Cardiff
Public Realm Manual
Creating Liveable Streets

October 2015

CARDIFF
CAERDYDD

Mae'r ddogfen hon hefyd ar gael yn Gymraeg / This document is also available in Welsh.

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Contents

1. ntroduction

1.1 Vision

1.1.1. The public realm refers to the space between buildings where people have free access, such as streets and public squares. High quality design together with the choice of high quality materials can provide a sense of wellbeing by making streets not only places that function well in terms of walking, cycling and public transport trips, but which also help to support the local economy by creating attractive and enjoyable places to spend time in within the city centre and district / local centres. By working together to build on existing achievements we can create a successful public realm across the city that enhances people's quality of life within their local communities, provides a focus and stimulus for business and tourism and helps to ensure that Cardiff can become Europe's most liveable Capital City.

1.2   About this Document

1.2.1.   The Public Realm Manual seeks to achieve a consistently high quality, distinctive and legible public realm throughout Cardiff that will help to enhance the experience of the city for residents, workers and visitors. It is intended to act as a guide for all those concerned with the design, implementation and maintenance of the public realm, whilst also informing developers and other interested stakeholders.

1.2.2.   The Manual sets out guidance and design principles that should be taken 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.

1.2.3.   t 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 design solutions.

1.2.4.   t is important to acknowledge the diverse range of uses and functions that the public realm accommodates and the Manual seeks to create streets and public spaces that provide an attractive and enjoyable pedestrian-friendly environment that is suitably robust to stand up to the pressures of everyday uses, including traffic movements, pedestrian footfall and the night-time economy.

1.2.5.   The Manual seeks to:

- Provide a clarified and coordinated approach to the continued development of the public realm across the city
- Create high quality streets and public spaces that are simple, uncluttered and legible.
- Make an inclusive and safe environment that is accessible to all.
- Establish a more consistent approach to the palette of materials used for paving and street furniture.
- Promote the use of high quality products and robust construction methods to ensure the longevity of schemes.
- Preserve and enhance the historic character of the city.
- Encourage a sustainable approach to design, sourcing and construction.
- e lp to create public spaces that are resource efficient and robust in response to the impacts of climate change.
- Promote a joined-up approach between Council departments and stakeholders.

Placemaking and Urban Design >	PUBLIC REALM MANUAL	< Engineering and Construction
▪ Distinctive Character ▪ User-Friendly ▪ Enhancing Quality of Life		▪ Durable ▪ Serviceable ▪ Functional

1.2.6.   The Manual should be utilised from the outset of a public realm / highway scheme design and considered within the context of associated highway regulations, guidance and standards, including the Cardiff Highway Specifications.

1.2.7.   The Cardiff Public Realm Manual was approved by Cabinet on 17h September 2015.

Public Realm Design Principles

1.3.1. Design, quality and layout influence not only how people move through an area, but also how they use and enjoy streets and public spaces. urther guidance is provided in Manual for Streets 2007) and Manual for Streets 2 2010 .

- **Character:** Cardiff has its own distinctive identity, made up of a network of character areas within it. Character can be shaped by a variety of factors including how paving materials, street furniture and landscaping integrate with local architecture, historic features and surrounding landuses. Character is not only derived from the physical elements, but also from the uses and activities taking place within them.

- **The Welsh Language:** As the Capital City of Wales, Cardiff is committed to ensuring equality by actively promoting and supporting the Welsh language. Within the public realm, new and replacement signage and street furniture, such as finger posts, information panels and litter bins will be bilingual.

- **Ease of Movement:** Streets and spaces should connect well with each other and street furniture should not obstruct pedestrian movement in order to maintain accessible routes across the city.

- **Legibility:** A legible place is one that people can understand and navigate easily. Routes throughout the city should be clear, distinctive and accessible by their design, and can be strengthened by implementing simple and direct signage / tourist information, by utilising public art and by protecting and enhancing important views and vistas.

- **Quality:** Paving materials, street furniture and landscaping should all be of a high quality and help to enhance the relationship between buildings and the street. Materials should be applied in a consistent way to help create more elegant, consistent and legible character areas across the city.

- **Reducing Clutter:** Unnecessary or redundant signage and street furniture should be removed in order to avoid cluttered streets. The sitting and location of traffic signage should consider the potential impact on the public realm, including ease of pedestrian movement and views along streets and of key buildings.

- **Paving Construction and Cleansing:** The choice of paving material should respond to the character and context of an area. t should be of a suitable quality, colour, size and depth, and be laid on a sufficient sub base relative to associated levels of pedestrian and vehicle traffic. Resistance to staining and ease of cleansing also needs to be considered in relation to pedestrian and vehicle trafficking and the impact of surrounding landuses.

- **Diversity and Flexibility:** The layout and design of the public realm should encourage and facilitate social interaction. Streets and public spaces should be adaptable and able to accommodate changing uses over time which can result from a change in surrounding landuses or new developments increasing pedestrian footfall.

- **Partnership:** Consultation and engagement is important in developing successful public spaces. oined up working with relevant internal / external groups and local communities can assist in problem solving, help to develop creative / pragmatic solutions and engender a sense of ownership and responsibility.

1.3   Secured by Design

1.4.1.   'Secured by Design' principles aim to assist in reducing the opportunity for crime and the fear of crime, creating a safer and more secure environment. Overarching principles include:

- **Environmental quality and sense of ownership**: High quality spaces that are well designed and well integrated with buildings can help create a sense of place and strengthen community identity.

- **Natural Surveillance:** The public realm should be overlooked wherever possible. Places that are well used and encourage activity will generate their own natural surveillance.

