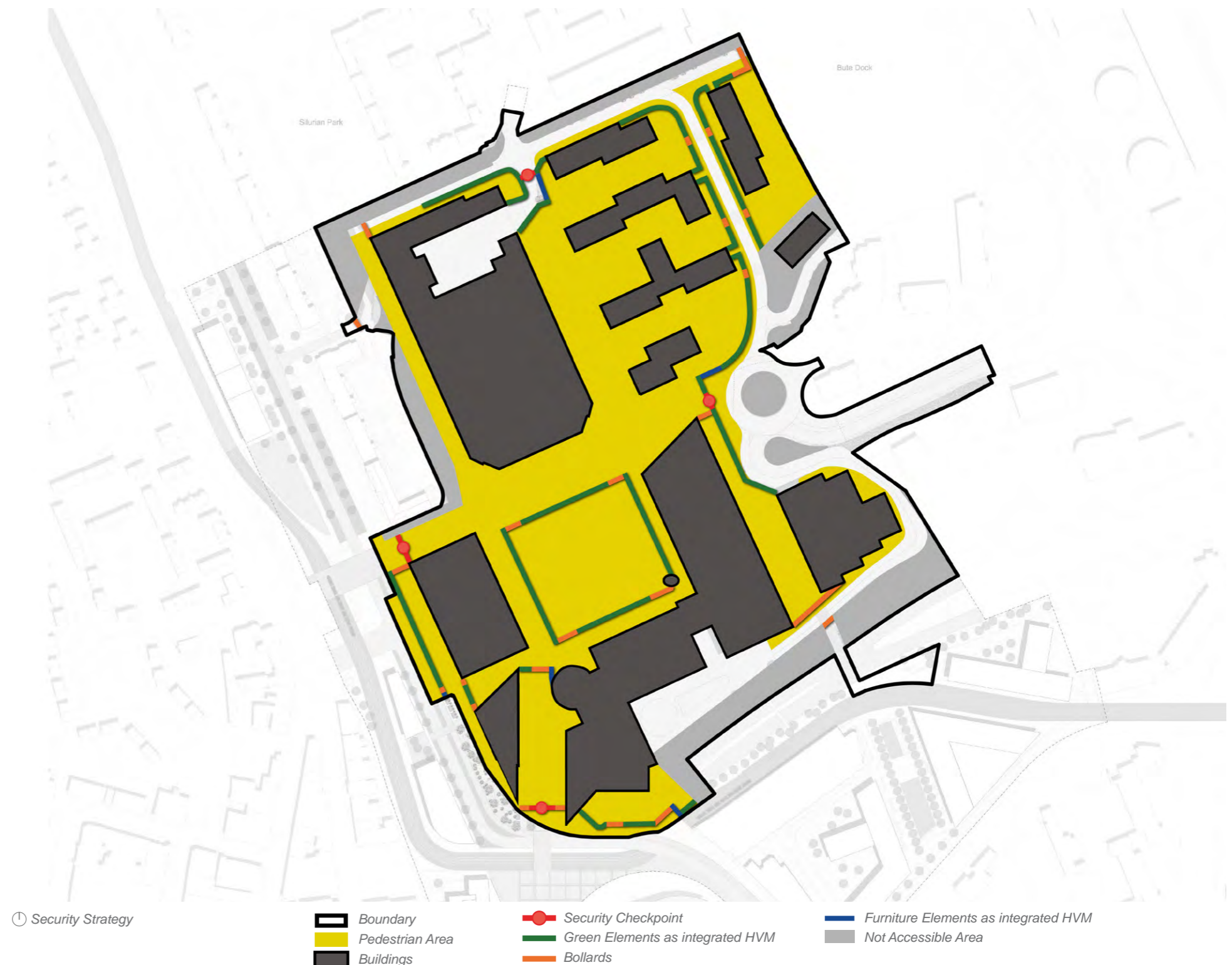
COMMUNITY SAFETY AND SECURITY

The success of the public realm is entwined with how safe people feel about using it and how aware they feel of the security features that are deployed to maintain civility, safety and security.

In terms of future detailed design the following documents have influenced the landscape masterplan

- Transport Advice Note 01/11 (Updated October 2017) (DfT, Centre for Protection of National Infrastructure)
- Integrated Security A Public Realm Design Guide for Hostile Vehicle Mitigation - Second Edition
- [Robertsons Security Report](#)

The use of a vehicle as a weapon in a terrorist attack is not new. Recent terrorist incidents and violent extremist propaganda demonstrate that the use of vehicles as a weapon continues to be of interest by those wishing to cause harm. Attacks of this nature require minimal capability, but can have a devastating impact in crowded places with low levels of visible security.



05 Atlantic Wharf: A multi-functional landscape

The above documentation, specifically TAL 01/11 outlines the variety of different threats posed from hostile vehicles.

Security features can include:

- Bollards (fixed or removable)
- Planter units
- Structural walls
- Enhanced fences
- Specialist structural cycle racks
- Integrated / strengthened street furniture (e.g. seating, lighting columns or shelters)
- Earthworks and level changes (e.g. steps, ditches or bunds)
- Water features (e.g. fountains or ponds)
- Trees (of certain species and sufficient dimensions).

A spatial strategy is proposed that governs community safety in terms of Hostile Vehicle Mitigation (HVM). Therefore target hardening has been considered as part of the overall design of the public realm. This incorporates HVM rated products or features to be located in the following locations:

- Entrance to the 'gateway' from the south from Plas Roald Dahl
- Entrance to Hemingway Road from Lloyd George Avenue to be used as an 'exit'
- Entrance to the eastern side of the Arena Plaza / Atlantic Square from the roundabout to be used as an 'entrance'
- WMC Academy Square (near to the Q Car Park).
- Access either side of the Urban Arboretum

The cumulative effect of this approach will be to create a secure outer and inner barriers around the perimeter of Atlantic Wharf and the inner area of Atlantic Square.

Within the development further target hardening has been designed into key features such as:

Planting design (at least 2m clear stem) and 1m gravel margins to low planting areas to optimise visibility and make it difficult to hide bags of contraband / explosives, etc in planted areas

Use of impenetrable species to boundaries where security is required (e.g. adjacent residential properties)

Uniform and high lux level lighting, with fully programmable and controllable settings for use should an incident occur and to create a safe environment at night.



Top image - Example of bollards integrated in the public realm.

Bottom image - Anti-terrorism planter.

05 Atlantic Wharf: A Multi-functional Landscape

STRATEGIC OVERVIEW OF AESTHETIC CHARACTER & IDENTITY

The proposed approach to softworks, hardworks and street furniture materials are covered in more detail in Sections 7, 8 and 9.

However, there is a strategic approach to the overall appearance of the landscape within the proposed Atlantic Wharf so that the aesthetic characteristics of the materials that make up the public realm have a common aim, which is to convey a strong overall sense of place and character across the whole of Atlantic Wharf. Whilst there will be distinctive methods of adapting materials within the masterplan area to suit the subtle distinctions within Atlantic Wharf it is intended that there is an overall narrative in terms of materiality that comes is evident for people using the area in the future.

A landscape recovering from an industrial past

The former industrial character of the area should be reflected in the materials that make up the planting, street furniture and hard landscape. The intention is to convey an environment that is recovering and, in places, has already recovered from the industrial past. Hence the overall approach to the materials that make up the public realm is as follows:

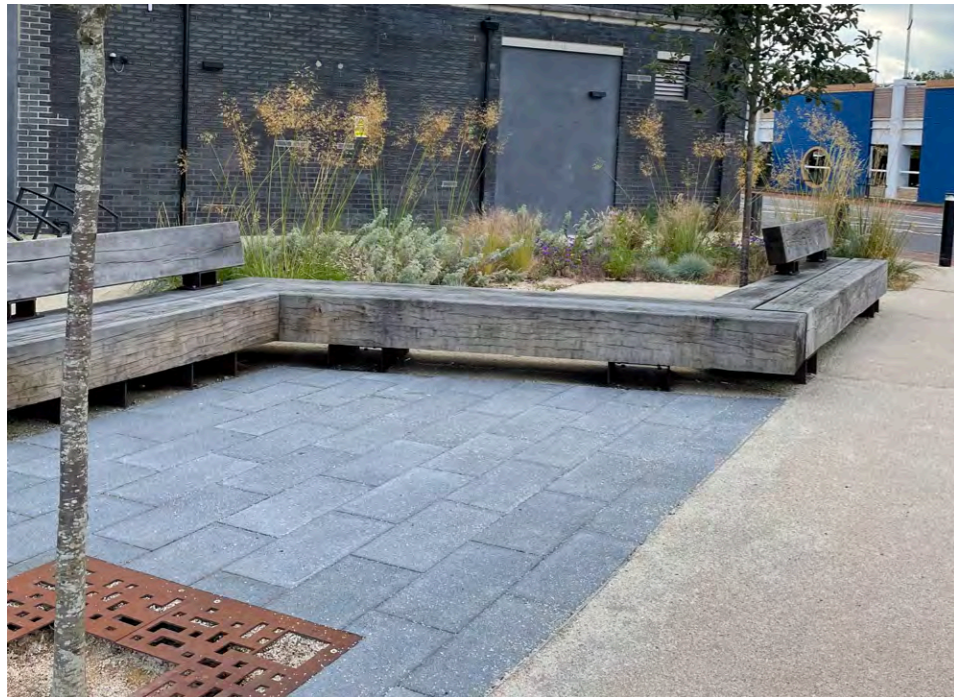
- A blend of ornamental grasses, perennials, trees and shrubs create a stylised version of an industrial landscape reclaimed by nature.
- Street surfaces that are robust, hardwearing and in places textured with emphasis upon granites and (sparingly) gravels. Partly this is down to the practicalities of managing a heavily used urban environment, but also because they are authentic to the area as a reference to the large granite and engineering block slabs that would've made up the paved surfaces in an industrial area.
- Street furniture that is compromised of robust, heavy forms and utilising materials that are simple to convey an appearance that has a consistency with an industrial aesthetic, yet which are suited to the urban environment.

As part of the theme of recovery from an industrial past needs to be an overt approach to integration of features that support biodiversity and habitat, particularly of pollinators and invertebrates.



*Image of cropped granite blocks taken near the former Graving Docks at Cardiff Bay.
Use of cropped setts in a contemporary scheme in Roskilde, Denmark.*

05 Atlantic Wharf: A multi-functional landscape



Use of cropped setts in a contemporary scheme in Roskilde, Denmark.

06 Key Spatial Elements of the Landscape Masterplan

ATLANTIC SQUARE

The centrepiece of the masterplan is the proposal for a new civic square that will become the heart of the new development and one of the biggest civic plaza’s to be built in the UK this millennium.

Key design objectives

There are a wide range of objectives that need to not only be met, but managed, as with such a large area and one required to perform such a wide variety of functions there will be inherent tension between them. It is vital therefore that the design offer flexibility to operate in a number of different guises, but common to all of them is a civic scale and the need to address Cardiff’s One Planet objectives. The proposed design objectives are as follows:

- A very large clear space to be used for major civic events where numbers of attendees can be managed in a secure environment (either on a ticketed or unticketed basis)
- A very large clear space which also incorporates a ‘magnet’ attractor (a ‘bubbler’ jet water feature) so that people are drawn to the centre of the space, or enjoy watching those who are attracted to it
- Incorporate intimate spaces on a human scale for day-to-day activities
- Integrate substantial green elements that perform a vital role in terms of climate change mitigation, microclimate management and to offset the heat island effect of a large clear (paved) space, especially during summer heat waves
- Integrate substantial connected habitat areas that can support biodiversity and bring nature into the heart of this major civic space
- Ensure that surface water from the square and the buildings surrounding it can be drained sustainably (i.e attenuated, treated and evaporated on site with the remainder being released slowly into the drainage system)

- Select a functionally robust hard materials palette that aesthetically support, rather than compete with, powerful surrounding architecture (the Arena, Wales One, potential Art Gallery)
- Incorporate opportunities for a very limited number of small structures. These could include some footfall driving activities into the square which might not otherwise be able to be accommodated in the surrounding buildings around the edges (these could be a small indie cafe, community space or small indie bar/restaurant/ice cream shop)
- A safe and secure space from the perspective of the feeling of safety and the ability to mitigate the impact of orchestrated terrorist attacks

Activity Zones

The space has been designed, in outline, to incorporate a variety of different activity zones:

- A dedicated children’s play area (in addition to the main water feature)
- Outdoor rooms for business meetings on the west of the square, which will get morning sun
- Large spaces for outdoor eating and drinking on the east of the square, which will get afternoon and evening sun
- Quieter reflective spaces for meeting, chatting and relaxing
- A perimeter of seating facing into the square as prime people / activity watching
- Wilder spaces where the primary role is for habitat and / or surface water attenuation

Materials

The area uses primary materials identified in section 07.

06 Key Spatial Elements of the Landscape Masterplan



① Atlantic Square - Zoomed in Plan

① Water Feature

② Main Event Space (80mx80m)

③ Long Bench

④ Pavilion

⑤ Outdoor Food and Drinks

⑥ Play Area

⑦ Raingarden

⑧ Social Rooms

⑨ Feature Lamp

⑩ Feature Tree

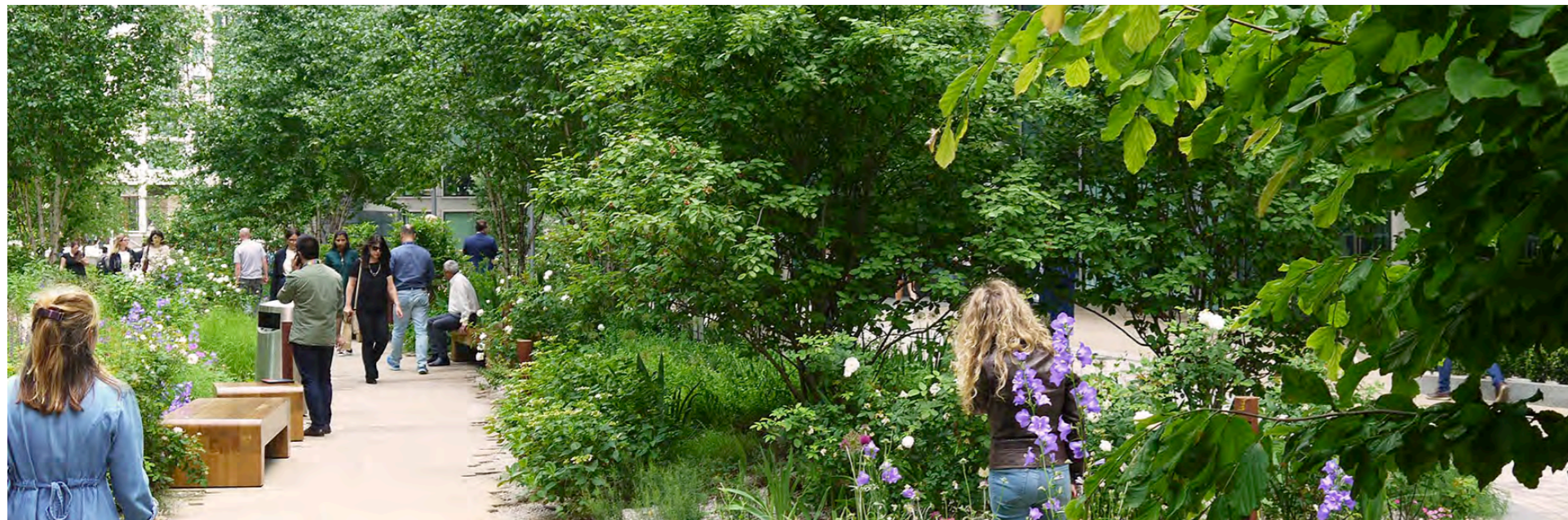
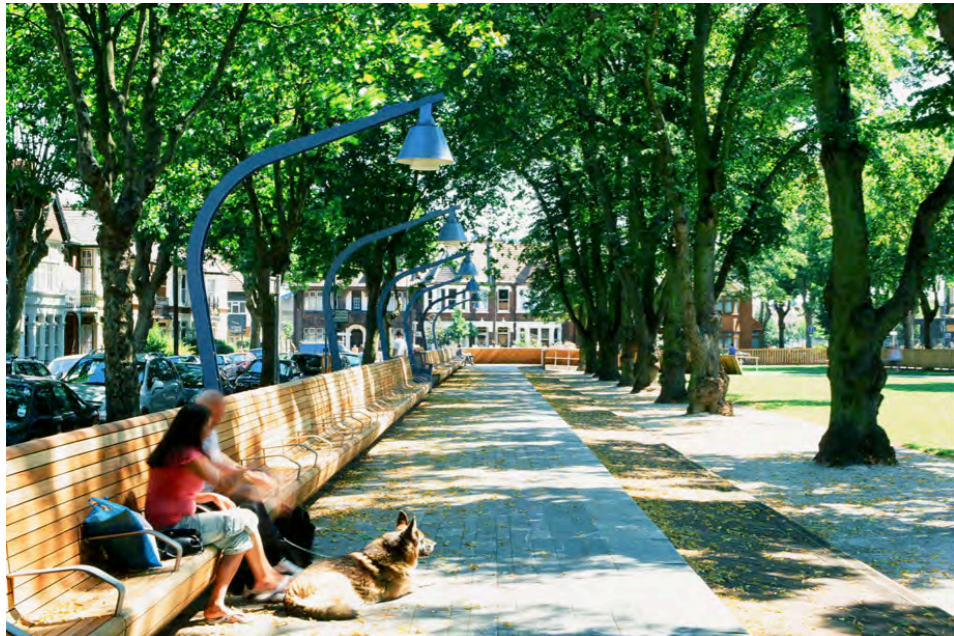
⑪ Movement Corridor

⑫ Arena Plaza

⑬ The Vista

06 Key Spatial Elements of the Landscape Masterplan

ATLANTIC SQUARE



Precedent Images

Top left image - Long bench beneath tree canopies

Top mid image - Wide rain garden

Bottom left image - Pedestrian path cutting through vegetation

Right image - Pocket spaces in a green area

06 Key Spatial Elements of the Landscape Masterplan

ATLANTIC SQUARE



Precedent Images

Top images - Mirror pool. Water jet mode; night mode; mist mode.

Bottom left image - Play area
Bottom mid image - Sitting and leisure Area around the play area
Bottom right image - Kiosk / Pavilion

06 Key Spatial Elements of the Landscape Masterplan

ATLANTIC SQUARE

Human Scale

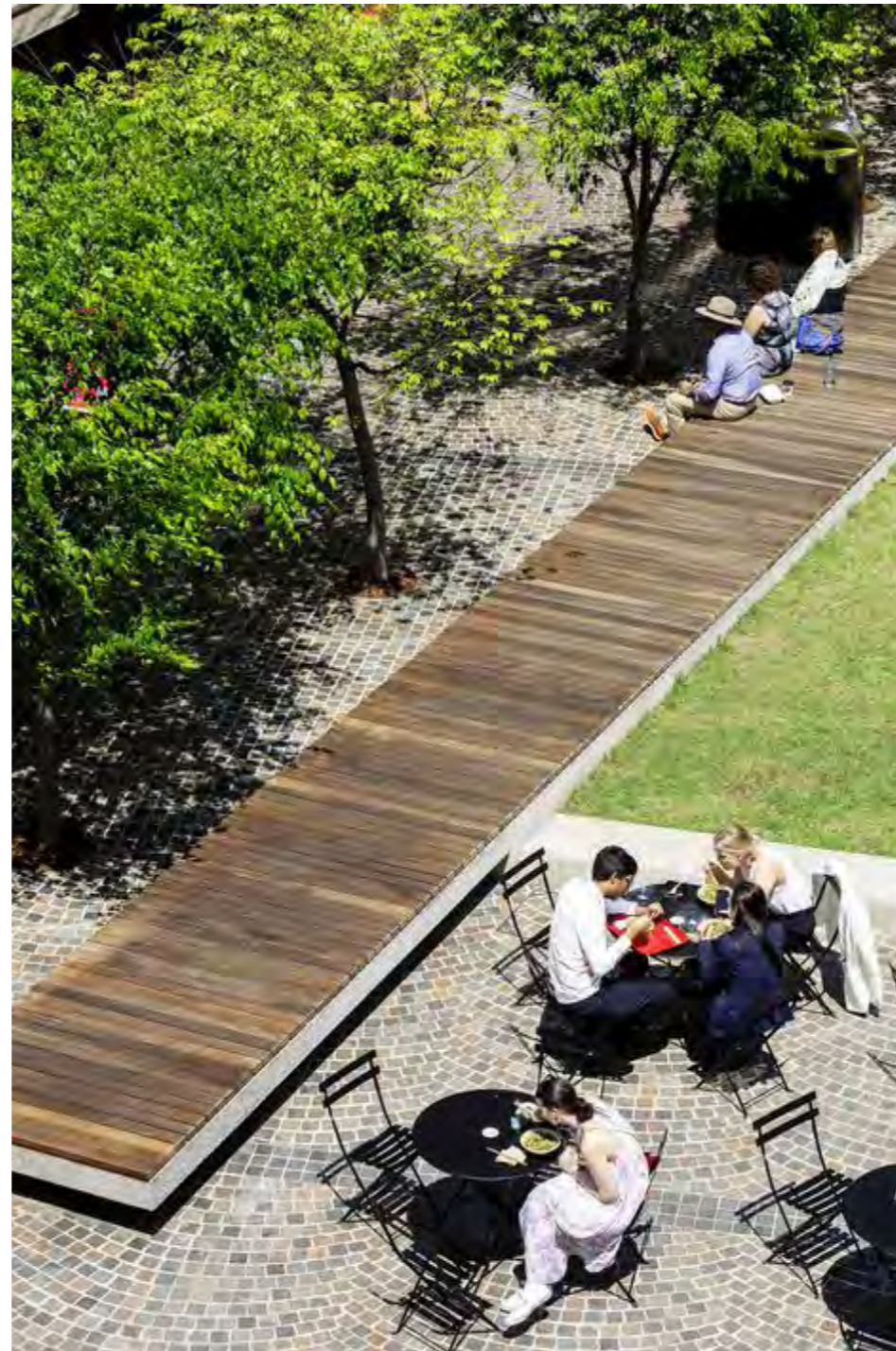
A large formal space can easily become an uninviting and aseptic environment. This is why activating the edges of the square with a multi-functional landscape that offers a diverse range of sensorial experiences and that supports a variety of activities is pivotal for the success of Atlantic Square.

It is vital that the relationship of the massing of surrounding buildings and the dimensions of the space exist harmoniously. Various iterations have been trialled to achieve the correct balance. The square has been deliberately designed to be separate from 'Arena Plaza' on the basis that if these two spaces were joined the resulting space would be too large. (Not to mention less easy to manage during events).

The very large trees at the edge of the square (proposed London Plane, *Planatus X Hispanica*) are intended to add scale and grandeur commensurate with the size of the space and frame the main events part of the square.

Progressively smaller trees, yielding to perennial and shrub planting towards the edges of the space are intended to create a more intimate scale at the edges where much of the social activity will happen.

The section demonstrates the relationship between buildings, space and the themes of planting.

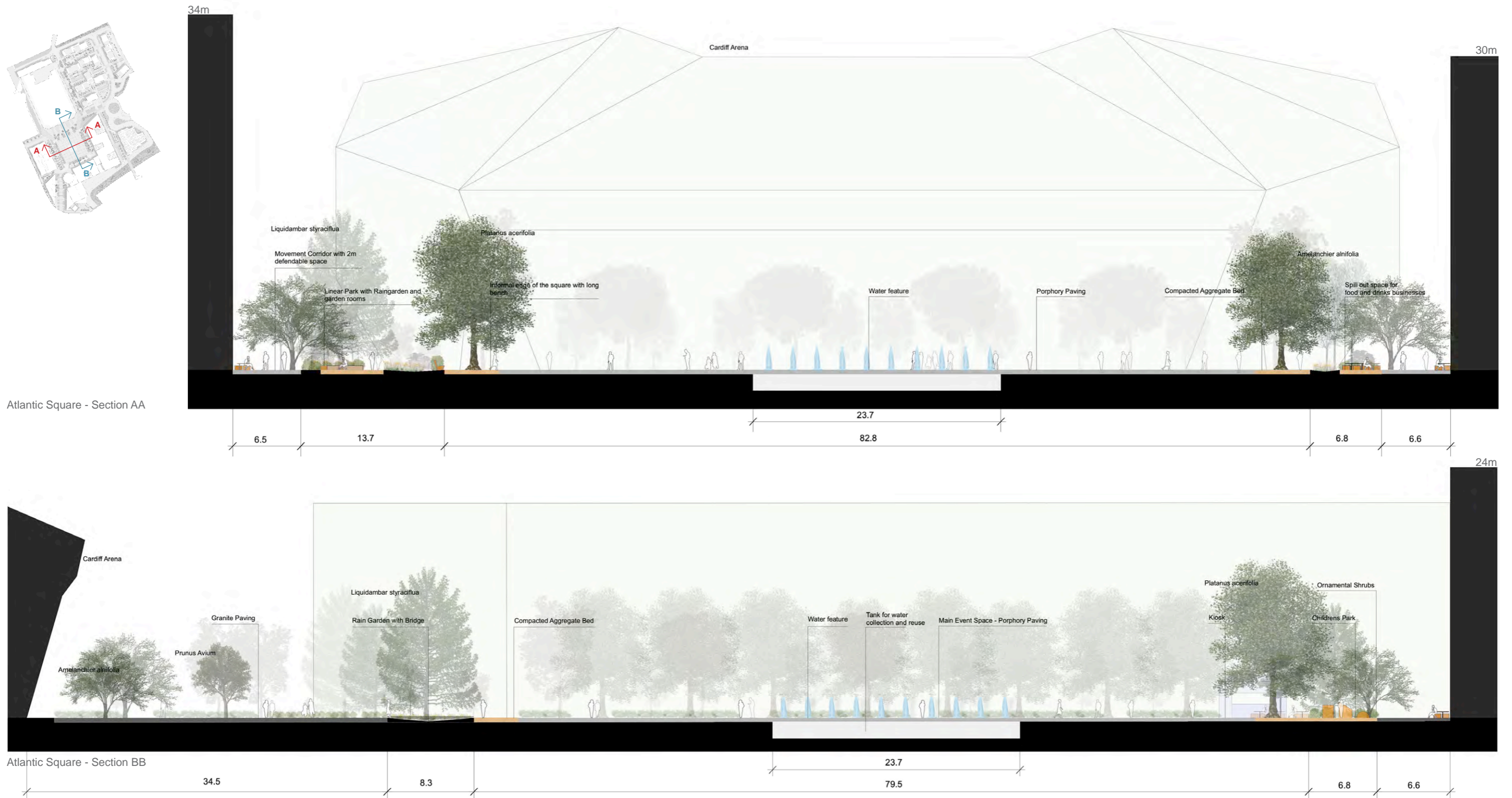


Darling Square, Sydney



Top image: Bryant Park, New York.
Bottom image: Paddington Central, London

06 Key Spatial Elements of the Landscape Masterplan



06 Key Spatial Elements of the Landscape Masterplan

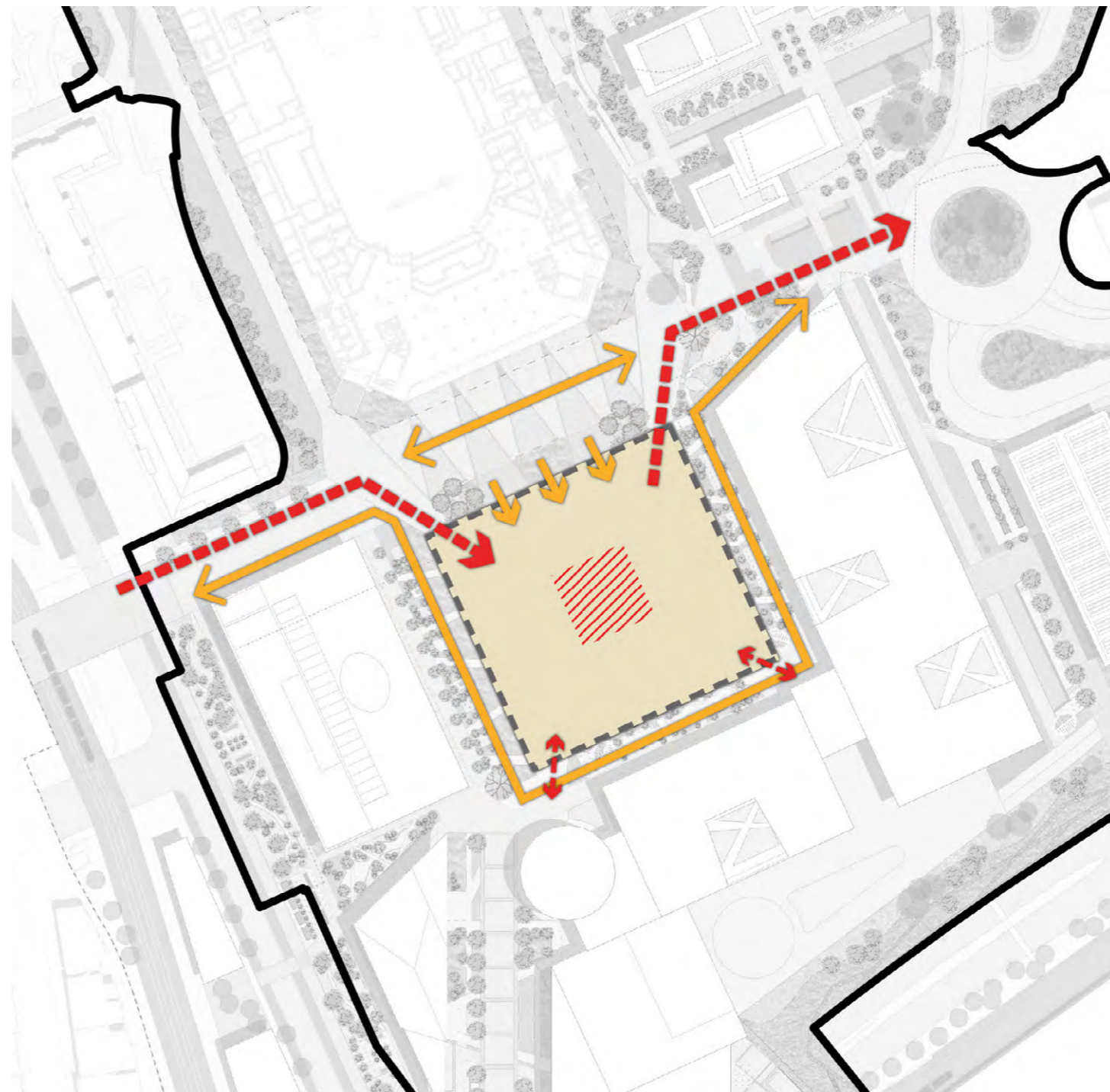
ATLANTIC SQUARE

Event Mode

The following diagram demonstrates how the Square could operate during a major event, where 6550 sq.m of space would be available for use.

Key features:

- Temporary boundaries could be deployed to manage numbers of people / paying attendees / undertake security checks, which could allow the edges of the space to operate as normal
- Electricity points could be added during detailed design (power would be required for the water feature)
- The water feature would be drained, although the surface could, in all likelihood, not be used for point loaded heavy structures or vehicles (whereas all other areas could)
- Surrounding lighting columns could be adapted to integrate both CCTV cameras and projection units to create interest / movement in the space
- Types of event could include: start/finish line for marathon/velothon type events, outdoor cinema, staged cultural events / outside broadcasts, seasonal events (Winter Wonderland, Eisteddfod, etc), seated outdoor events (e.g., beach volleyball, tennis), one off large arts installations (e.g., Jeff Koons 'Puppy')
- Access for large vehicles is permitted via each corner being accessible (under strict controls)
- Atlantic Square could become part of the pre-event crowd management plan for the Arena when major events are being held



⌚ Atlantic Square - Event Mode Operation Diagram

- | | |
|--|--------------------------------|
| ⬜ Boundary | ⚡ No Heavy Load Area |
| ⬜ Big Event Space (temporarily fenced) | ➡ Pedestrian Access |
| ➡ Heavy Vehicle Movement | ↔ Retained Pedestrian Movement |
| ↔ Vehicle Accesses | |



Top image - Cardiff Marathon.
Middle image - Outdoor Cinema.
Bottom image - Winter Wonderland (London)

06 Key Spatial Elements of the Landscape Masterplan

ATLANTIC SQUARE

Experience of Using the Square

- Each corner of the square has been designed to create a dramatic 'reveal' with each experience being different
- Long views are permitted around the edges to be able to enjoy seeing people
- Routes through raingardens and planted areas will bring people closer to nature and promote wellbeing
- Edges of the square will be vibrant with activities spilling out from surrounding buildings
- Detailed lighting design would, ideally, be capable of being highly programmable across the space in order to further influence the environment and atmosphere
- QR codes, augmented reality and digital placemaking would add further information about the square to visitors (e.g., representations of the former quayside activities)



Integrated augmented reality (Parliament Square, London)



Edges of the Square could work similar to Mill Lane, Cardiff

06 Key Spatial Elements of the Landscape Masterplan

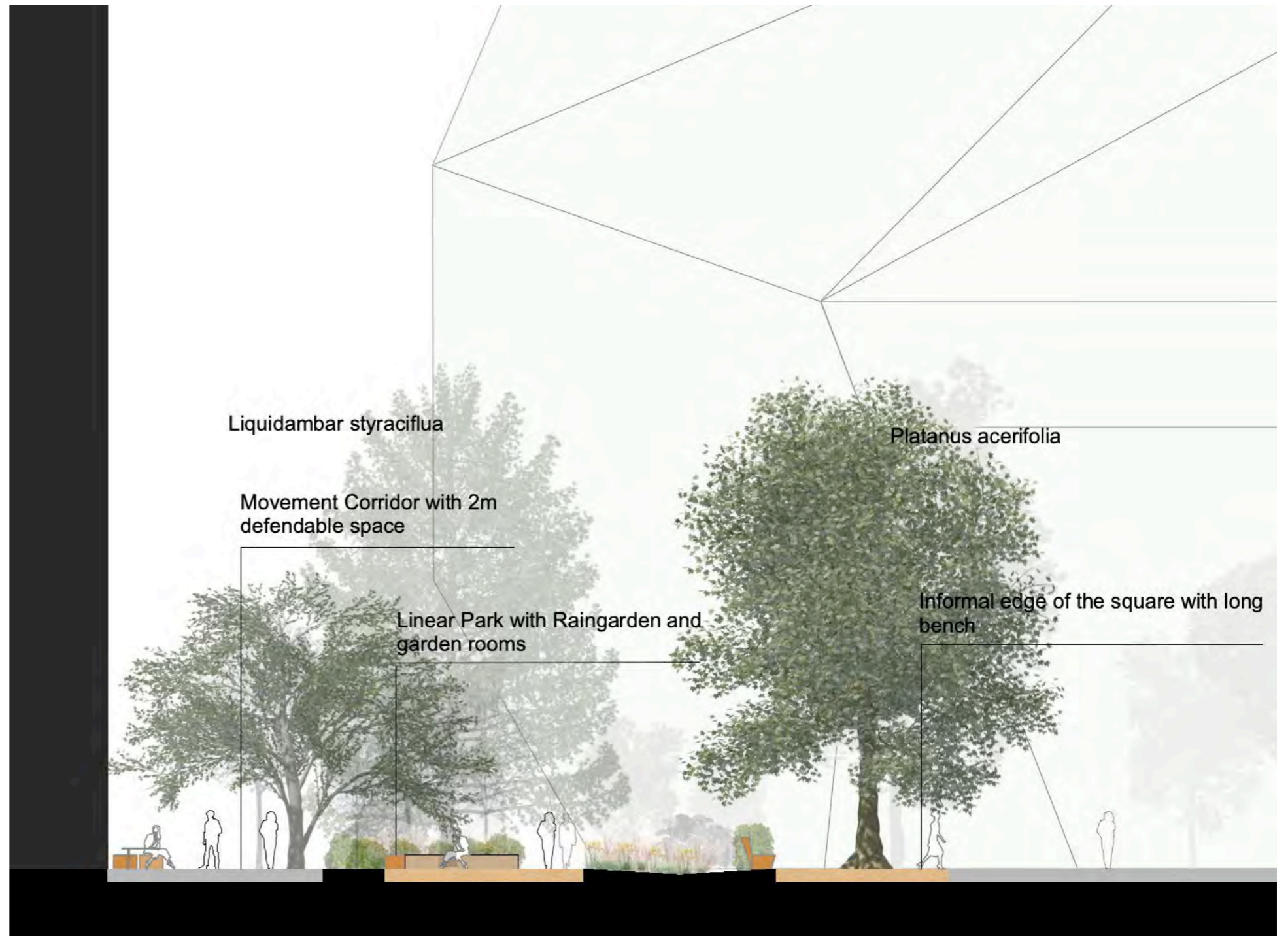
ATLANTIC SQUARE

Integrating multi-functional Green Infrastructure (GI) and biodiversity

Each edge of the square has been designed to work together to create a park around a formal square. This provides a clear structure and a relief to the overall scale of the place, but will link up with wider GI to create a rich and vibrant natural environment that can support biodiversity in Cardiff Bay and surrounding communities.



Example of Mature London Plane Tree (Platanus Acerifolia)



Atlantic Square - Section AA (zoom in)

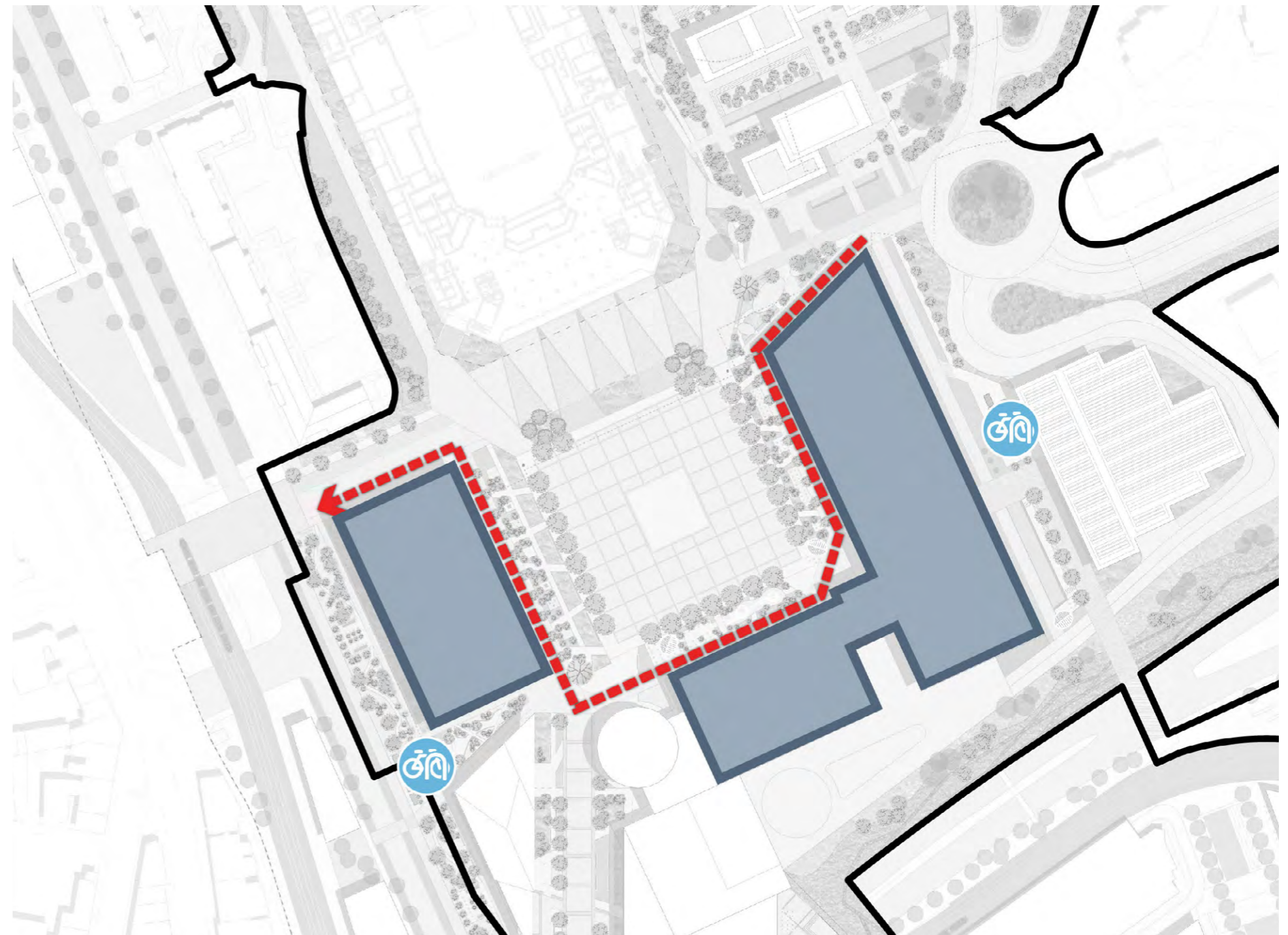
06 Key Spatial Elements of the Landscape Masterplan

ATLANTIC SQUARE

Access & Servicing Strategy

It is proposed that ground floor square facing accommodation will be accessed and loaded from the front. This will necessitate time limited access by 3.5tonne 'box van' type vehicles which will be permitted one way (clockwise) around the square. There is space for two such vans to pass one another. Outside of servicing hours this will become a pedestrian promenade.

Cycle parking will not be incorporated into the square, but provided in abundance just outside it. Whilst cyclists will be welcomed to 'pass through' visitors arriving by bike will be encouraged to leave their bikes before they arrive at the centre of the development.



⌚ Atlantic Square - Access and Servicing Diagram

— Boundary
- - - - - Service Vehicle Movement

■ Building with Business at Ground Floor Facing the Square
🚲 Possible Location for Bicycle Parking

06 Key Spatial Elements of the Landscape Masterplan

THE ARENA PLAZA

Introduction

Joined to Atlantic Square is the proposed Arena Plaza, a standalone, but connected civic space fundamental to the operation of the Arena. Arena Plaza is designed to complement Atlantic Square, yet still a standalone civic space in its own right.

Key design objectives

Being part of the first phase of the masterplan, Arena Plaza is the first key spatial element of the scheme that is going to be built. For this reason particular attention has been given to the design of such a crucial space that has to be flexible to accommodate several uses, while meeting all the functional requirements intended for the optimal operation of the Arena. The proposed design objectives are the following:

- A large clear space to be used for medium-size events (XX people) where numbers of attendees can be managed in a secure environment (either on a ticketed or unticketed basis)
- A space that allows the transition of heavy vehicles either to provide access to Atlantic Square and/or to allow small events to take place on the Plaza itself.
- A large clear space that allows a safe and easy-to-operate queueing system when an event is hosted in the Arena
- A space that integrates anti-terrorism measures to provide a safe and secure space for everyone
- A design that integrates water managements and meets the SABS requirements by providing surface water treatments with 1660 sqm of raingardens
- Contribute to compensate the loss of part of Silurian Park at north of the site and achieve a Biodiversity Net Gain

- A space where people can appreciate the shape and the tectonics of the Arena
- A space that provides a strong east-west link, connecting Cardiff Bay Station to Bute East Dock
- A high quality space that works as a stand-alone open space as well as in combination with Atlantic Square

Materials

The area uses primary area materials identified in section 07.



Example of gravel based planting with vigorous matrix planting

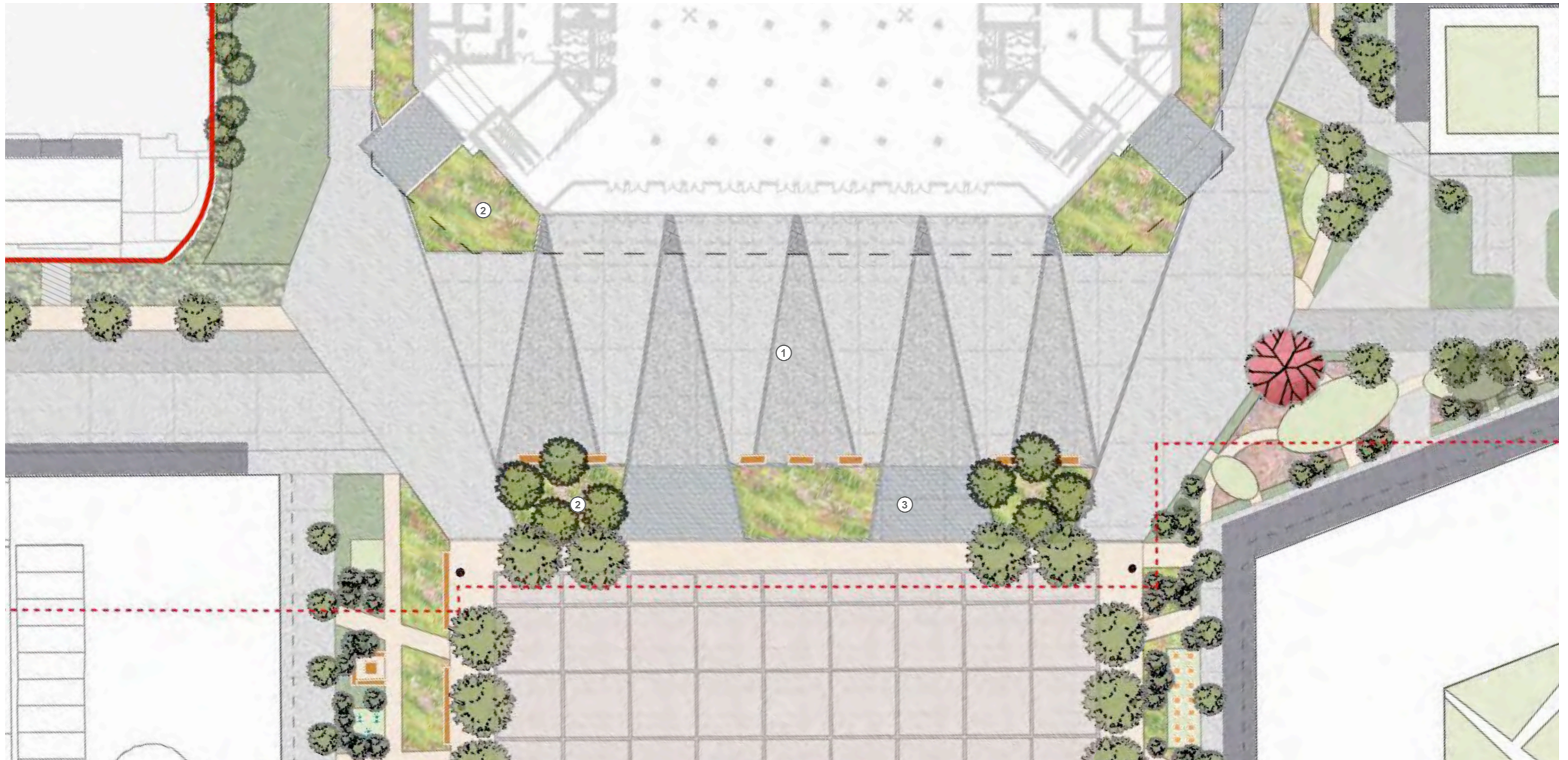


Left image - Gravel edge around raingarden as anti-terrorism measure

Top image - Use of corten and grey granite

Bottom image - Footbridge over a raingarden

06 Key Spatial Elements of the Landscape Masterplan



① Arena Plaza - Zoomed in Plan

① Plaza

② Raingarden

③ Footbridge over raingarden

06 Key Spatial Elements of the Landscape Masterplan

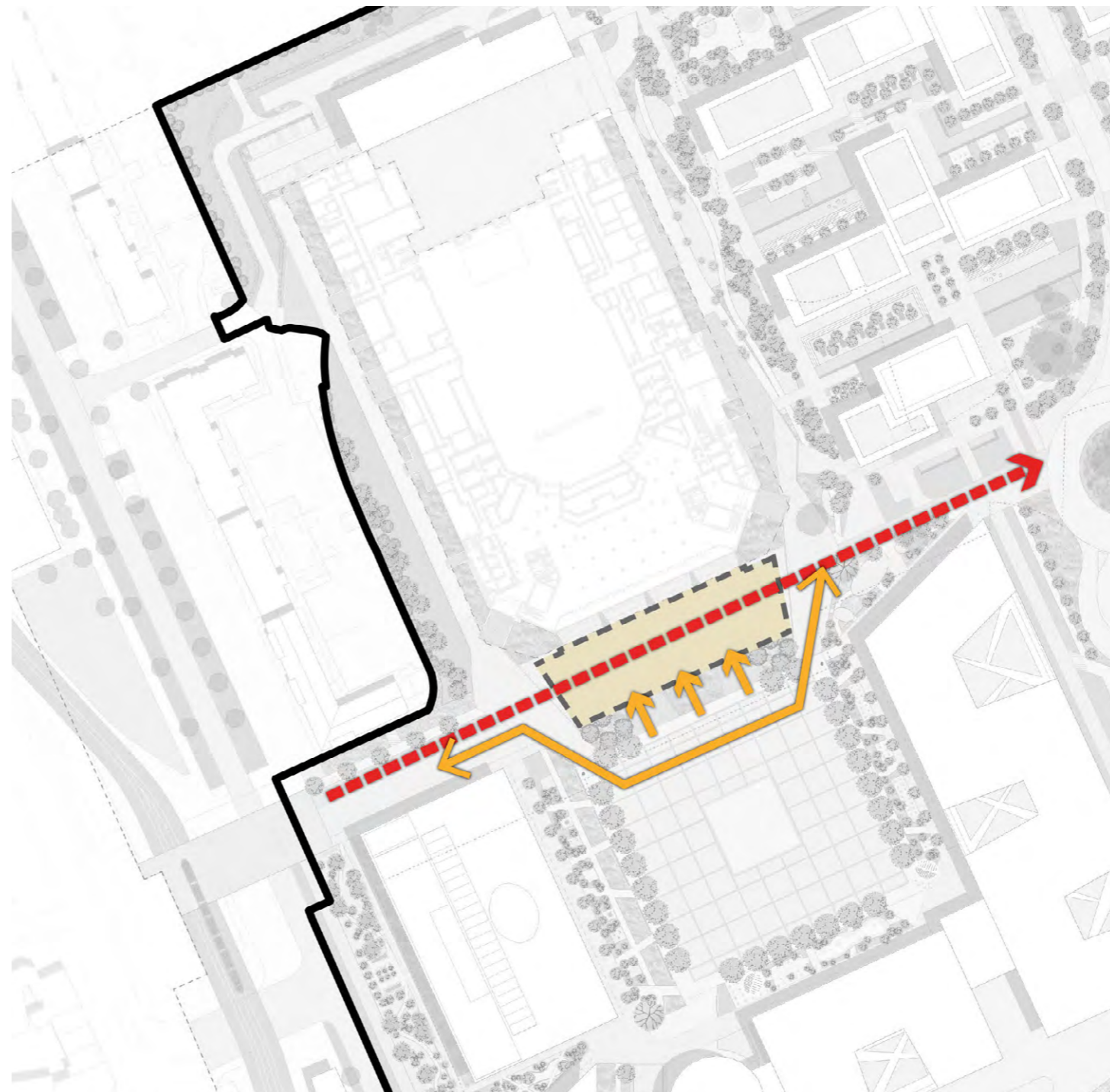
THE ARENA PLAZA

Event Mode

The following diagram demonstrates how the Plaza could operate in different circumstances.

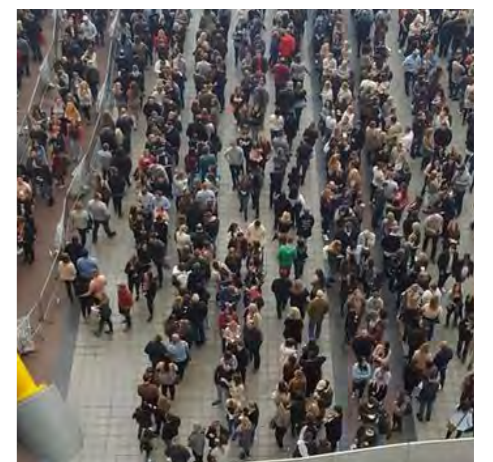
Key features:

- Accommodate in a safe and organised space, up to 2000 people in queue when main events are held in the Arena
- Temporary boundaries could be deployed to manage numbers of people / paying attendees / undertake security checks, while maintaining east-west movement
- Hosted types of events could be similar to ones described for Atlantic Square, but at a smaller scale: start/finish line for marathon/velothon type events, outdoor cinema, staged cultural events / outside broadcasts, seasonal events, seated outdoor events (e.g., beach volleyball, tennis), arts installations. In addition the space could host a small market and temporary pop-up businesses.
- Access for large vehicles is permitted via a one way route through Hemingway road, with access from Lloyd George Avenue and exit on the eastern roundabout. (Vehicle's access is only allowed under strict controls)



⌚ Arena Plaza - Event Mode Operation Diagram

- Boundary
- Big Event Space (temporarily fenced)
- Heavy Vehicle Movement
- Pedestrian Access
- Retained Pedestrian Movement



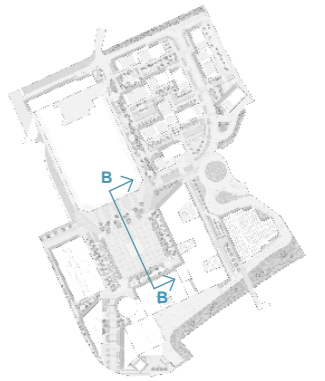
Top image - Art Installation.
Middle image - Coca-Cola Truck (pop-up event).
Bottom image - People in queue for an event.

06 Key Spatial Elements of the Landscape Masterplan

THE ARENA / THE ARENA PLAZA

Integrating multi-functional Green Infrastructure (GI) and biodiversity

The first phase of the masterplan includes the Arena, Arena Plaza and the new Travelodge hotel at north. The design of the soft and hard landscape has been coordinated with the wider team to meet all the security, logistic and functional requirements. As a result an extensive area of raingarden has been integrated to provide the water treatment required for the water collected by the roof of the Arena and the hardsurfaces around it. In addition to the raingarden, native and ornamental planting and 75 new trees have been proposed, providing new ecological and biodiverse areas to support the local fauna and achieve a **Biodiversity Net Gain**.



Example of Prunus Avium



Arena Plaza - Section BB (zoom in)

06 Key Spatial Elements of the Landscape Masterplan

THE ARENA / THE ARENA PLAZA

Access & Servicing Strategy

Vehicle access to the Arena Plaza is provided by controlled and secure points on the two sides of Hemingway Road, with access from Lloyd George Avenue and exit on the roundabout on the East in a one-way system.

The reinforced pavement is designed to allow heavy vehicles to access both the Arena Plaza and Atlantic Square.

The Arena servicing access is located on the north-east of the building and is served by a new road that link the existing roundabout to Schooner Way. The new Travelodge has an in situ car park accessible though dead end side road.

Pedestrians and cyclists' movement is prioritised over vehicle movements across the whole scheme, especially enhancing key east-west and north-south connections.

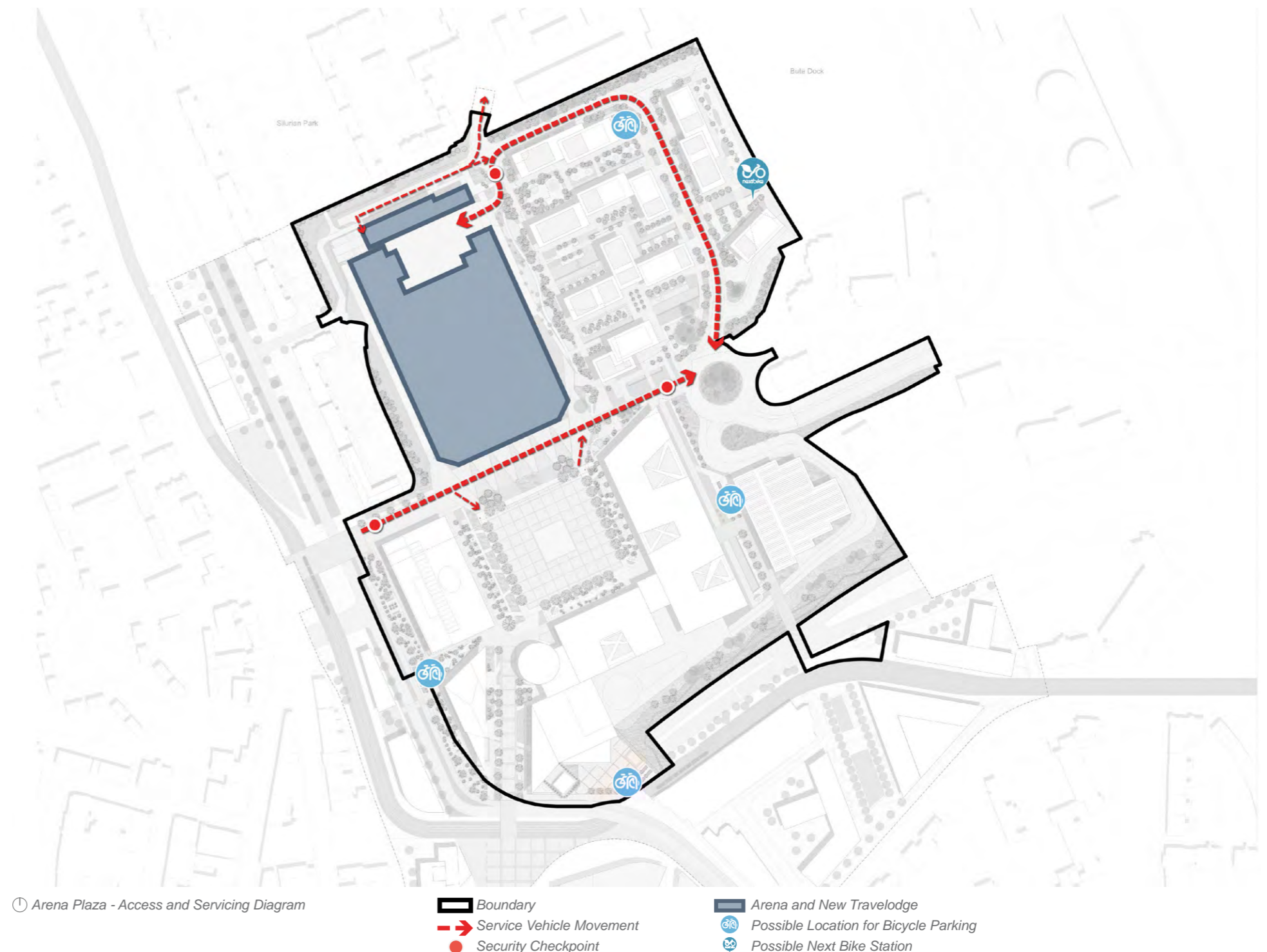
During Phase 1, the design proposes 300 (covered but not secured) cycle storage spaces along the western side of Hemingway Road.

The mix of cycle storage options are as follow:

- 4 x blocks Double stacked = 192
- 2 x blocks Single stacked = 48
- 2 x blocks Sheffield stands = 84

In addition the design provide 12 covered and secured cycle spaces for the Arena stuff, located to the east of the Arena in soft landscape areas.

Both, visitors and stuff cycle spaces, will require relocation in future development Phase



PLACEHOLDER

06 Key Spatial Elements of the Landscape Masterplan

SOUTHERN GATEWAY (THE VISTA)

Introduction

Starting from Roald Dahl Plass (the oval) The Vista ends in the proposed Atlantic Square, providing a strong visual and physical corridor that connects Cardiff Bay to the new Masterplan. The public space interfaces with the proposed museums and the Wales Millennium Centre Academy.

Key design objectives

- A gateway and a visual and physical corridor that connects Cardiff Bay to the new Masterplan
- A multi-functional space that integrates extensive Green Infrastructure and surface water management
- A cultural public space for the new Cultural Quarter

Integrating multi-functional Green Infrastructure (GI) and biodiversity

The design integrates raingardens, ornamental planting, amenity lawns and trees providing in loco surface water treatment, bats and birds boxes, pollinator corridor and an interesting and varied landscape for people to enjoy.

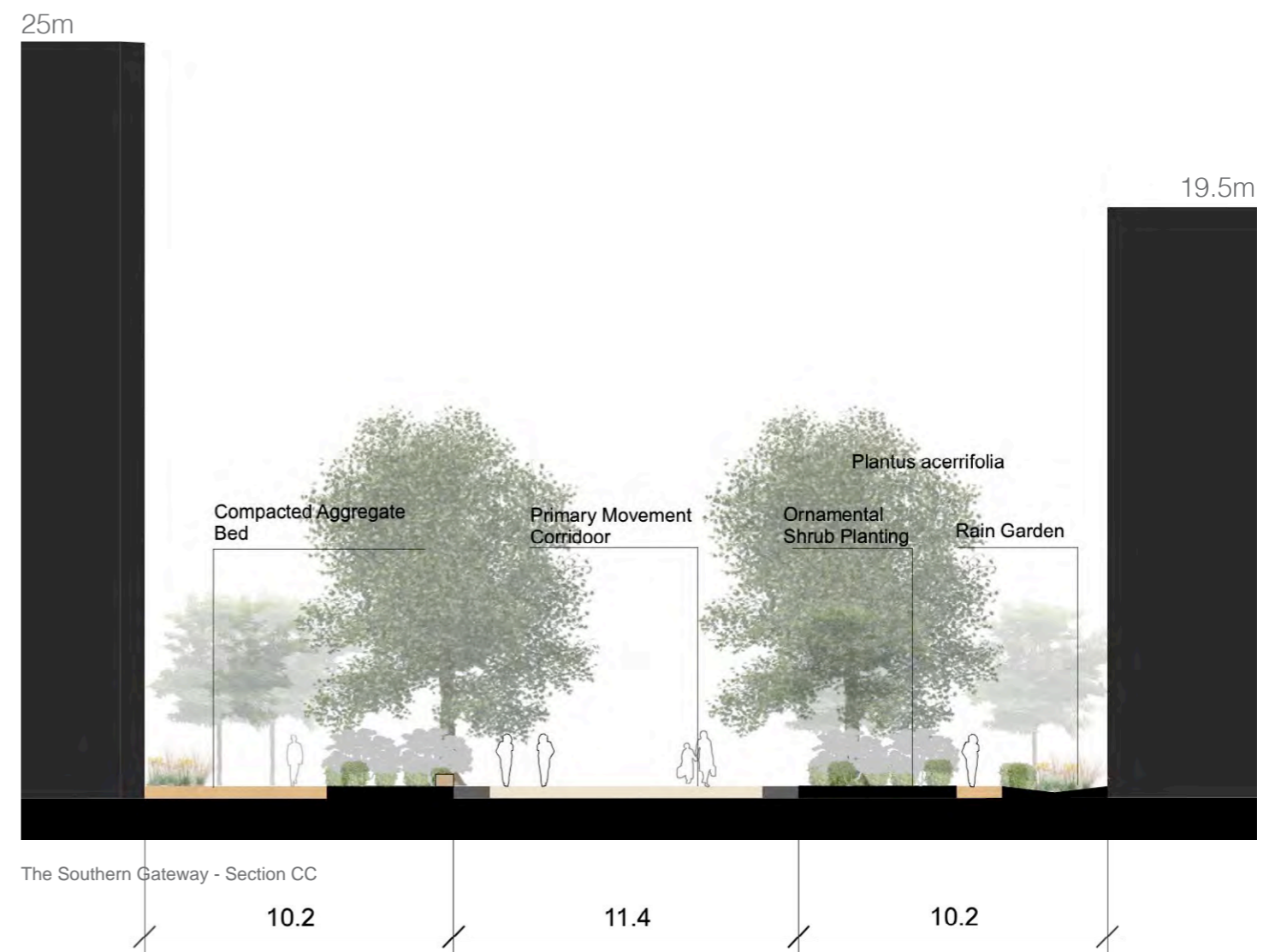
Access & Servicing Strategy

Pedestrian accessibility from the south is provided by a two-phase crossing that connects Roald Dahl Plass to The Vista. The crossing cut through the railway corridor, the road infrastructure and the cycle highway. While pedestrians will have to way for the green light to cross the first two, the cyclists will have to stop to allow pedestrian movements.

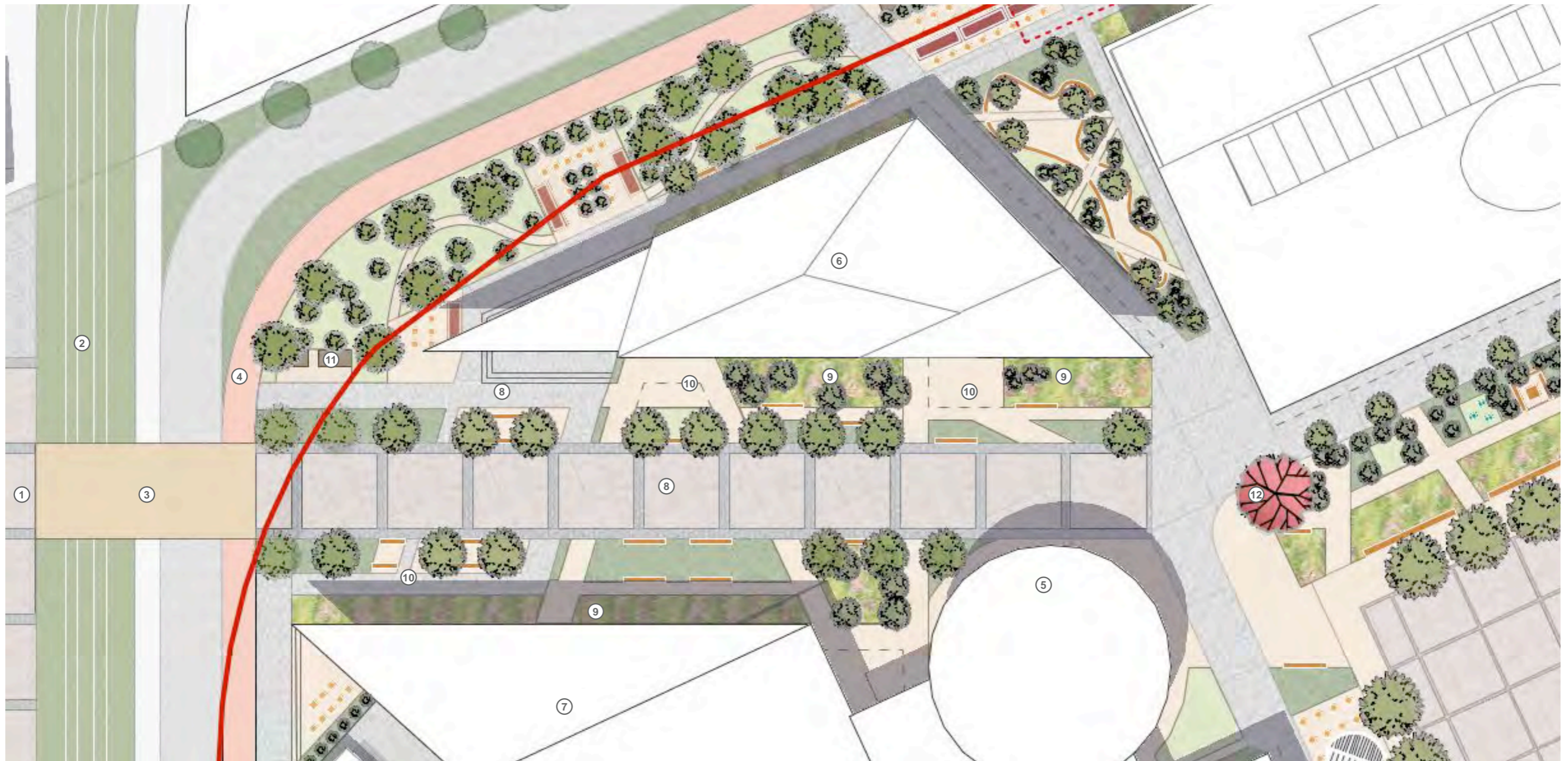
Cycle storage spaces will be strategically and conveniently integrated in the public space along the cycle highway to support active travel.

Materials

The area uses primary area materials identified in section 07.



06 Key Spatial Elements of the Landscape Masterplan



⊖ The Southern Gateway - Zoomed in Plan

① Roald Dahl Plass

② Railway Corridor (outside application boundary)

③ Pedestrian Crossing

④ Cycle Highway

⑤ Cardiff Story Museum

⑥ Contemporary Museum

⑦ WMC Academy

⑧ Movement Corridor

⑨ Raingarden

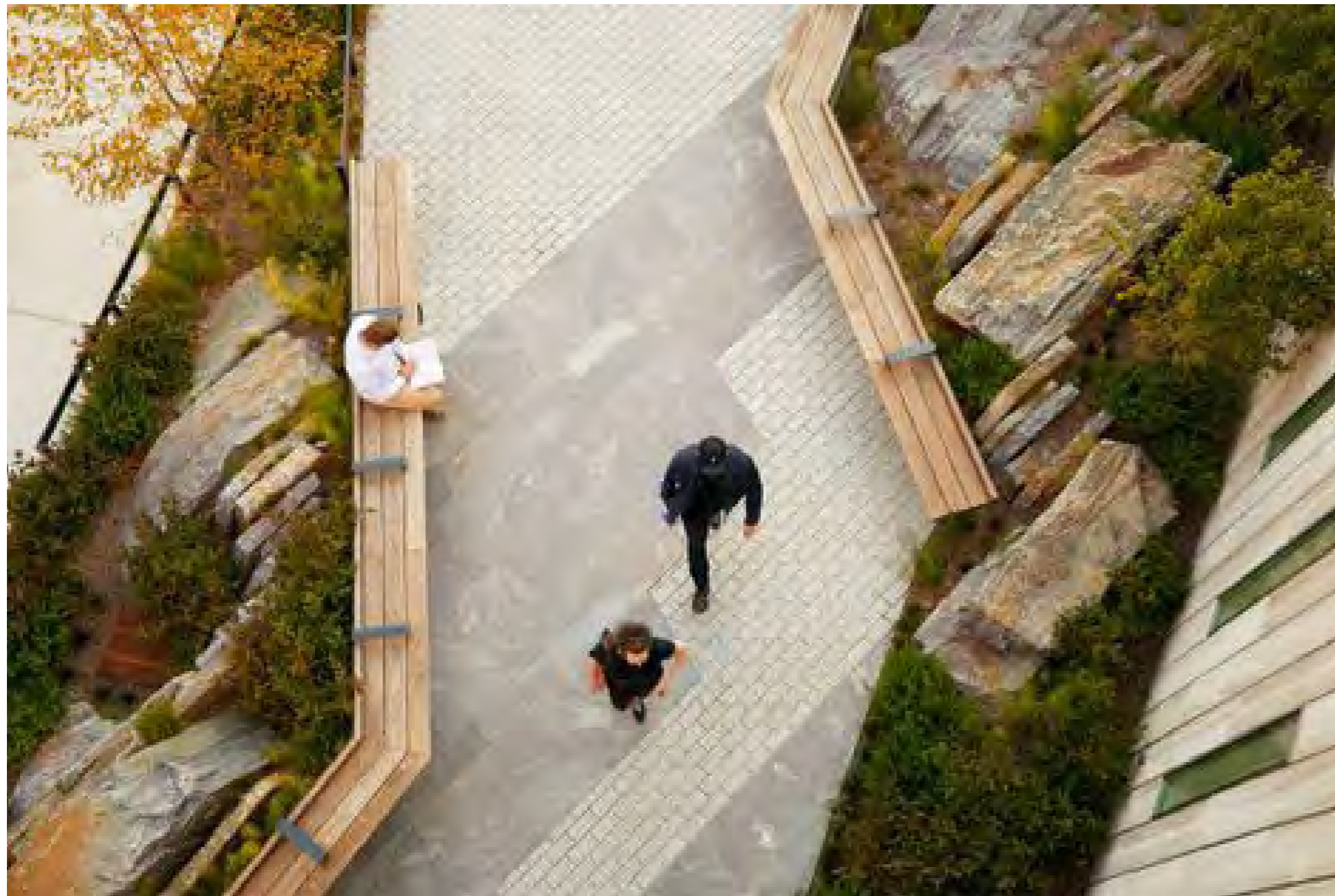
⑩ Pocket Park with Spill-out Space

⑪ Bike Shelter

⑫ Feature Tree

06 Key Spatial Elements of the Landscape Masterplan

SOUTHERN GATEWAY (THE VISTA)



Precedent Images



Left image - Path cutting through green landscape into pocket spaces

Right image - Example of integration of cultural elements into the landscape

06 Key Spatial Elements of the Landscape Masterplan

SOUTHERN GATEWAY (THE VISTA)



Precedent Images



Left image - Tranquil sitting spaces between green areas

Top image - Variety of grasses and flowers to provide a rich sensorial experience

Bottom image - Main movement corridor with green active edges

06 Key Spatial Elements of the Landscape Masterplan

FOOTBRIDGE WALK

Introduction

Footbridge Walk is the southern gateway of the Masterplan and it is strategically located to connect the future Transport Interchange to the new multi-storey car park and the new Red Dragon Centre.

Key design objectives

- Provide an attractive and vibrant southern gateway. The use of high quality materials, the delivery of cafe pavilion and beautiful interface with the canal will provide activation and surveillance, making this space a destination on its own
- Connect to the existing community at south of the highway and to the future transport interchange
- Providing a direct connection between the new multi-storey car park and the proposed destinations and provisions

Integrating multi-functional Green Infrastructure (GI) and biodiversity

The canal (part of the redirected dock feeder) is integrated as a key amenity, while also **contributing to the management of surface water**. Ornamental planting and trees provides greenery and shade, in the public space, while the raingardens treat the water collected by the multi-storey car park. Extensive use of native planting and wildflowers to the south provides a strong green buffer to the A4232, contributing to the mitigation of air and noise pollution while supporting local biodiversity.

Access & Servicing Strategy

This area ensures great accessibility to visitors providing 1,300 parking spaces in a new multi-storey car park, while providing pedestrian and cyclist accessibility through the new footbridge over the A4232. The footbridge also connects to the future transport interchange ensuring great public transport accessibility.

The multi-storey car park and the service yard of the Red Dragon Centre are served by a new road that extends from the existing roundabout.

Materials

The area uses primary and tertiary materials identified in section 07.



Precedent Images



Left image - Waterside public space

Top Image - Footbridge

Bottom image - Cafe / Pavilion

06 Key Spatial Elements of the Landscape Masterplan



⊖ Footbridge Walk - Zoomed in Plan

① Multi-Storey Car Park

② RDC & Residential

③ Covered Pedestrian Access through RDC Arcade

④ Footbridge

⑤ Railway Corridor

⑥ A4232

⑦ Cafe / Pavilion

⑧ Waterside Public Space

⑨ Service Road

⑩ Urban Forest

⑪ Green Buffer

⑫ Wildflowers

⑬ Possible Location for Cycle Spaces

06 Key Spatial Elements of the Landscape Masterplan

EASTERN GATEWAY

Introduction

The Eastern Gateway proposes a 4*hotel, pick-up and drop-off area for disabled and VIP guests of the Arena and pick-up and drop-off area for the 4* hotel, while introducing extensive blue-green landscape to provide a welcoming experience for visitors.

Key design objectives

- Provide an attractive and welcoming gateway to visitors accessing the area by bus (drop-off on Hemingway Road opposite to the Water Quarter).
- Provide a transitional space from a large road infrastructure to a pedestrian-friendly area
- Provide an attractive visual anchor at the end of the east-west sight corridor on Hemingway Road
- Provide safe and convenient drop-off area for the disabled and VIP guests of the Arena
- Provide a drop-off area for the 4* hotel
- Allow for the exit of heavy vehicles in case of medium and big size events held in Atlantic Square and Arena Plaza
- Integrate HVM elements and a secured access point to provide a safe and uncluttered public space

Integrating multi-functional Green Infrastructure (GI) and biodiversity

Extensive blue and green infrastructure is here integrated in the public realm and consists of ornamental plants, trees, amenity lawns and a canal/water feature. The GI ensures the continuity of the pollinator and biodiversity corridors, while creating a varied and welcoming environment.

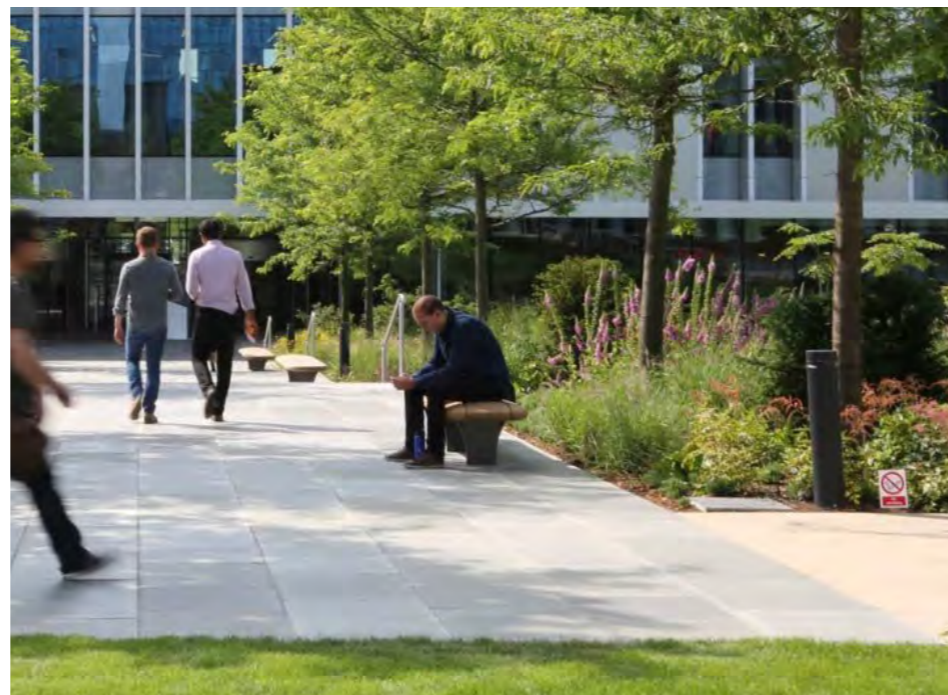
Access & Servicing Strategy

This area is designed to be pedestrian and cycle friendly, while also providing limited access to the drop-off areas of the Arena and of the 4* hotel. The area allows vehicles that access Atlantic Square and Arena Plaza from Lloyd George Avenue security checkpoint to leave the area.

Access to vehicles servicing the businesses interfacing the Atlantic Square is also provided here through a security checkpoint.

Materials

The area uses primary materials identified in section 07.



Precedent Images

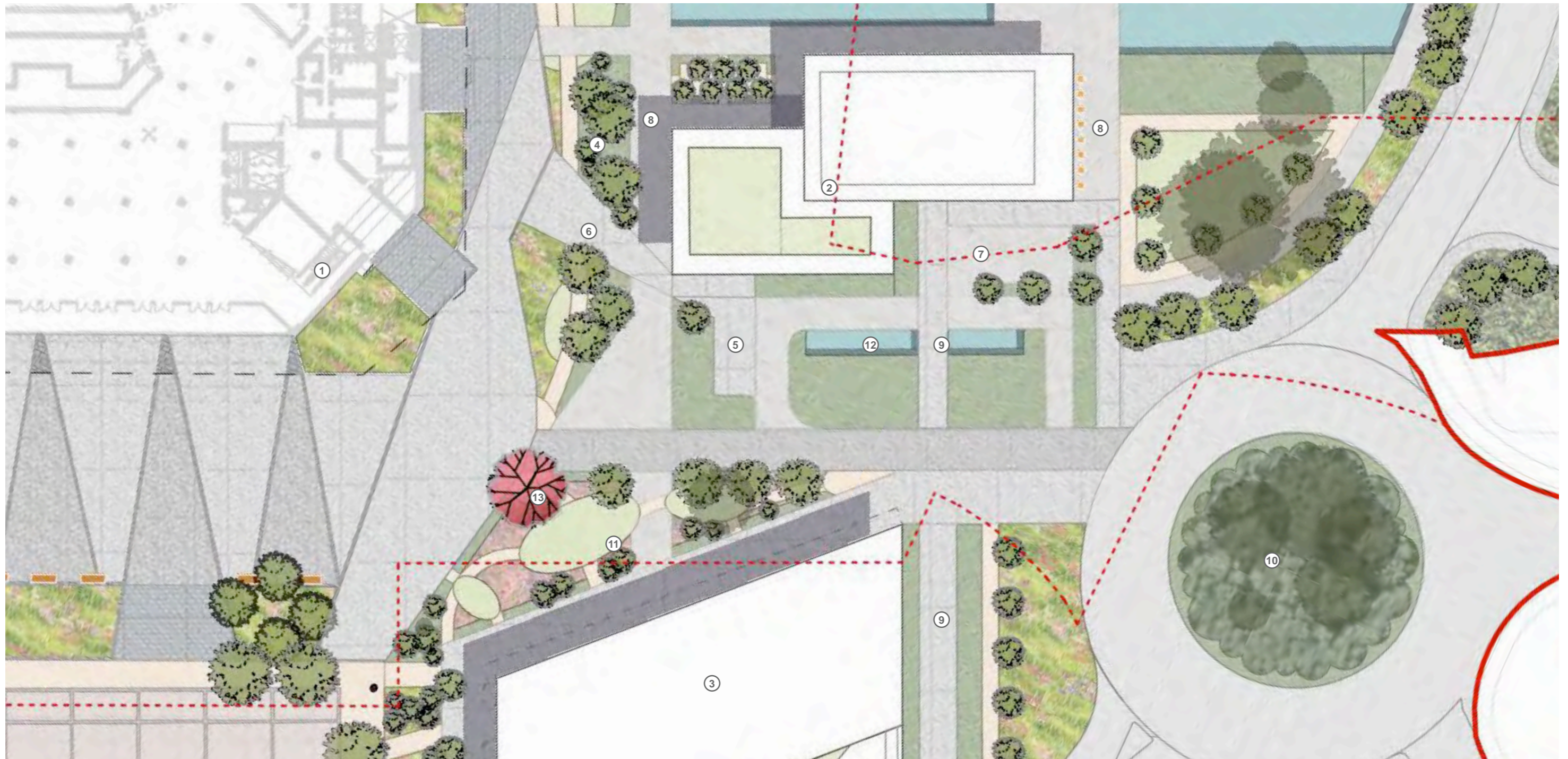


Left image - Green pedestrian link

Top Image - Pocket park

Bottom image - Green drop-off area with pedestrian path

06 Key Spatial Elements of the Landscape Masterplan



① Eastern Gateway - Zoomed in Plan

① Arena
② 4* Hotel
③ RDC

④ Linear Park / Arboretum
⑤ VIP / Disable Drop-off Area
⑥ VIP / Disable Access to the Arena

⑦ Hotel Drop-off Area
⑧ Link to Residential Area
⑨ Link to MSCP and Footbridge

⑩ Urban Forest
⑪ Pocket Park
⑫ Canal

⑬ Feature Tree

06 Key Spatial Elements of the Landscape Masterplan

HEMINGWAY ROAD

Introduction

Hemingway Road provides the Western Gateway to the masterplan connecting the existing Cardiff Bay Station to the Arena.

Key design objectives

- Provide a safe and appropriate movement corridor for the Arena visitors approaching the Arena from Cardiff Bay Station
- Provide a green buffer for the existing residential buildings
- Provide a limited and secured access to vehicles in case of events held on Atlantic Square and Arena Plaza.

Integrating multi-functional Green Infrastructure (GI) and biodiversity

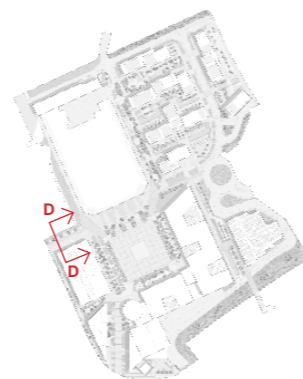
The design proposes a green buffer of ornamental planting and a tree line to provide privacy and mitigate visual and noise pollution to the existing residential unites on Hemingway Road

Access & Servicing Strategy

Hemingway Road is designed to accommodate the movement of a large amount of people at the end of a big event in the Arena. Informed by a crowd modelling, Hemingway Road becomes a 17 m movement corridor. In case of events held in Arena Plaza or Atlantic Square, vehicles can access from Lloyd George Avenue and through a security checkpoint located at the beginning of Hemingway Road.

Materials

The area uses primary area materials identified in section 07.



06 Key Spatial Elements of the Landscape Masterplan



① Hemingway Road Zoomed in Plan

① Arena

② Lloyd George Avenue

③ Existing Residential Building

④ Extended Railway Corridor

⑤ Proposed Office Building

⑥ Linear Park

⑦ Green Buffer

⑧ Existing Cardiff Bay Station

⑨ Pedestrian Crossing

⑩ Pedestrian Movement Corridor (17m)

⑪ Reinforced pavement for Heavy Vehicle Access through Security Checkpoint

⑫ Cycle Highway

⑬ Existing Cycle and Pedestrian Corridor

06 Key Spatial Elements of the Landscape Masterplan

THE URBAN ARBORETUM

Introduction

The Urban Arboretum is a linear park located between the Arena and the Waterside Residential.

Within this large urban development, The Urban Arboretum strikes between the entertainment of the Arena and the residential quarter. This is not only a vital green buffer between the two differing land uses, but is an important new amenity space for the wider community and an ecological resource. The size of the space allows for playing with different scales of planting and light levels which can facilitate a wide range of different planting typologies, from more open steppe-style grassland to woodland understorey. The park aspires to be an urban arboretum, featuring a wide variety of trees that can be an educational feature for the community.

The Urban Arboretum will include a variety of open spaces, including rainwater attenuation and filtration, habitat and space for people living in the proposed development and wider area to play.

The scale of the Urban Arboretum as a multi functional urban park will be XXha and this will be sufficient to offset the loss of XXha resulting from the development of part of Silurian Park during phase 1 (construction of the proposed Arena).

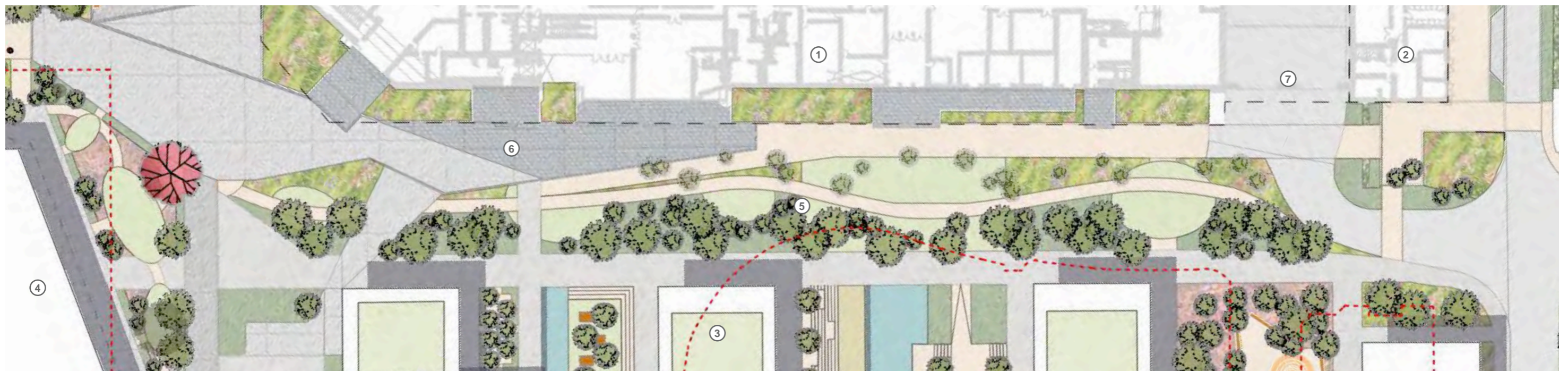
Key design objectives

- Providing a buffer between the Arena and the proposed Waterside Residential
- Provide a strong North-South pedestrian connection
- Support biodiversity and integrate green infrastructure
- Provide amenities for visitors and local residents



Above image: Educational path

06 Key Spatial Elements of the Landscape Masterplan



④ The Arboretum Zoomed in Plan

① Arena

② Travelodge

③ Residential Area

④ RDC

⑤ Linear Park / Arboretum

⑥ VIP Access

⑦ Arena Service Access

06 Key Spatial Elements of the Landscape Masterplan

WATERSIDE RESIDENTIAL

Introduction

The Waterside Residential area deliver new high quality flats on the land currently occupied by Cardiff County Hall, at the south-west edge of Bute East Dock. The masterplan propose new high quality residential flats with integrated green spaces, play provisions and leisure amenities

Key design objectives

- Provide a strong public realm connection between Bute East Dock and the rest of the scheme
- Bring the water into the residential area by creating a series of canals around which create key public spaces
- Deliver a new road that connects the existing roundabout on Hemingway Road to Schooner Way
- Deliver a Blue-Green residential quarter that provides plenty of play, sport and leisure provisions

Integrating multi-functional Green Infrastructure (GI) and biodiversity

Among the area proposed in the masterplan, the Waterside Residential Area is the one that proposes the most diverse and extensive Blue-Green Infrastructure. The area proposes canals, wildflowers, ornamental planting, native buffer, plenty of new trees and green roofs, providing great benefits for local fauna, water management and people's wellbeing.

Access & Servicing Strategy

Vehicle access to the new property is provided through a new road that connects the existing roundabout on Hemingway Road to Schooner Way at north.

Materials

The area uses secondary area materials identified in section 07.



Precedent Images



Left image - Terraced waterside with integrated greenery

Top image - Waterside Theatre

Bottom image - Ping pong table in public space

06 Key Spatial Elements of the Landscape Masterplan



Top Image - Play provision
Bottom image - Floating greenery



⊙ The Waterside Residential - Zoomed in Plan

- | | | |
|---------------------------------|--|-----------------------|
| ① Arena | ⑥ Terraced Waterfront with Water Stage | ⑪ Bike Storage |
| ② Arboretum | ⑦ Designed Public Waterfront | ⑫ Raingarden |
| ③ Main Pedestrian Link (Public) | ⑧ Pic-nic Area | ⑬ Green Roof |
| ④ Semi-public Spaces | ⑨ Spill-out Space | ⑭ Native Buffer |
| ⑤ Canal | ⑩ Play and Sport Provision | ⑮ Pedestrian Crossing |

06 Key Spatial Elements of the Landscape Masterplan

WMC ACADEMY CREATIVE SPACE

Introduction

The Wales Millennium Academy is strategically located at the southern edge of the scheme, opposite to the existing Wales Millennium Centre, and together with the two museum, creates the Cultural Quarter.

Key design objectives

- Provide an outdoor stage for performances and plays
- Provide a space for small events and complement Atlantic Square and Arena Plaza big and medium size event spaces
- Provide high quality outdoor space for food and drinks businesses that face the public space

Integrating multi-functional Green Infrastructure (GI) and biodiversity

The GI elements are here used to buffer the existing utility structure, integrate a rain garden and create a sense of enclosure to the public space. A strong green buffer of native plants is used to mitigate visual, noise and air pollution coming from the A4232.

Materials

The area uses primary area materials identified in section 07.

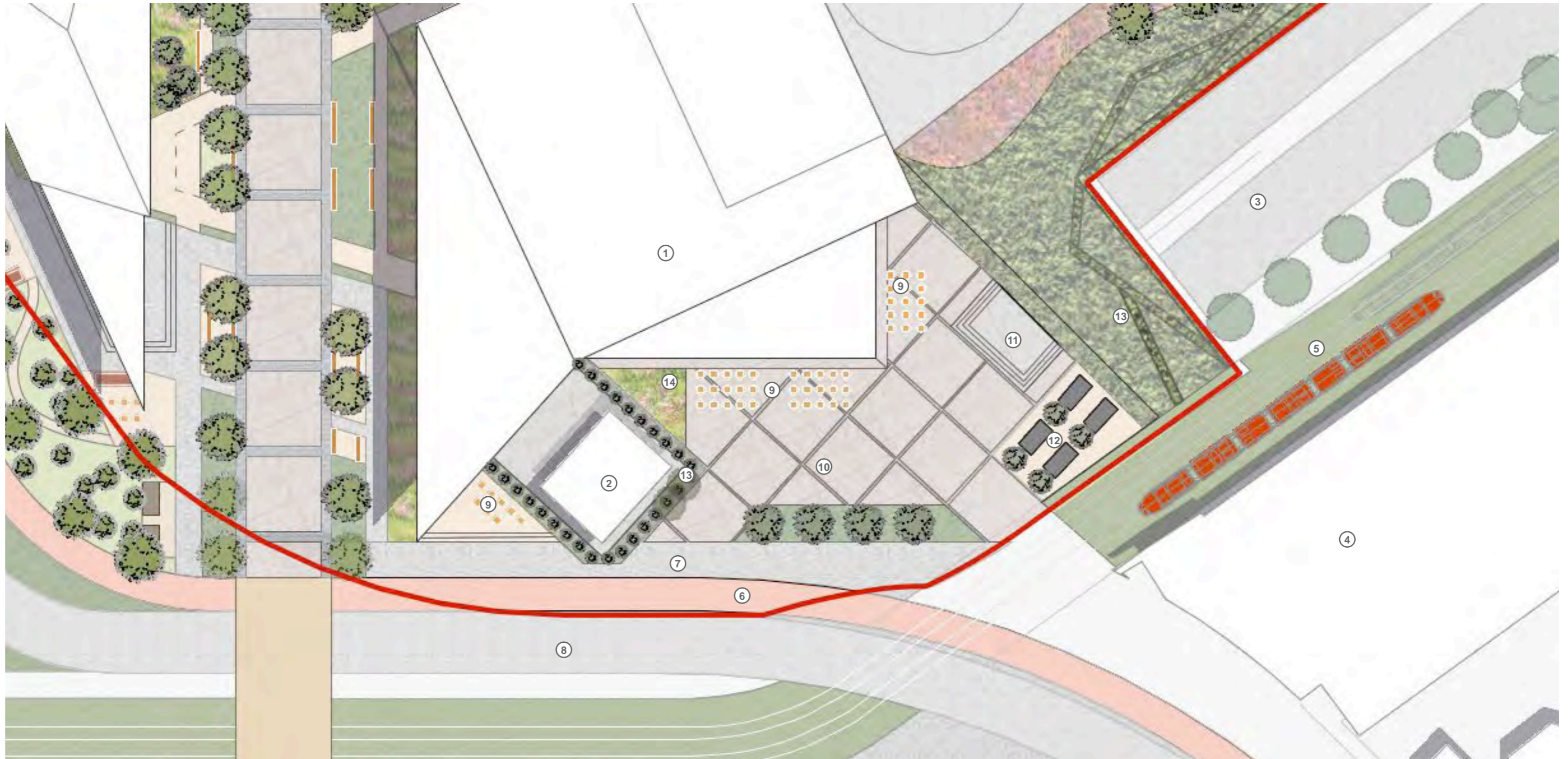


Precedent Images

Top left image - Outdoor stage / creative area
Bottom left image - Green railway corridor

Top right image - Outdoor digital stage
Bottom right image - Outdoor flexible sitting space

06 Key Spatial Elements of the Landscape Masterplan



① Wales Millennium Centre Academy
Zoomed in Plan

① Wales Millennium Centre Academy
② Existing Utility Structure
③ A4231

④ Existing Multi-Storey Car Park
⑤ Extended Railway Corridor
⑥ Cycle Highway

⑦ Pedestrian Movement Corridor
⑧ Road
⑨ Spill-out Space

⑩ WMCA Square
⑪ Outdoor Stage
⑫ Cycle Storage

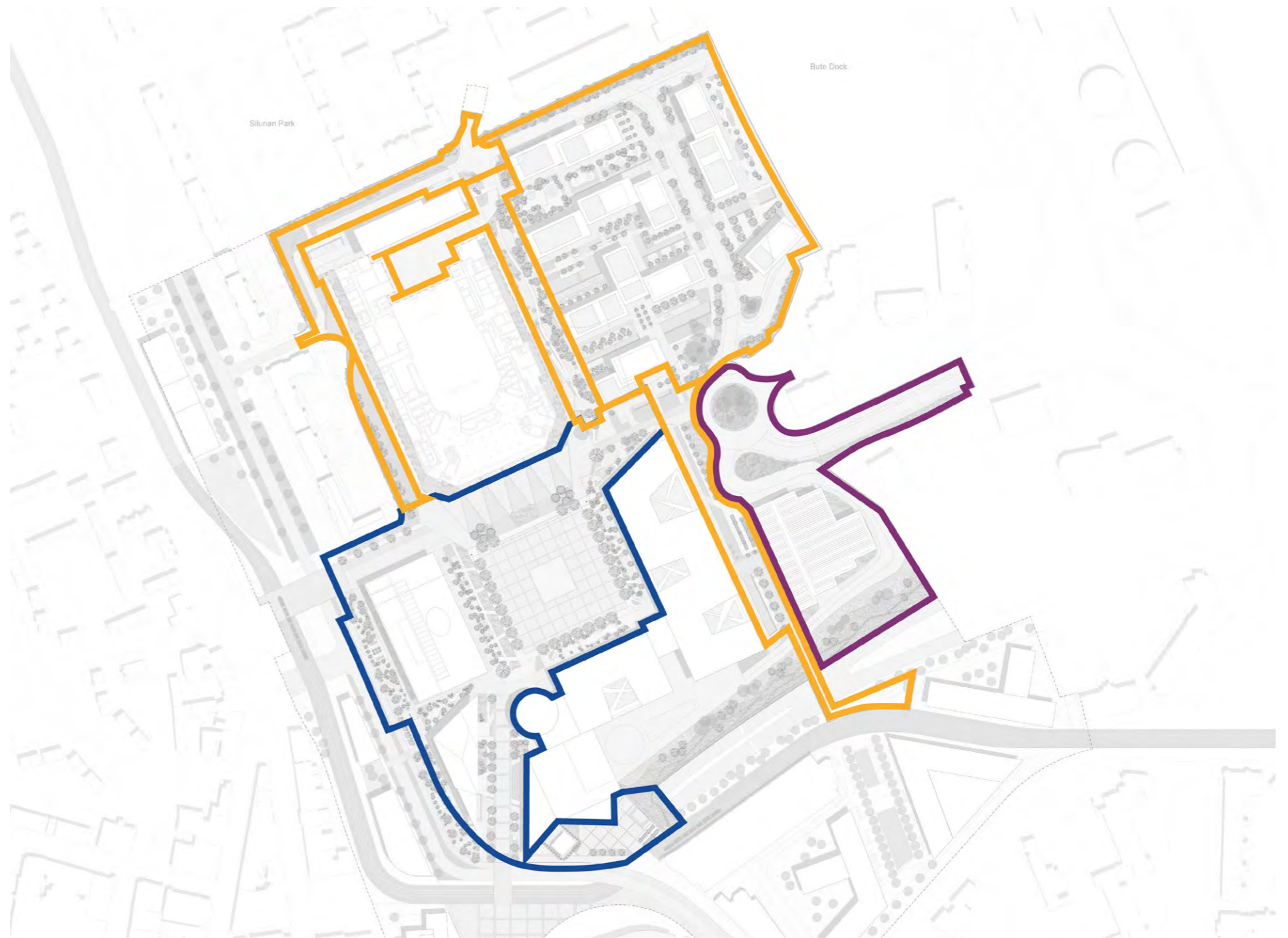
⑬ Green Buffer
⑭ Raingarden

07 Hard Landscape Design Guidelines

The Atlantic Wharf Area falls under 'Character Area A' within the City Council's Public Realm Design Manual (YEAR). The basis of the vision for paving and hard surfaces across the masterplan is for materials to be consistent with other materials in Character Area A (City Centre and the Bay). This will ensure effective long term maintenance and a consistent palette.

It is recommended that it is not the paving, but the street furniture and planting which will be used to differentiate Atlantic Wharf from elsewhere in the City and the Bay and it will be these elements that contribute to highly localised distinctiveness for Atlantic Wharf. Hence the outline paving recommendations for surface treatment should be consistent with Public Realm Design Manual, although carefully refined to the treatment of this particular area.

The examples outlined in this section are illustrative only at this stage and not a detailed specification.



Material Area Diagram

07 Hard Landscape Design Guidelines

PRIMARY

High Status / Feature areas (e.g., centre of Atlantic Square, WMC Academy Performance Space)

Cropped Porphyry setts (100mm cubed) laid in fantail pattern

General High Quality Footway surfaces

Sawn and flamed pink Granite (W:400mm. L:300mm, 400mm, 500mm. D: 65mm)

Banding material #1

Light grey granite setts cropped and flamed (W:100mm, L:200, D:80mm)

Banding material #2

Slate slabs split (W:200mm, Min L: 300mm, Max 800mm)

Areas of regular vehicle over run (Class II) and street furniture zones

Mixed grey granite setts sawn and flamed (W:100mm, L:200, D:80mm)

Kerbs

Fine picked light grey granite kerb (W300mm) with a bullnose edge. (Where possible to be used with a 300mm wide channel of light grey setts)

Footways amongst green infrastructure

Compacted gravel 12mm (1/2") to fines

Parking areas

Mixed grey granite setts sawn and flamed (W:100mm, L:100, D:100mm)

Carriageways

Buff coloured asphalt



07 Hard Landscape Design Guidelines

SECONDARY

General Footway surfaces

Silver Granite / Concrete Mixed Product (W:173mm, L:240mm, 208mm, D: 55mm)

Banding material #1

Light grey granite setts cropped and flamed (W:100mm, L:200, D:80mm)

Areas of regular vehicle over run (Class II) and street furniture zones

Silver / Mid Grey Mix Modified Concrete Paviour (W:100mm, L:200, D:80mm)

Kerbs

Fine picked light grey granite kerb (W300mm) with a bullnose edge. (Where possible to be used with a 300mm wide channel of light grey setts)

Footways amongst green infrastructure

Compacted gravel 12mm (1/2") to fines

Parking areas

Buff coloured asphalt

Carriageways

Tarmacadam



07 Hard Landscape Design Guidelines

TERTIARY

General Footway surfaces

Concrete & Granite Aggregate Mixed Product (W:200mm, L:300m, 400mm, 600mm D: 80mm)

Banding material #1

Light grey concrete setts
(W:100mm, L:200, D:80mm)

Areas of regular vehicle over run (Class II) and street furniture zones

Silver / Mid Grey Mix Modified Concrete Paviour (W:100mm, L:100mm, 200mm, 300mm D:80mm)

Kerbs

Fine picked light grey 'conservation' kerb (W300mm)

Footways amongst green infrastructure

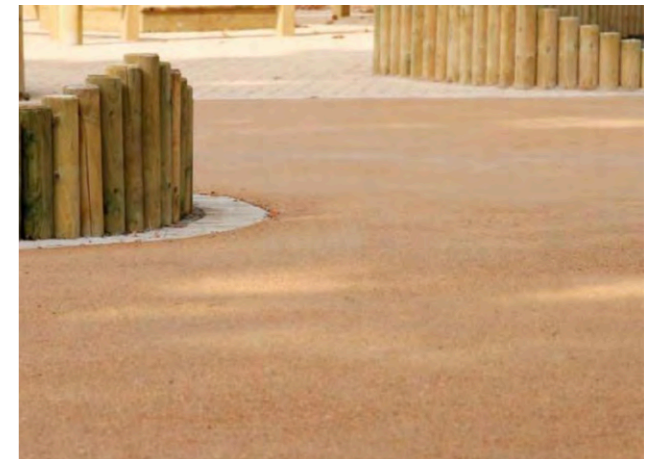
Compacted gravel 6mm (1/2") to dust

Parking areas

Buff coloured asphalt

Carriageways

Tarmacadam



07 Hard Landscape Design Guidelines

OTHER HARD LANDSCAPE ELEMENTS: WALLING

In a flat site there are not likely to be numerous opportunities or need for walling to manage changes in level. However, there may be some requirement in terms of demarcation of boundaries or integration within large soft landscape areas to create visual interest.

Where walling is necessary / desirable rough hewn, texture rich materials such as layered slate, or stacked timbers in gabions should be considered. Not only will this contribute to the overall aesthetic, but small voids amongst stone and timber can create opportunities for habitat for invertebrates and pollinators.



Slate in a gabion basket can contribute to the overall aesthetic while create voids for habitat

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08 Soft Landscape Design

The planting design for the masterplan seeks to create a new green heart to the Cardiff Bay area. Vibrant planting will be a core element contributing to the user experience of the development, but also provide important ecological benefits and improve the local microclimate in response to climate change.

The examples outlined in this section are illustrative only at this stage and not a detailed specification.

Base Planting Style

The predominant base planting style around the development will be a naturalistic matrix of perennials, ornamental grasses and ferns. This will provide a sensory and colourful experience for visitors throughout the year. Our rationale behind using this planting style:

- It provides a dense and much more naturalistic feel than other key civic spaces in the city, and will contrast particularly well with the geometric form of the new Arena and other modern pieces of architecture.
- A large variety of species can be used to create distinct characters to different areas of the development, but also provide a greater variety of flora to benefit local wildlife.
- Matrix planting can provide greater sensory stimulation for visitors, particularly with the use of ornamental grasses, which will sway and rustle in the wind in a way that shrub planting will not.
- There is greater seasonal interest, as different species emerge, flower and die back throughout the year. Grasses and seed heads provide structure in the winter and are valuable shelter and food sources for the local ecosystem.
- While this planting style requires more specialised maintenance, this presents an opportunity for upskilling and training for maintenance teams within the Council. Furthermore, basing the planting design on minimising upkeep requirements leads to more sterile and uninspiring species selection such as the shrub planting along Lloyd George Avenue.

Tree planting is the vital upper-layer of the planting strategy. They provide shade and cool the urban environment, are a valuable ecological resource, capture air pollution, soften the lines of surrounding architecture, and have fantastic seasonal interest.

Tree Planting Style

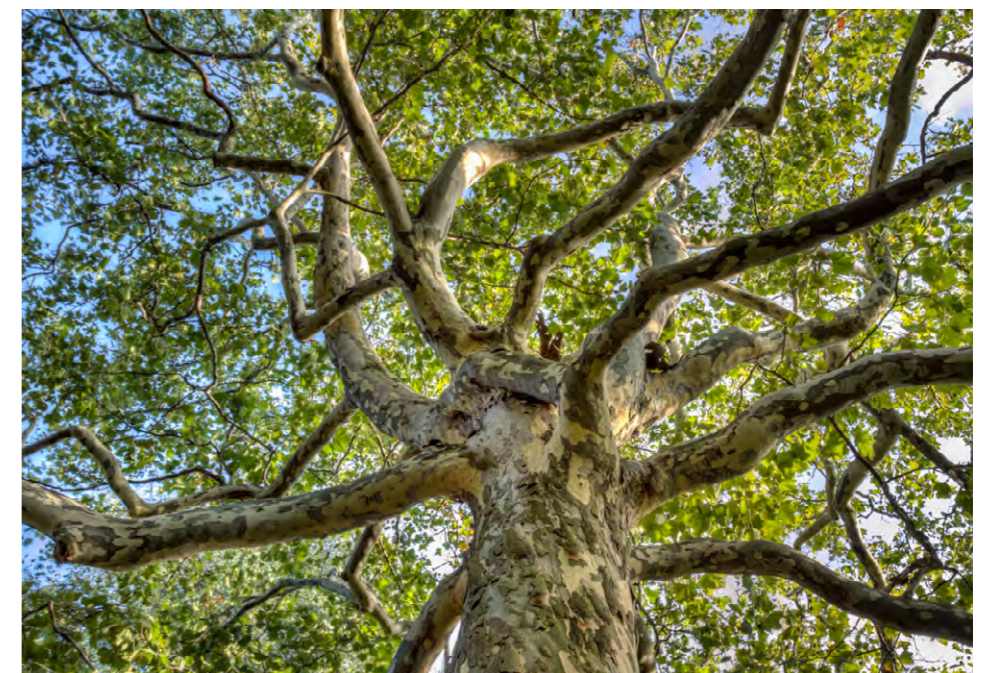
The planting design will maximise the number of trees within wider soft landscape planting as opposed to beneath hard-standing. This is for three key reasons:

- Trees within soft landscape planting are more likely to perform better in the long-term than under paving because the roots will receive more water and better soil aeration.
- Trees within soft landscapes contribute to a much more natural feel to the planting design, with swathes of other species growing and flowering underneath.
- By planting within areas of soft landscape, it reduces the need for root cell systems beneath paving to provide uncompacted soil volumes which can act as a cost saving.

The following outline species information is to be cross referenced with the Green Infrastructure Strategy in Section 5.



Betula spp: a proposed tree for 'dynamic' areas of Atlantic Wharf



Platanus hispanica: a proposed 'showcase' tree

08 Soft Landscape Design

	GI STRATEGY AREAS				
PLANTING TYPE	SHOWCASE	DYNAMIC	RESIDENTIAL	VISUAL BUFFER	LINEAR PARK
TREES	Platanus hispanica				
	Liquidambar styraciflua	Prunus spp.	Gleditsia triacanthos f. inermis	Pinus sylvestris	Acer palmatum
	Amelanchier spp	Quercus palustris	Pyrus calleryana	Betula pendula	Cercis siliquastrum
	Prunus avium 'Plena'	Betula spp.	Acer x freemanii	Sorbus aucuparia	Ginkgo biloba
	Liriodendron tulipifolia				



Liquidambar styraciflua : a proposed 'showcase' tree



Amelanchier spp. : a proposed 'showcase' tree



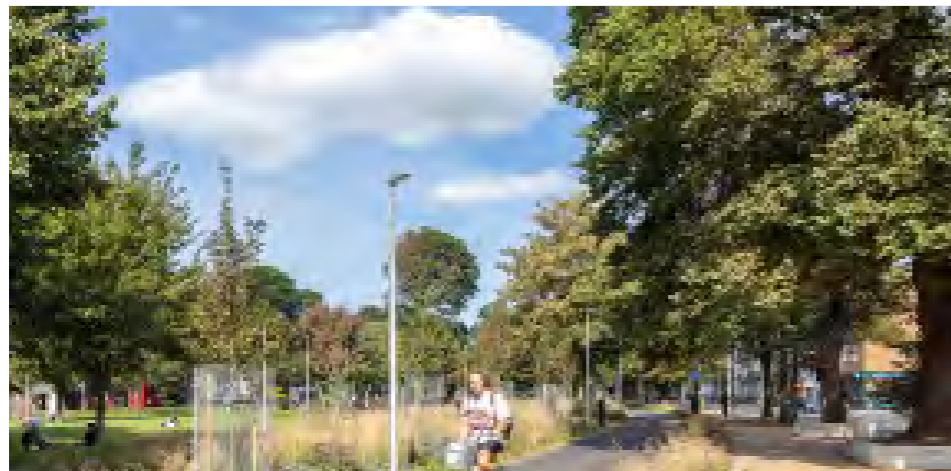
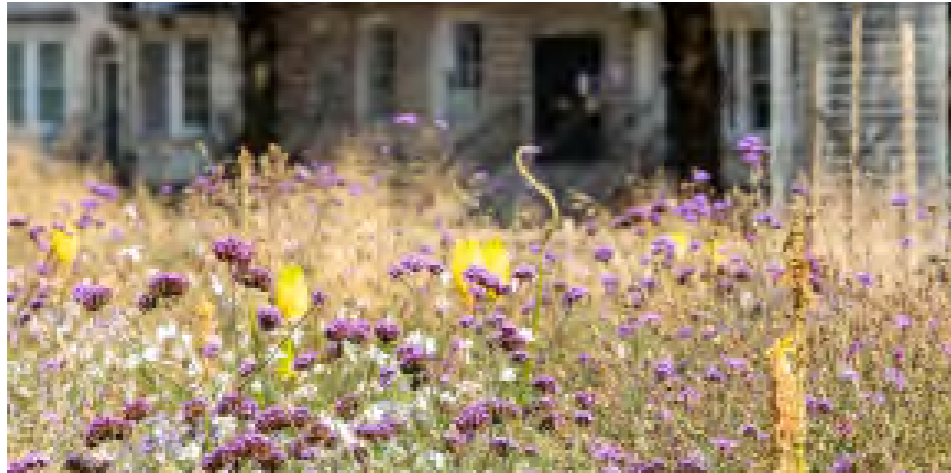
Gleditsia triacanthos f. inermis: : a proposed 'residential' tree

08

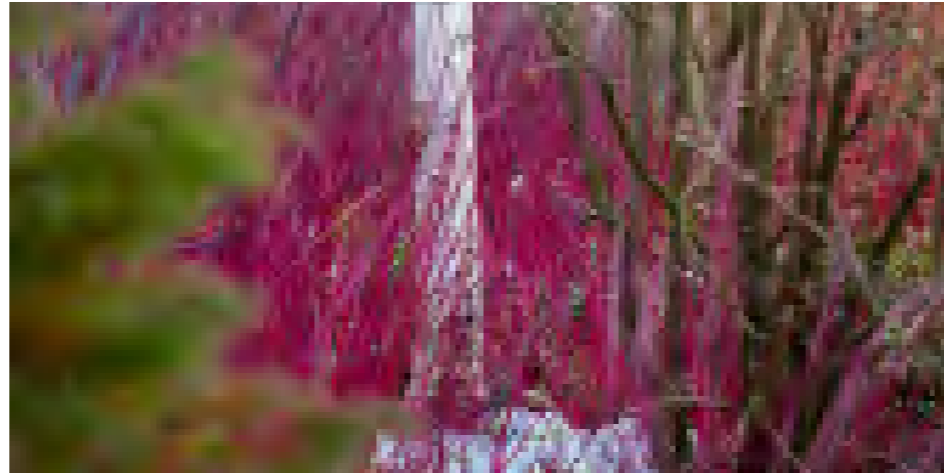
Soft Landscape Design

	GI STRATEGY AREAS				
PLANTING TYPE	SHOWCASE	DYNAMIC	RESIDENTIAL	VISUAL BUFFER	LINEAR PARK
SHRUBS	Viburnum opulus Cornus alba 'Sibirica' Gillenia trifoliata	Cornus alba 'Sibirica'	Viburnum spp Hypericum spp		
GRASSES & FERNS	Deschampsia spp. Panicum 'Shenandoah' Luzula nivea Carex divulsa Polystichum setiferum	Sesleria spp. Deschampsia spp. Molinia caerulea spp. Dryopteris spp. Liriope spp.	Deschampsia spp. Carex divulsa Hakonechloa spp Asplenium spp	N/A	Miscanthus sinensis Deschampsia spp Anemanthele lessoniana Polystichum setiferum Athyrium spp.
FLOWERING PERENNIALS	Epimedium spp. Anemone huphensis Kirengeshoma palmata Sanguisorba spp	Phlomis russeliana Verbena bonariensis Tricyrtis spp	Alchemilla mollis Geranium spp Rudbeckia spp. Tellima spp	N/A	Tiarella spp Thalictrum spp Rudbeckia spp Lamium maculatum
LAWN / MEADOW			Stylised/designed wildflower meadow Flowering lawn	Native wildflower meadow	

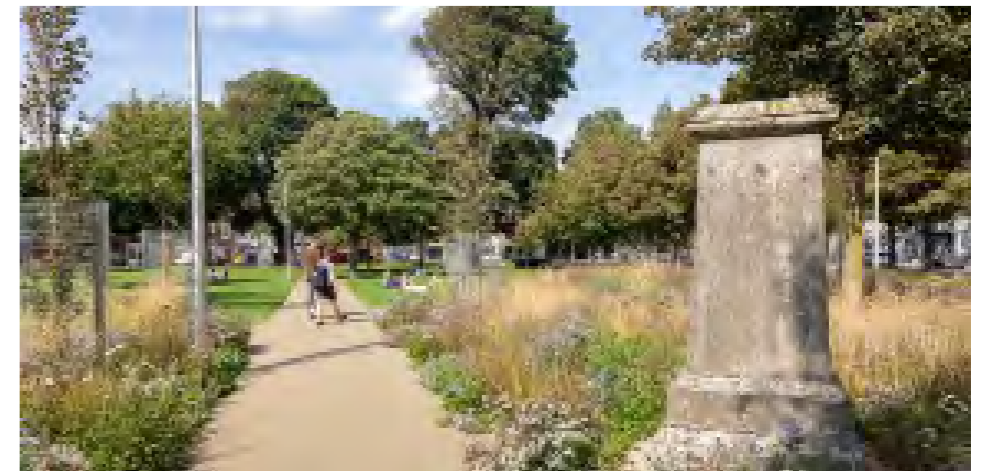
08 Soft Landscape Design



Top image - Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.
Mid image - Residential & Showcase Grasses / ferns: *Deschampsia* spp.
Bottom image - Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.



Top image - Showcase Shrubs: *Cornus Albus Siberica*
Mid image - Grey to Green, Sheffield showing matrix plant typology
Bottom image - Showcase Flowering perennial: *Kirengeshoma palmata*



Top image - Olympic Park, London. Matrix style planting
Mid image - Showcase shrubs: *Gillenia trifoliata*
Bottom image - Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.

09 Street Furniture Materials

The Atlantic Wharf development presents an opportunity to develop a unified approach to street furniture (whether that be bespoke or from pre-existing product ranges) that spans all of the phases of construction, so that the whole place is imbued with a common and coherent feel.

The examples outlined in this section are illustrative only at this stage and not a detailed specification.

Materiality and Appearance

In terms of materiality we've considered the use of a number of different materials, which could dominate the look and feel of the palette. Each have their own pro's and con's and are well documented elsewhere and are only summarised/generalised here, specifically in the context of their use at Atlantic Wharf:

MATERIAL	PROS	CONS
TIMBER	Can be sustainably sourced Algae growth, especially on seating, needs to be specified with care	A timber dominated range unlikely to be aesthetically relevant to Atlantic Wharf Can convey a 'rural' feel. Will need to be blended with other materials if selected.
STAINLESS STEEL	Wide choice and availability	Generic and challenging to create an 'identity' using this material Can be hard to differentiate for visually impaired
POWDER COATED STEEL	Colour palette choice and variation	Maintenance concerns
CAST CONCRETE (CERTAIN APPLICATIONS)	Wide choice and availability	Can be cold, both visually and to touch / sit upon
OXIDISED / CORTEN STEEL	Relevant in brownfield and post industrial settings Not used extensively in Cardiff, so could denote a unique identity	Needs to be deployed / specified with care due to staining of clothing and surrounding paving

We have noted that different materials, depending upon their application can have different impact upon people with visual impairments and physical disabilities. Hence, recommendations regarding this have been taken into consideration.

Integrating lighting, where relevant, into each of the street furniture forms should be a consideration within future Reserved Matters applications. For instance, integrating lightning into a bench, seating area or planter.

The following range of street furniture provides an illustrative overview of how we envisage the palette of materials being used across the Atlantic Wharf development.

The overarching aesthetic is for a palette of materials that are dominated by:

- Timber
- Corten (oxidised steel); and
- Powder coated gunmetal grey

This was the preferred palette from the early in the design process. During the design process, further context site work highlighted that this palette has already been used on a very small landscape scheme elsewhere in the Bay. In 2020 Techniquest, at the former Graving Docks, was refurbished and a small landscape scheme has already used the aesthetic that is being recommended for Atlantic Wharf. This is encouraging and we would seek to scale up and amplify, what has already implemented elsewhere on a sensitive heritage site in the Bay.

09 Street Furniture Materials



Techniquist: Cardiff Bay

09 Street Furniture Materials

Seating

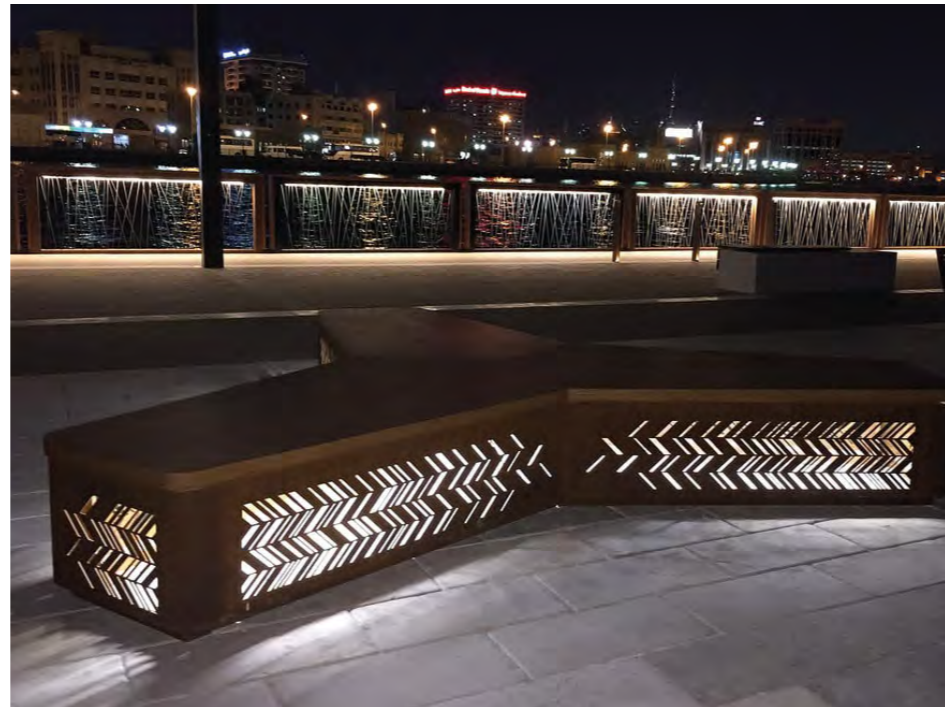
A range of seating will be necessary across Atlantic Wharf to encapsulate:

- Standalone benches
- Seating integrated with planters and/or islands
- Single seats / cubes
- Linear feature seating areas
- Shaped feature seating areas
- PAS 68 rated seating (see below)

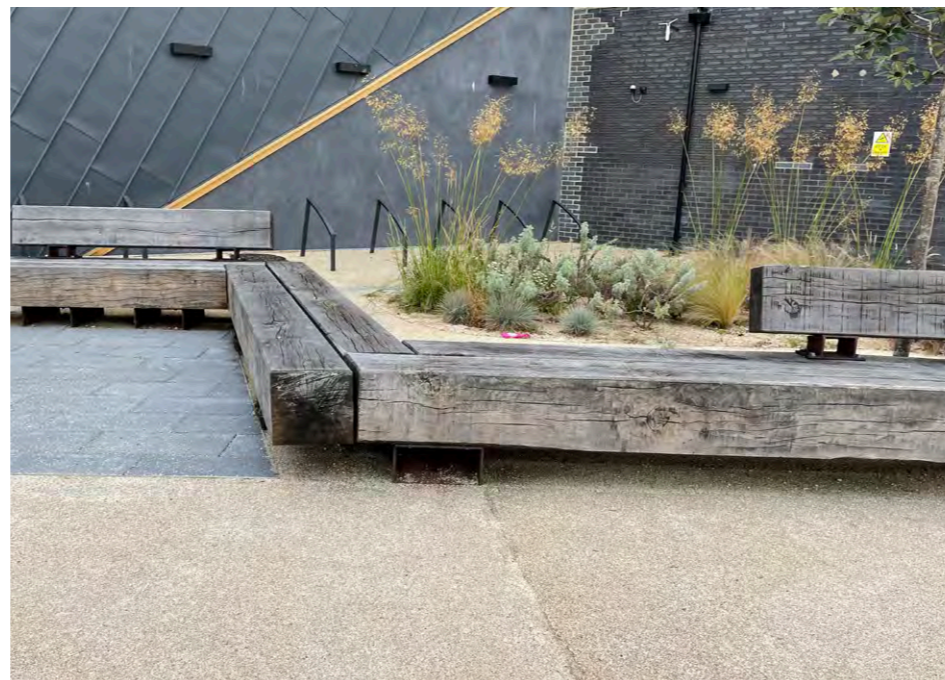
Detailed design should consider options with backrests and handrests to ensure that they are suitable for people with mobility impairments.



Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.



Showcase Flowering perennial: *Kirengeshoma palmata*



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials



Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.



Grey to Green, Sheffield showing matrix plant typology



Showcase Shrubs: Cornus Albus Siberica

09 Street Furniture Materials

Tree Grilles

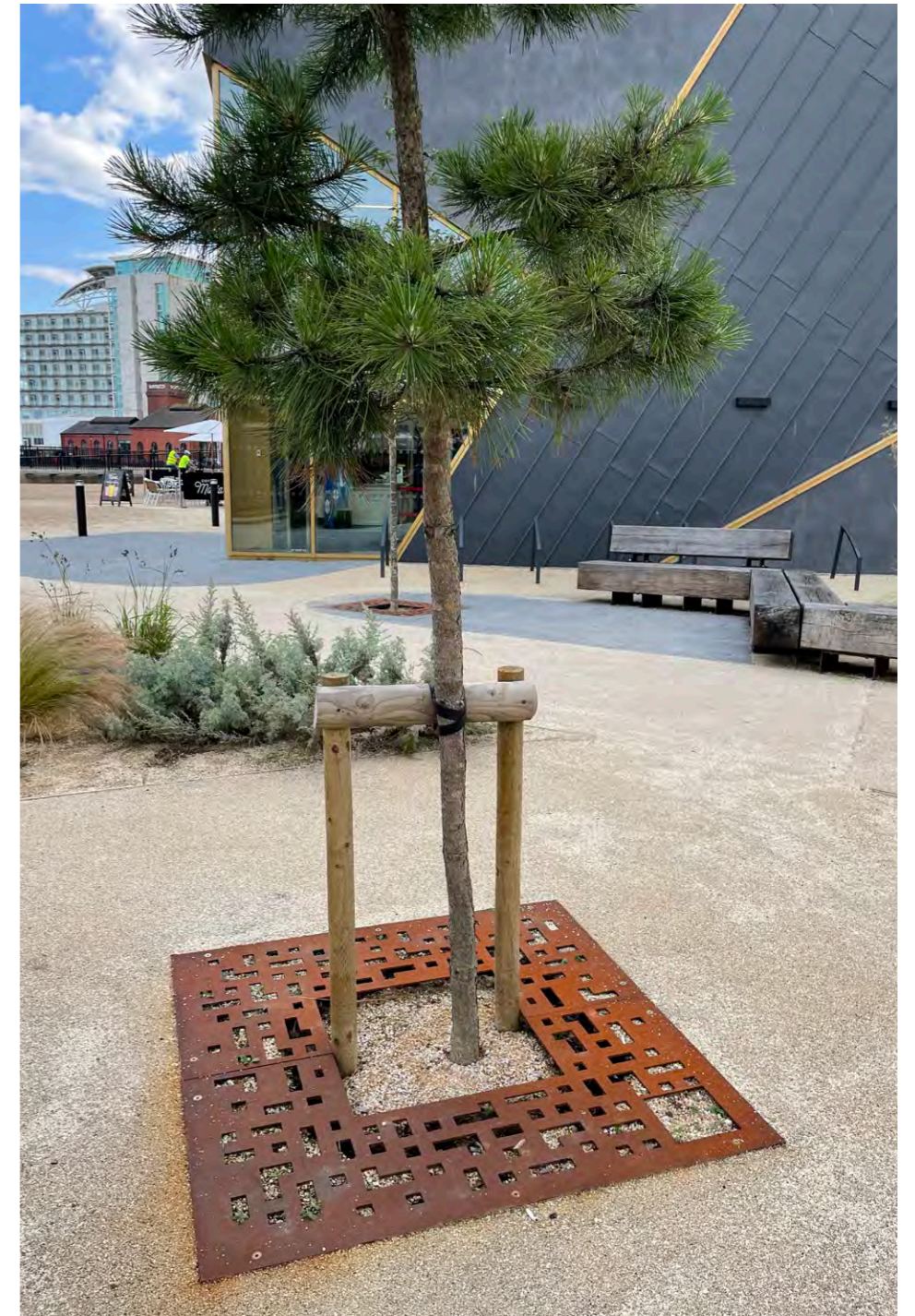
Where planting trees into areas of paving grilles will be used to define these spaces oxygenate the soil at the base of the tree.



Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials

Bollards

Where it is not possible to protect a vulnerable area using planting or street furniture bollards will be necessary.

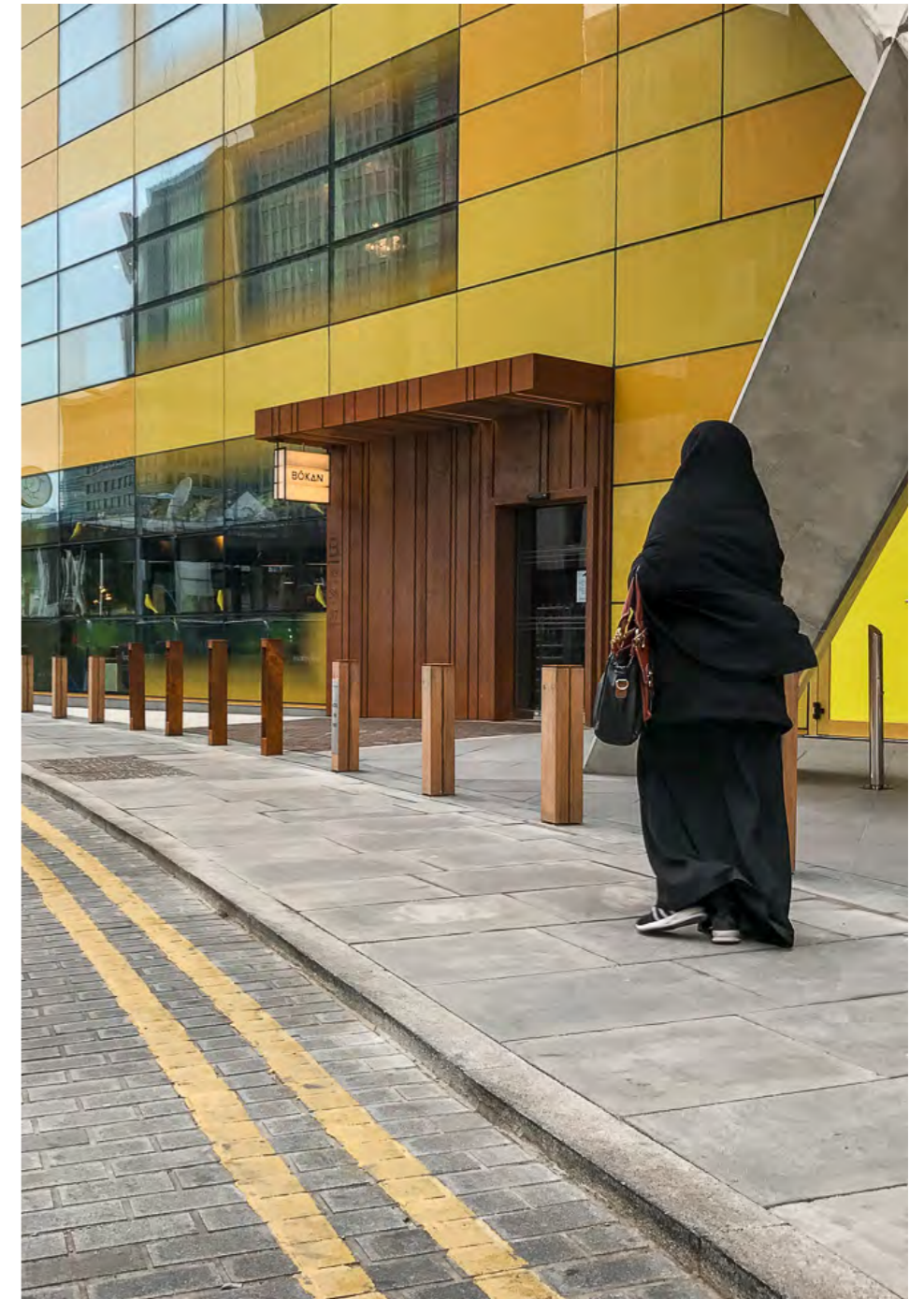
The following types demonstrate the opportunities for bollards that are compliant with the overall material style. Where used in areas of heavy pedestrian footfall, or on desire lines they should incorporate internal illumination to aid wayfinding and personal safety at night.



Valley Gardens, Brighton a rich matrix of low maintenance perennial and bulb planting.



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials

Cycle Parking

A wide range of cycle parking will be required throughout Atlantic Wharf in order to facilitate a dramatic increase in trips by active travel.



Showcase Flowering perennial: *Kirengeshoma palmata*



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials

Wayfinding & feature totems

Feature totems can encapsulate hard, illuminated features to add features to the public realm, or within planting areas, whereas wayfinding totems will include important spatial information about the area for visitors who are unfamiliar with the area and choose not to use a GPS enabled smart device.



Showcase Flowering perennial: *Kirengeshoma palmata*



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials

Islands & Planters

Wherever possible trees and plants will be planted in the ground. However, where this is not possible, or practical planter and islands will be used as integrated features within Atlantic Wharf.



Showcase Flowering perennial: *Kirengeshoma palmata*



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials

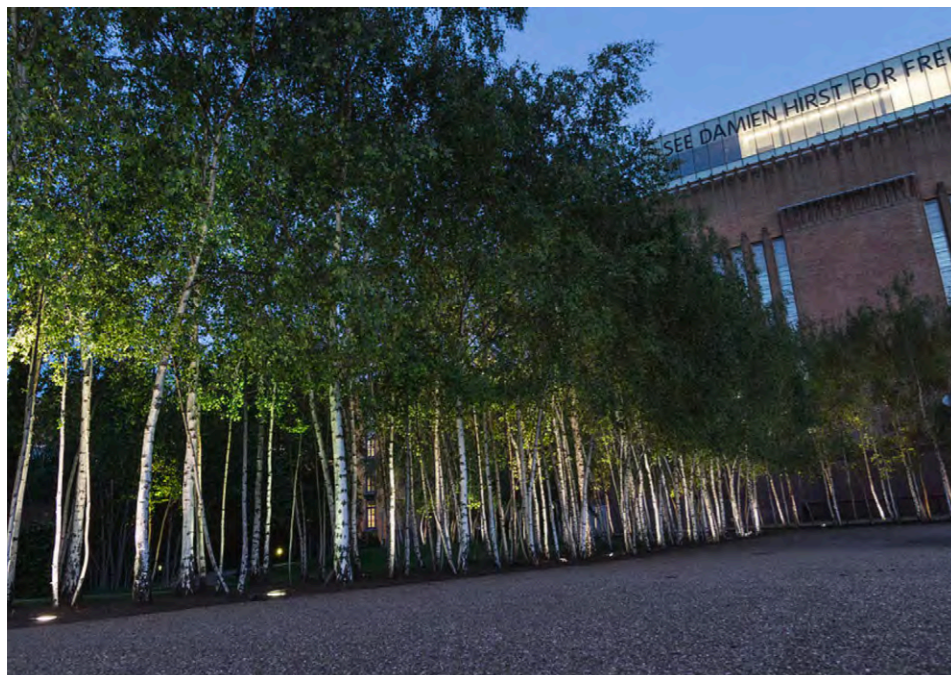
Lighting columns

There is a requirement for a range of lighting furniture across the masterplan area. This includes the following:

- **Strategic lighting** (Atlantic Square) 18m tall column finished in either galvanized or oxidised steel (or corten 'effect')
- **Standard street lighting**: 8m - 12m tall (depending upon context) in a dark grey finish
- **Totem lighting / Feature pillars**: key routes with substantial pedestrian activity (such as 'the gateway') may require non-traditional lighting as features. In such cases a totem column could be used.
- **Wash lighting**: used as downlighting to 'wash' cones of light over walkways or to exentuate planting at night



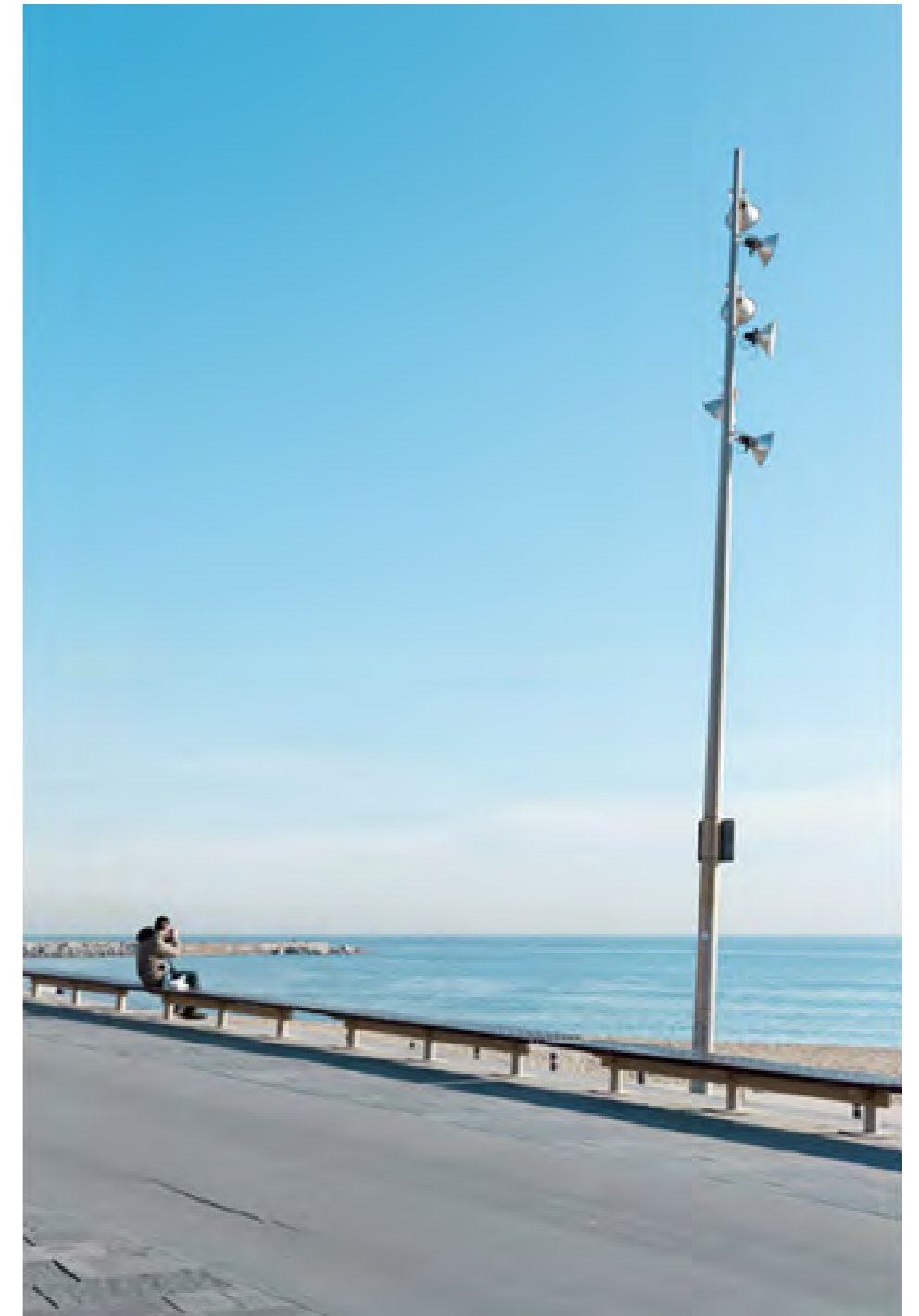
Showcase Flowering perennial: Kirengeshoma palmata



Showcase Flowering perennial: Kirengeshoma palmata



Showcase Flowering perennial: Kirengeshoma palmata



Strategic lighting columns (for use in Atlantic Square)

09 Street Furniture Materials

Hostile Vehicle Mitigation (HVM) Protective Features

The masterplan incorporates a wide range of HVM measures strategically in the Chapter 5. The street furniture would need to be PAS 68 rated to be effective. The images below indicate the type of products and approaches to be deployed. The general rule would be to create arrangements that do not appear as protective street furniture but instead as functional street furniture (planters, benches, etc).



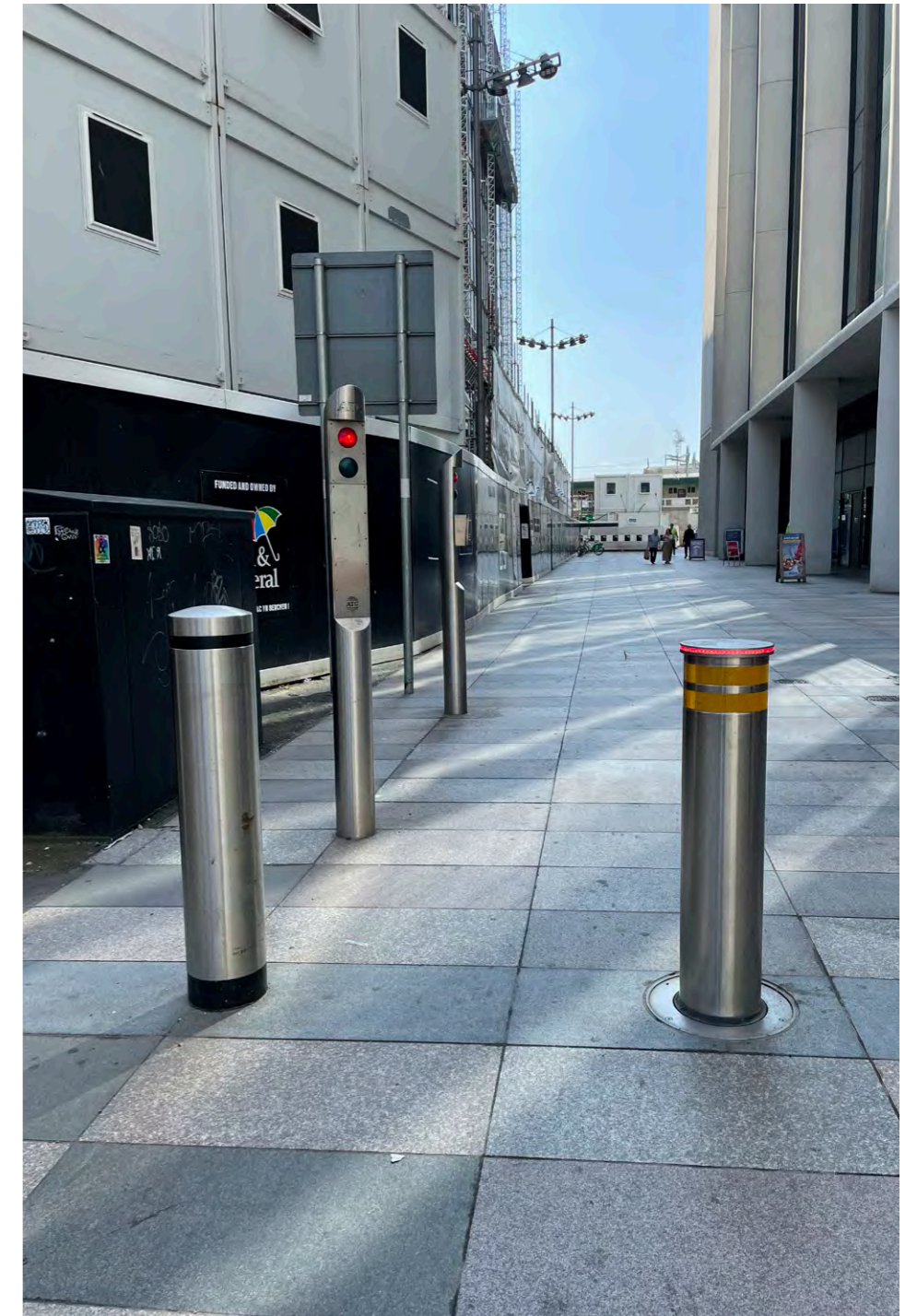
Showcase Flowering perennial: *Kirengeshoma palmata*



Showcase Flowering perennial: *Kirengeshoma palmata*



Showcase Flowering perennial: *Kirengeshoma palmata*



Residential & Showcase Grasses / ferns: *Deschampsia* spp.

09 Street Furniture Materials

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10 Compensation & Enhancement

ATLANTIC WHARF GREEN AREA ASSESSMENT [PRELIMINARY ASSESSMENT]

	EXISTING	REMOVED	RETAINED	PROPOSED	LOSS / GAIN
TREES (NUMBER)*	381	304	77	740	436 (gain)
AMENITY GRASS (AREA)	15400	13240	2160	2300	-10940 (loss)
WILDFLOWER (AREA)	0	0	0	2176	2176 (gain)
NATIVE BUFFER (INC BROADLEAVED WOODLAND)	5725	4225	1500	7100	2875 (gain)
ORNAMENTAL SHRUB PLANTING (AREA)	12245	8380	3865	6340	-2040 (loss)
RAINGARDENS (AREA)	0	0	0	5870	5870 (gain)
GREEN ROOF	0	0	0	3780	3780 (gain)
URBAN FOREST	0	0	0	840	840 (gain)
LINEAR FEATURES AND HABITAT CONNECTIVITY (LINEAR METRES)	2207	1197	1010	3016	1819 (gain)

*All areas are in sqm unless specified.



① Green Area Assessment Diagram

- Boundary

Native Buffer

Raingarden
- Ornamental Planting

Amenity Lawn

Wildflower
- Urban Forest

Roof Garden

Existing Green Area

10 Compensation & Enhancement

Future Management & Maintenance

The range of landscape features proposed is extensive, yet incorporates many aspects that are already either emerging or prevalent in Cardiff, such as:

- Granite paving
- Raingardens
- Parks with large mature trees in the public realm

Materials have been proposed with future management and maintenance in mind. However, the proposals do not result in a zero maintenance landscape. It would be impossible to meet the various contemporary policy requirements without incurring the necessity for appropriate management.

Thus, we have liaised with the Council to consider an evolution of future management so that the horticultural skills and knowledge of maintenance operatives is enhanced and evolves as the landscape approach is adapted to offset loss of habitats and mitigate climate change. There is a considerable skills and education agenda that the landscape proposals associated with the Atlantic Wharf development can promote.

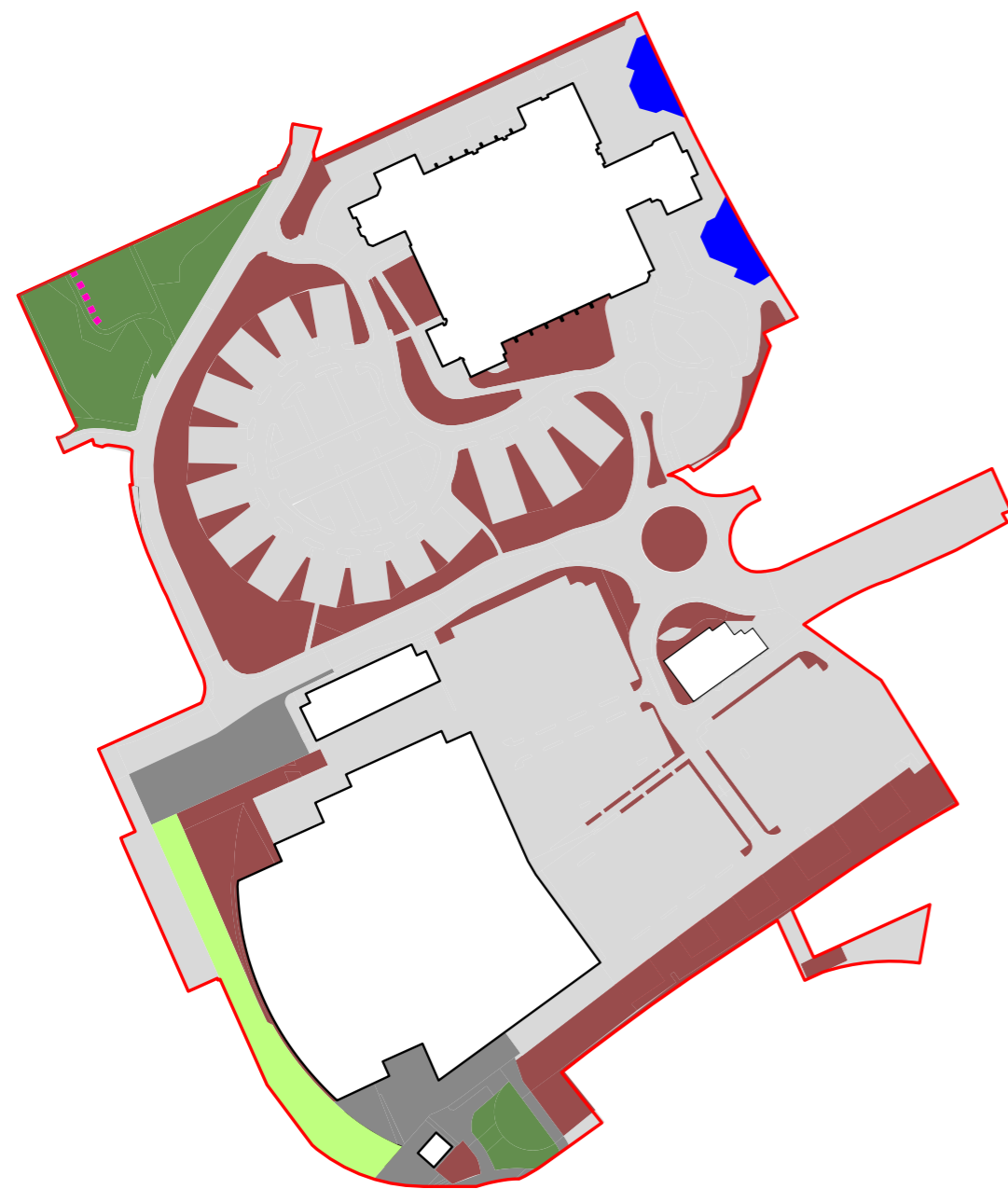
10 Compensation & Enhancement

ATLANTIC WHARF OPEN SPACE ASSESSMENT (PHASE 5) [PRELIMINARY ASSESSMENT]

	Existing	Removed	Retained	Proposed	Loss / Gain
Multi-functional green space	6352.5	4477.5	1875	9430	4952.5
Green Corridor	2815	2815	0	18580	15765
Outdoor sport facilities	43.5	43.5	0	830	786.5
Provision for children and young people	0	0	0	1685.5	1685.5
Civic spaces	0	0	0	12240	12240
Green verges / buffer	23970	18815	5155	4520	-14295
Water	1120	1120	0	1918	798
Other	5365	5365	0	11820	6455
Total	39666	32636	7030	62709	30073
Other Useful Area Assessment - Phase 5					
Buildings' footprints	29130	29007.35	122.65	44440	15432.65
Road infrastructure & car park	66810	63,280	3530	16,510	-46,770
Total site assessment area	13.4 ha				
Notes: Phase 6 is the sum of the areas within all six phases.					
All measures are in sqm unless specified.					
Lost of grey road infrastructure & surface car park is a positive outcome as it highlighsts how the design focuses on providing high quality spaces for pedestrians and cyclists.					

A breakdown by phase of the Open Space Assessment can be found in the Appendix.

10 Compensation & Enhancement



Existing Open Space Assessment



Proposed Open Space Assessment

- Open Space Assessment Areas
- Multi-functional green space
 - Secondary Multi-functional green space
 - Green Corridor
 - Outdoor sport facilities
 - Provision for children and young people
 - Civic spaces
 - Green verges / buffer
 - Water
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- Other Areas
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 - Building Footprint

11 Conclusion

This document sets out a medium to long term ambition for how the spaces between the buildings in Atlantic Wharf can contribute to a strong sense of place that is consistent with Cardiff's One Planet Strategy and the Wellbeing of Future Generations Act. In the short term the ambition will be initiated by the development of the proposed Cardiff Arena in Phase 1.

Such a profound change to the urban environment is an opportunity to make considerable contribution to the City. Presently much of the space in the area is dominated by the need to accommodate vehicles, especially parking. This landscape masterplan demonstrates how this can be overcome.

The proposed masterplan is a bold vision to create a variety of civic spaces that are focused around people. The needs of the visitors, residents and users of Atlantic Wharf have been considered in a wide range of terms (e.g., comfort from wind or strong sun, the needs of children and older people, ways of moving around by foot and bicycle, the pleasure gained from just being and people watching, etc).

The masterplan is influenced by how trees and planting can: support sustainable drainage, create comfortable conditions, provide rewarding experiences and very much contribute to the overall sense of place alongside the architecture and the activities that take place within the buildings. This approach to greenery is also intended to support the conditions where wildlife can thrive and become an intrinsic part of the development.

Taken together: materials, planting, wayfinding, public art, civic spaces, streets, ecology, security, etc provide a series of layers and guidance on detailed design that will ensure that each phase of development contributes towards a neighbourhood that has a consistent and high quality sense of place.

11 Conclusion

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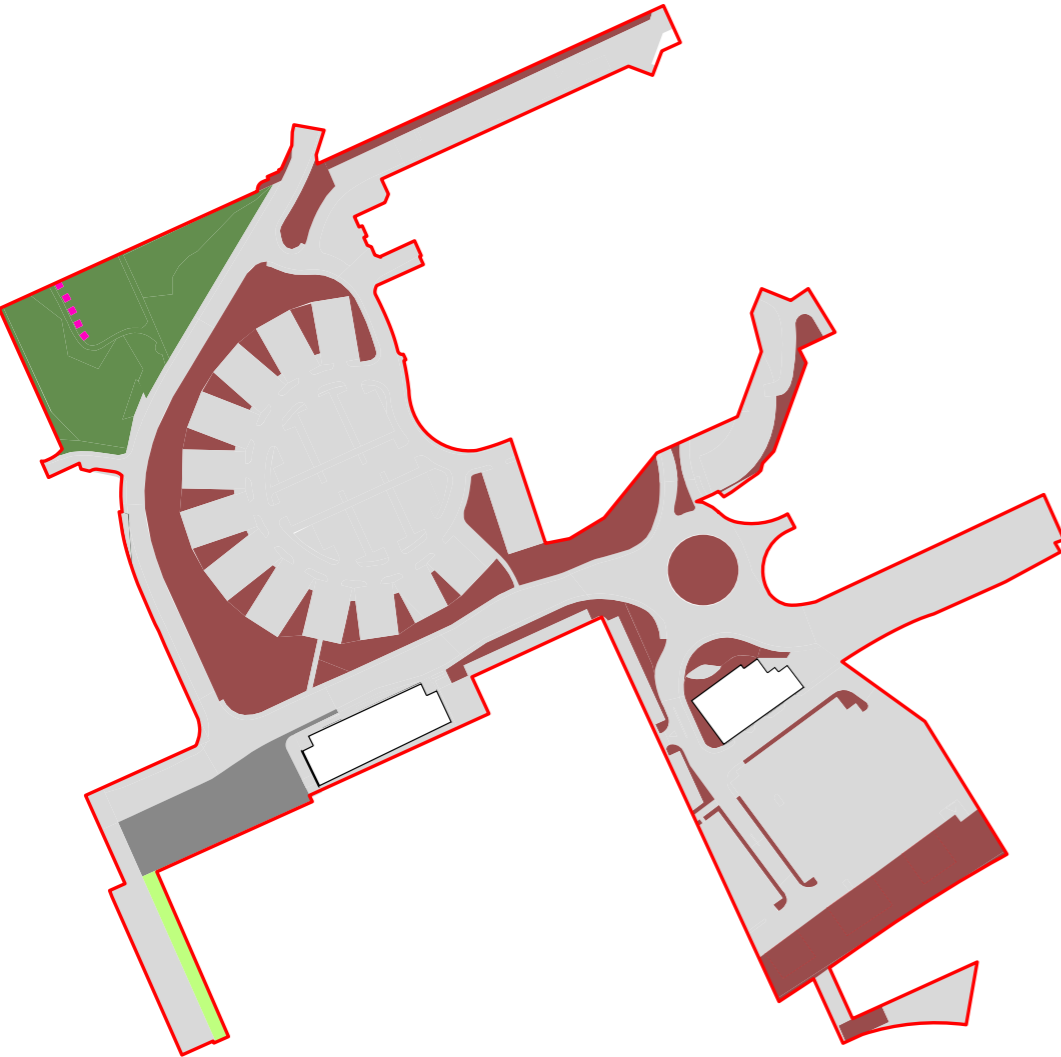
Appendix A

ATLANTIC WHARF OPEN SPACE ASSESSMENT (PHASE 1) [PRELIMINARY ASSESSMENT]

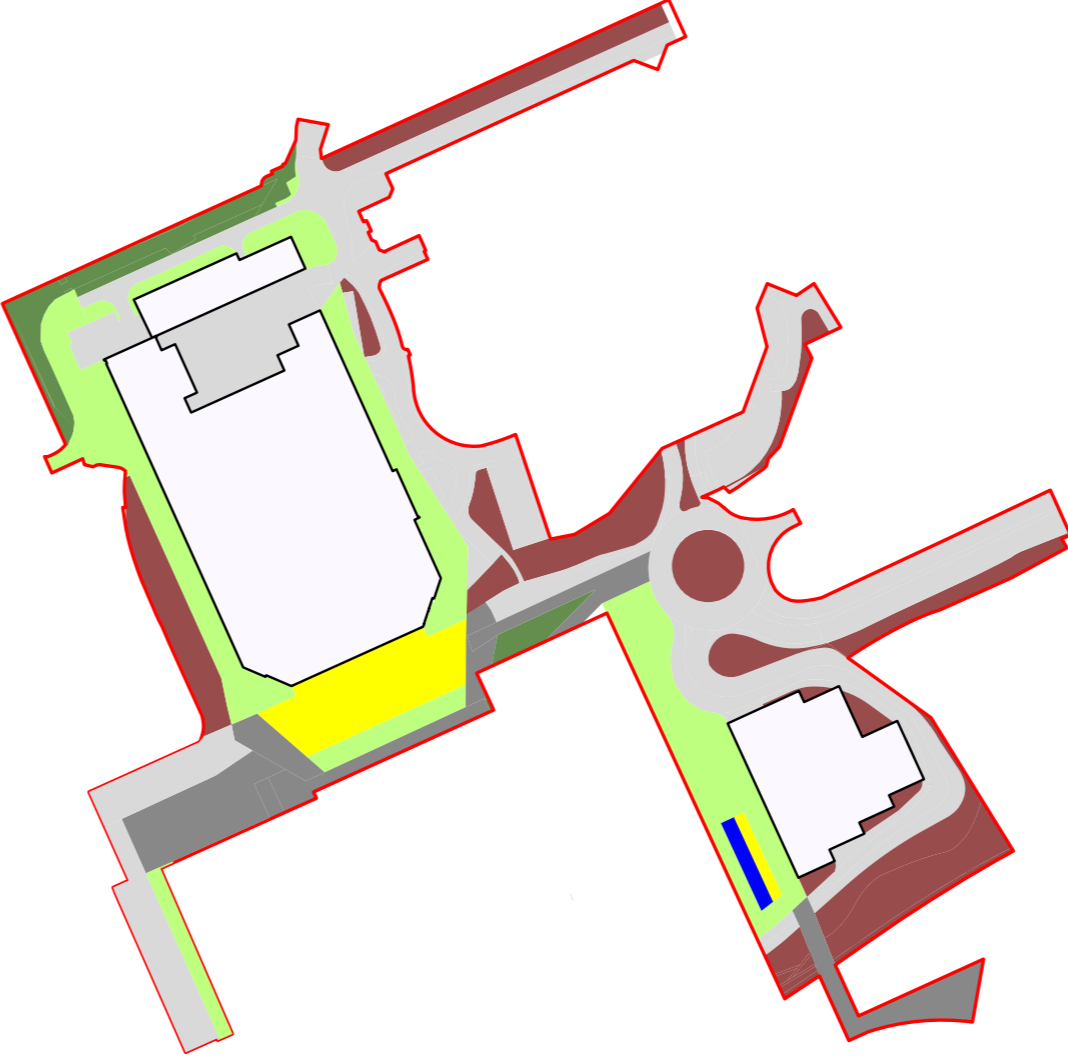
	Existing	Removed	Retained	Proposed	Loss / Gain
Multi-functional green space	5380	3505	1875	393	-3112
Green Corridor	474	0	474	9438	9438
Outdoor sport facilities	43.5	43.5	0	0	-43.5
Provision for children and young people	0	0	0	0	0
Civic spaces	0	0	0	2612	2612
Green verges / buffer	15252	9378	5874	3131	-6247
Water	0	0	0	240	240
Other	2130	539	1591	3563	3024
Total	23279.5	13465.5	9814	19377	5911.5
Other Useful Area Assessment - Phase 1					
Buildings' footprints	2144	2144	0	17108	14964
Road infrastructure & car park	47914	35002	12912	8,573	-26,429
Total site assessment area	6.9 ha				
Notes:					
All measures are in sqm unless specified.					
Lost of grey road infrastructure & surface car park is a positive outcome as it highlighsts how the design focuses on providing high quality spaces for pedestrians and cyclists.					



Appendix A



Existing Open Space Assessment - Phase 1



Proposed Open Space Assessment - Phase 1

- Open Space Assessment Areas
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 - Building Footprint

Appendix A

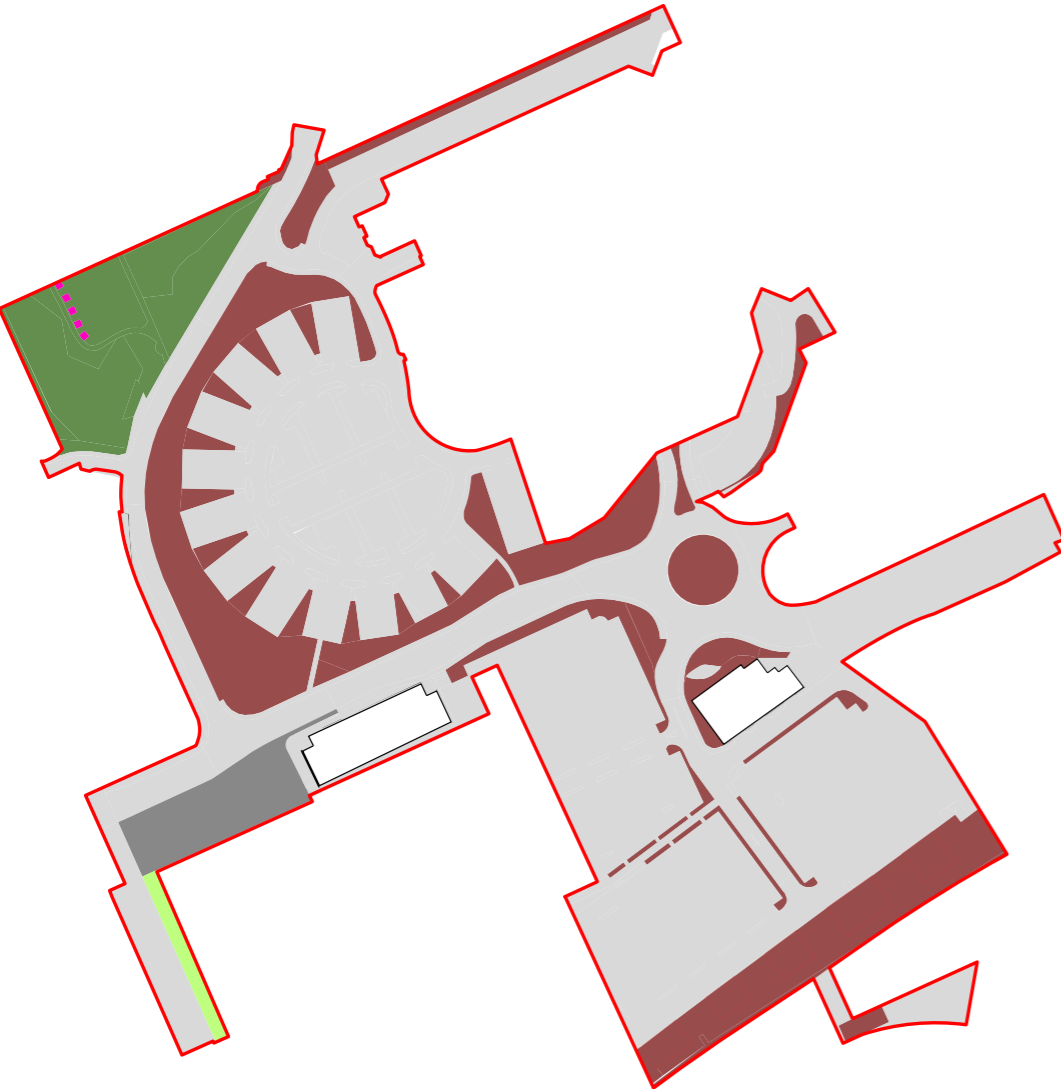
ATLANTIC WHARF OPEN SPACE ASSESSMENT (PHASE 2)

[PRELIMINARY ASSESSMENT]

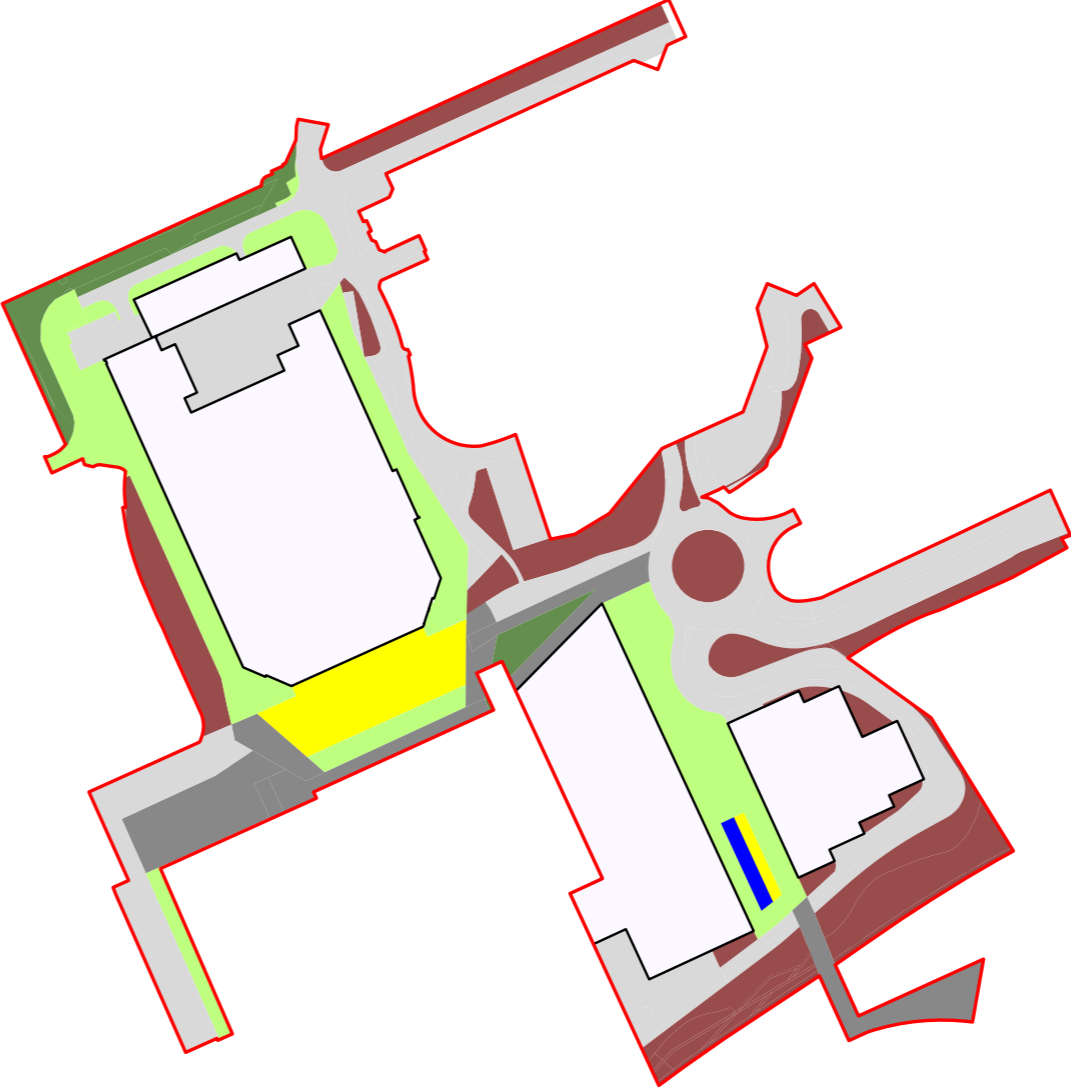
	Existing	Removed	Retained	Proposed	Loss / Gain
Multi-functional green space	5380	3505	1875	464	-3041
Green Corridor	474	0	474	9438	9438
Outdoor sport facilities	43.5	43.5	0	0	-43.5
Provision for children and young people	0	0	0	0	0
Civic spaces	0	0	0	2612	2612
Green verges / buffer	16573	10015	6558	3247	-6768
Water	0	0	0	240	240
Other	2130	540	1590	3743	3203
Total	24600.5	14103.5	10497	19744	5640.5
Other Useful Area Assessment - Phase 2					
Buildings' footprints	2144	2144	0	24408	22264
Road infrastructure & car park	56800	43788	13012	9,970	-33,818
Total site assessment area	7.9 ha				
Notes:					
All measures are in sqm unless specified.					
Lost of grey road infrastructure & surface car park is a positive outcome as it highlighsts how the design focuses on providing high quality spaces for pedestrians and cyclists.					



Appendix A



Existing Open Space Assessment - Phase 2



Proposed Open Space Assessment - Phase 2

- Open Space Assessment Areas
- Multi-functional green space
 - Secondary Multi-functional green space
 - Green Corridor
 - Outdoor sport facilities
 - Provision for children and young people
 - Civic spaces
 - Green verges / buffer
 - Water
 - Other
- Other Areas
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 - Building Footprint

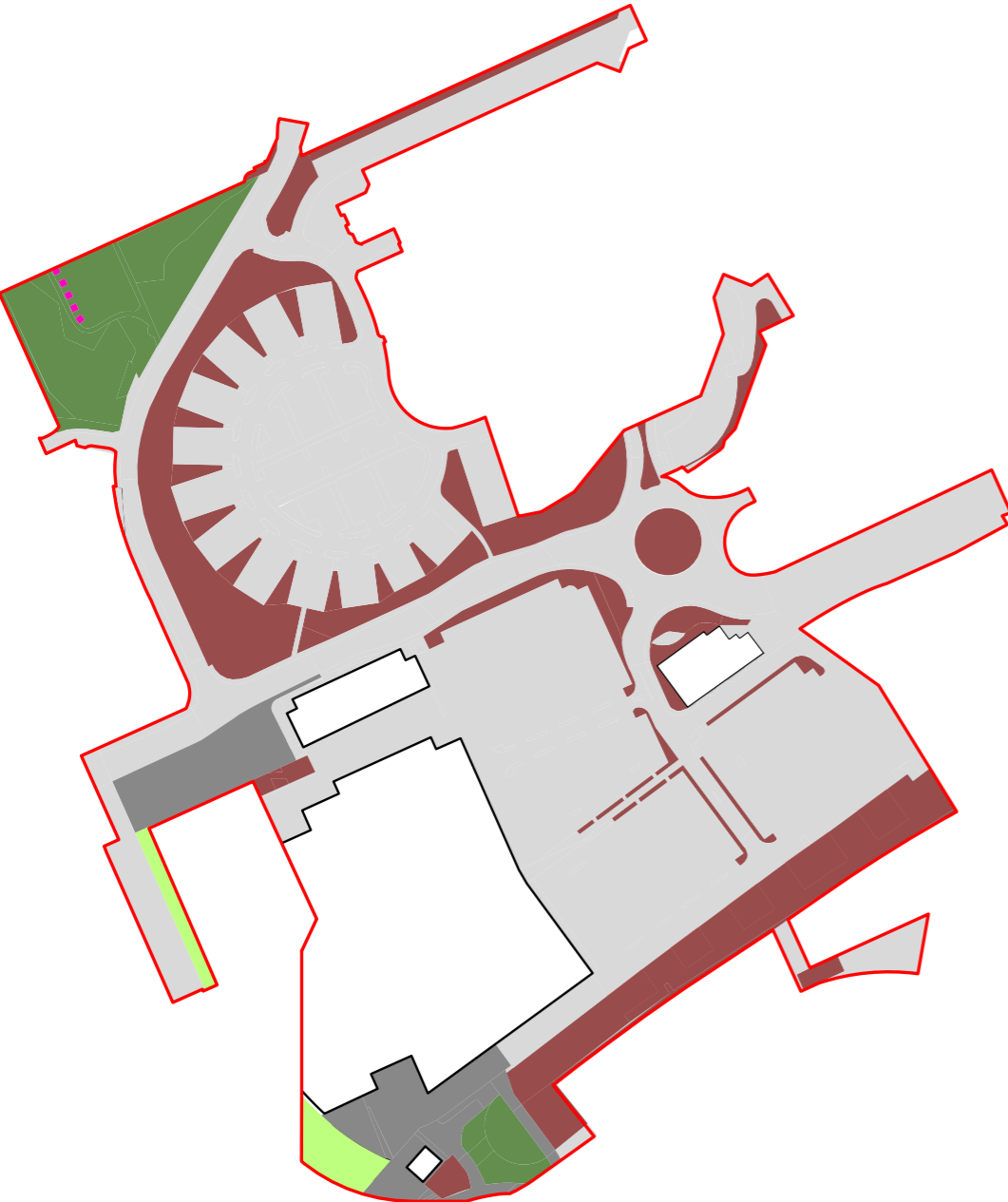
Appendix A

ATLANTIC WHARF OPEN SPACE ASSESSMENT (PHASE 3) [PRELIMINARY ASSESSMENT]

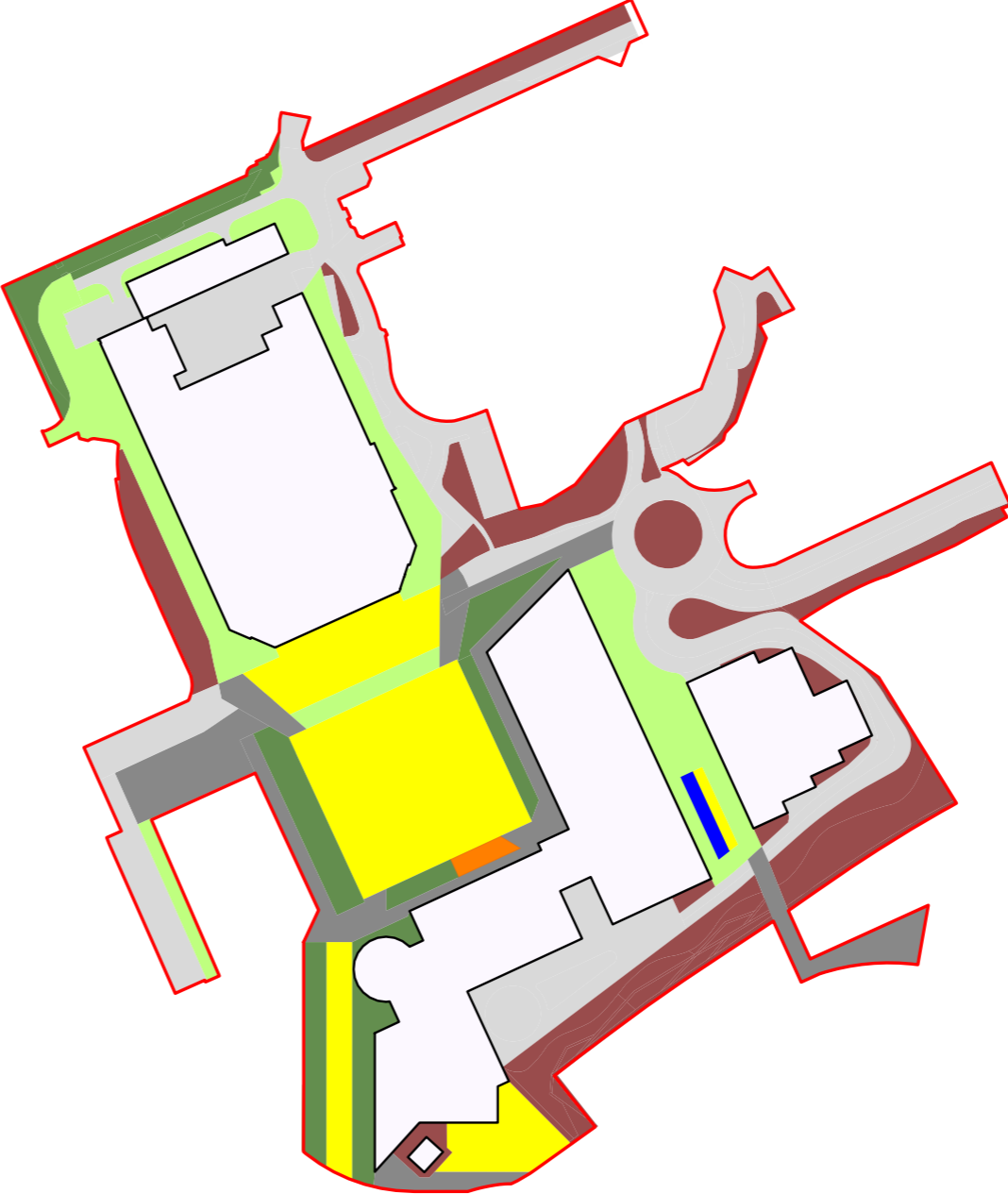
	Existing	Removed	Retained	Proposed	Loss / Gain
Multi-functional green space	6352.5	4477.5	1875	4770	292.5
Green Corridor	1280	806	474	9438	8632
Outdoor sport facilities	43.5	43.5	0	0	-43.5
Provision for children and young people	0	0	0	246	246
Civic spaces	0	0	0	11760	11760
Green verges / buffer	18734	11156	7578	3545	-7611
Water	0	0	0	240	240
Other	5364	3774	1590	5843	2069
Total	31774	20257	11517	35842	15585
Other Useful Area Assessment - Phase 3					
Buildings' footprints	16300	16177.4	122.6	31170	14992.6
Road infrastructure & car park	65267	61,728	3539	12,318	-49,410
Total site assessment area	10.5 ha				
Notes:					
All measures are in sqm unless specified.					
Lost of grey road infrastructure & surface car park is a positive outcome as it highlighsts how the design focuses on providing high quality spaces for pedestrians and cyclists.					



Appendix A



Existing Open Space Assessment - Phase 3



Proposed Open Space Assessment - Phase 3

- Open Space Assessment Areas
- Multi-functional green space
 - Secondary Multi-functional green space
 - Green Corridor
 - Outdoor sport facilities
 - Provision for children and young people
 - Civic spaces
 - Green verges / buffer
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- Other Areas
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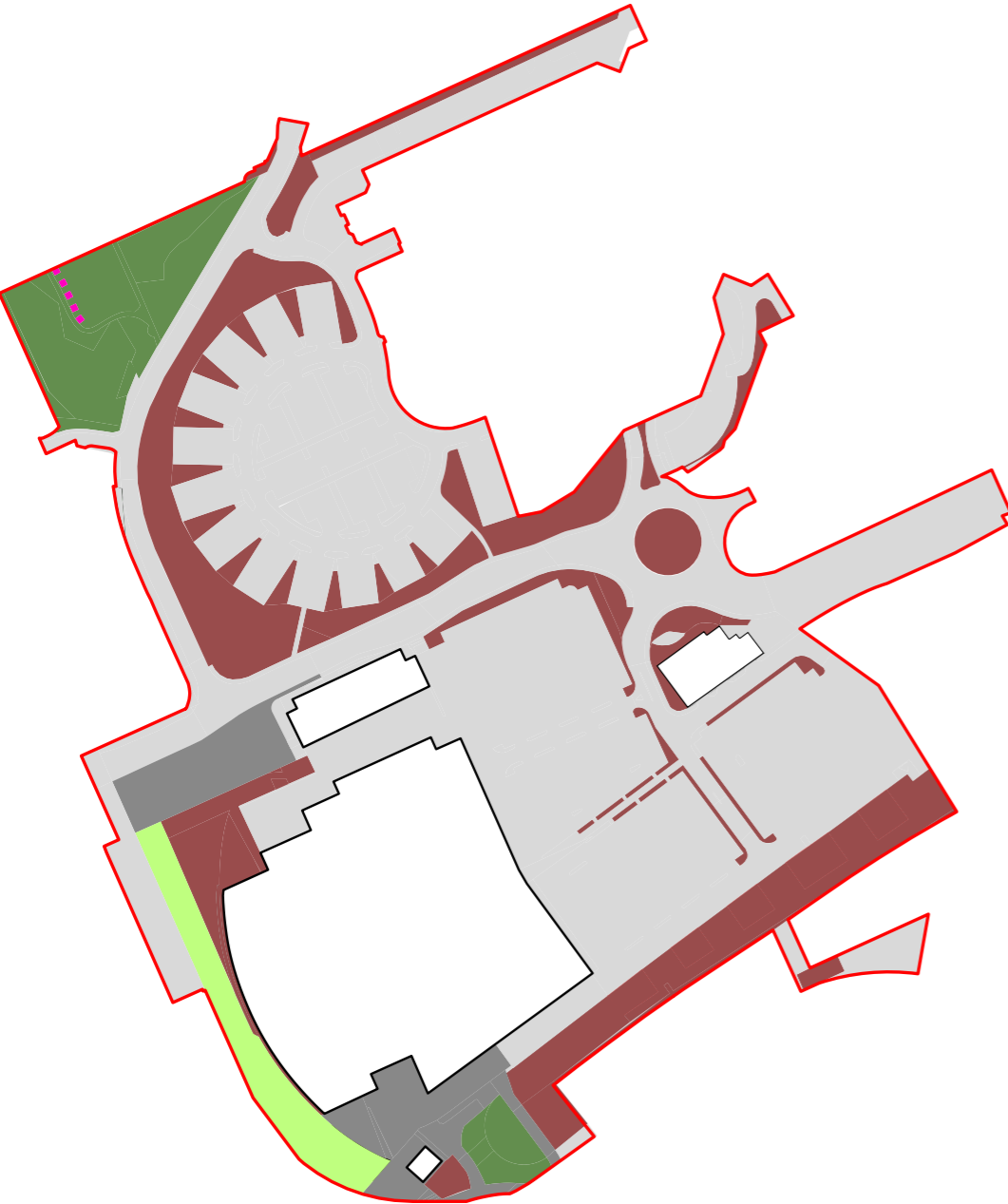
Appendix A

ATLANTIC WHARF OPEN SPACE ASSESSMENT (PHASE 4) [PRELIMINARY ASSESSMENT]

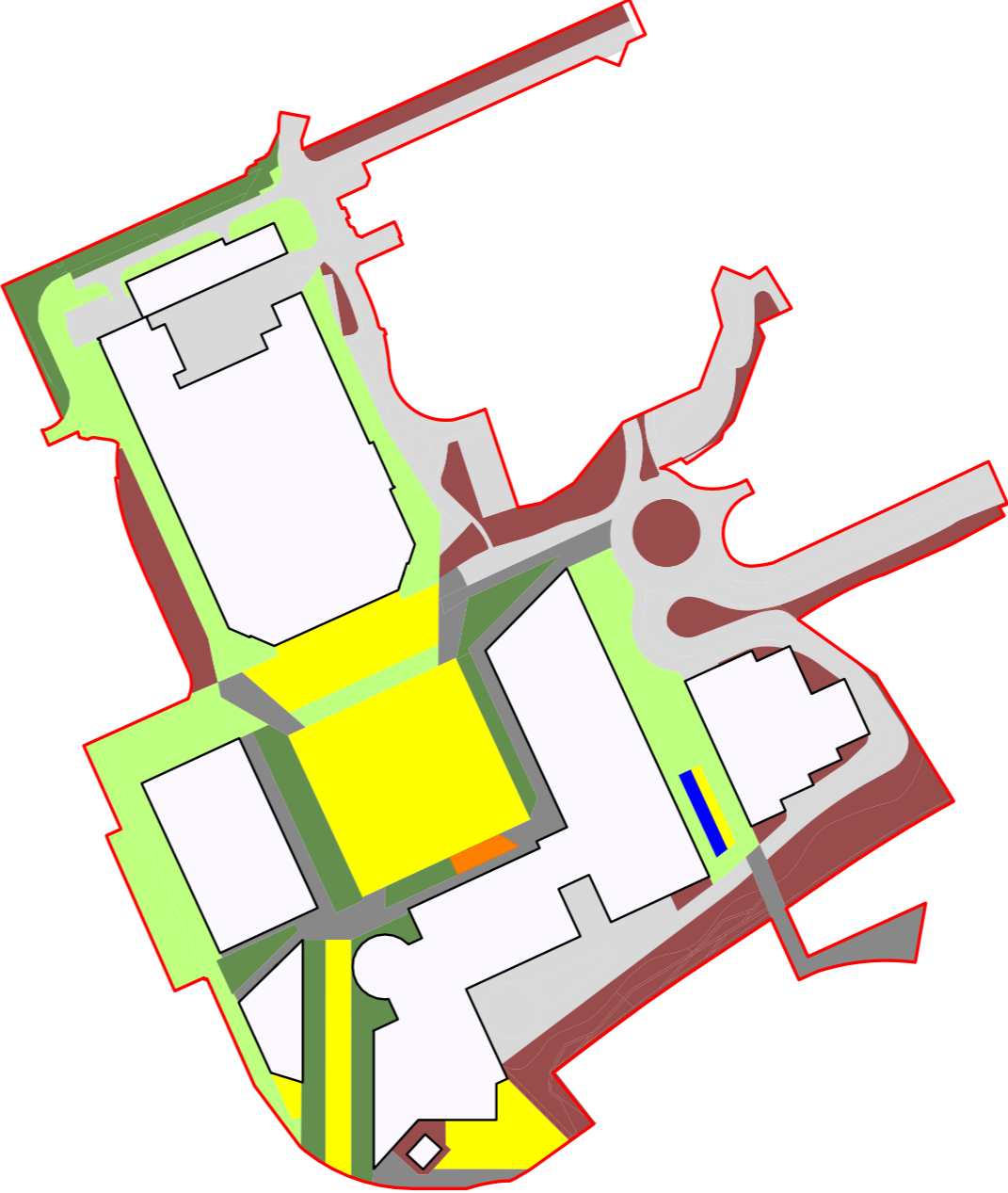
	Existing	Removed	Retained	Proposed	Loss / Gain
Multi-functional green space	6352.5	4477.5	1875	5165	687.5
Green Corridor	2816.5	1316.5	1500	12460.5	11144
Outdoor sport facilities	43.5	43.5	0	0	-43.5
Provision for children and young people	0	0	0	246	246
Civic spaces	0	0	0	11916.5	11916.5
Green verges / buffer	20584	13006	7578	3545	-9461
Water	0	0	0	240	240
Other	5364	5364	0	6100	736
Total	35160.5	24207.5	10953	39673	15465.5
Other Useful Area Assessment - Phase 4					
Buildings' footprints	18850	18727.4	122.6	36315	17587.6
Road infrastructure & car park	63094	61,967	1127	12,318	-49649
Total site assessment area	11.1 ha				
Notes:					
All measures are in sqm unless specified.					
Lost of grey road infrastructure & surface car park is a positive outcome as it highlighsts how the design focuses on providing high quality spaces for pedestrians and cyclists.					



Appendix A



Existing Open Space Assessment - Phase 4



Proposed Open Space Assessment - Phase 4

- Open Space Assessment Areas
- Multi-functional green space
 - Secondary Multi-functional green space
 - Green Corridor
 - Outdoor sport facilities
 - Provision for children and young people
 - Civic spaces
 - Green verges / buffer
 - Water
 - Other
- Other Areas
- Road Infrastructure and Surface Car Park
 - Building Footprint



The Urbanists, The Creative Quarter, 8A Morgan Arcade, Cardiff, CF10 1AF, United Kingdom