- **Lighting:** Improved lighting can be effective in reducing fear of crime, and in certain circumstances reducing the incidence of crime. Differing lighting sources need to be considered for different environments – the character of the local environment must always be respected.

- **Landscaping:** The design of the public realm and positioning of street furniture should provide clear sight lines and avoid the creation of hiding places.

- **Movement:** Layouts should be based on a hierarchy of well defined primary routes and shared spaces which do not compromise security.

- **Street Furniture:** Items should be placed where their function can positively contribute to the surrounding environment. Designs should anticipate and minimise anti-social behaviour, and materials should be robust and resistant to vandalism.

1.4   nclusive Design

1.5.1.   nclusive Design is a process of designing, building and managing and places and spaces to ensure that they work for as many people as possible, not just some groups. It aims to remove the barriers that create undue effort and separation.

1.5.2.   ' nclusive environments are:

- Welcoming to everyone
- Responsive to people's needs
- ntuitive to use
- le xible
- Offer choice when a single design solution cannot meet all user needs
- Convenient so they can be used without undue effort or special separation and so that they maximise independence'[1]

1.5.3.   Legislation is set out in the Equalities Act 2010 and the Active Travel Wales Act 2013. Reference can also be made to the Principles of nclusive Design 2006 and nclusion by Design (2008).

[1]www.designcouncil.org.uk

1.5   Positioning Street urniture

1.6.1.   The uncoordinated and inappropriate location of street furniture can impact on ease of movement for pedestrians, in particular wheelchair / scooter users and people with mobility / visual impairments.

1.6.2.   n general, a footway can be divided into four zones:

- **A: Kerb Zone:** Kept free of street furniture in order to prevent items being damaged by vehicles.
- **B: Street Furniture Zone:** For the positioning of street trees, lighting, signage and other furniture.
- **C: Pedestrian Zone:** Free of any obstructions to allow for unhindered movement of pedestrians.
- **D: rontage Zone:**   or window shopping in retail areas without obstructing the pedestrian zone.
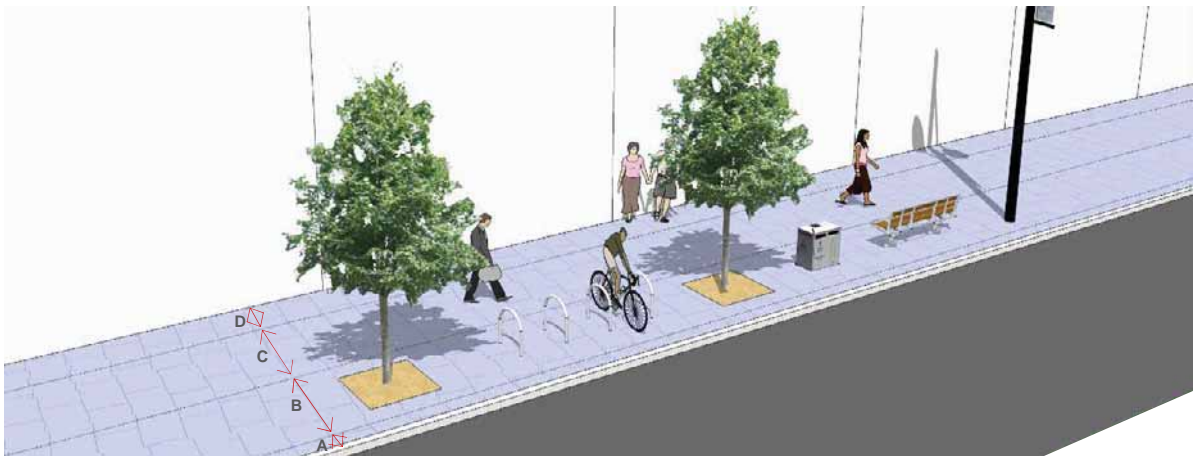
1.6.3.   Care should be taken when introducing additional items of furniture into the street in order to avoid creating unnecessary obstacles and clutter. Consideration should also be given to potential conflict caused by the proximity of items of street furniture (i.e. trees / street lighting and bins / benches .

1.6.4.   Within pedestrianised areas, it can often be beneficial to group together or align street furniture and demarcate these 'street furniture zones' with a contrasting paving colour.

1.6.5.   The use of ground sockets should be considered on a site by site basis for items of street furniture, including bollards, seats and benches, particularly in areas that accommodate temporary / seasonal events to enable their temporary removal and / or ease of replacement.

Consistent street furniture alignment / contrasting paving

Cluttered street furniture arrangement

1.6   Street Design Coordination

1.7.1.   When designing and upgrading streets and public spaces, consideration needs to be given to the established palette of street furniture and paving materials within the surrounding area to help ensure consistency within the streetscape.

1.7.2.   Older paving materials for example large concrete slabs / patterned block paving) and items of street furniture that are not consistent with the principles identified in the Public Realm Manual should be phased out over time as new schemes come forward.

1.7.3.   Where an area is to be upgraded over several phases, a consistent palette of materials should be identified / documented form the outset and adhered to over the lifespan of the project.

Silver-Grey Slab   Standard Concrete Slab   Black Macadam

Ninian Park

2. Streetscape Character

2.1 Public Realm Manual Character Areas

2.1.1. The Public Realm Manual seeks to ensure a consistent approach to the use of paving materials and street furniture across the city. It is recognised, however, that there is a need for the design of the public realm to reflect different areas of local character / distinctiveness and respond to the differing pressures of day-to-day use. To this end, a series of four 'Character Areas' have been identified and each section of the manual sets out where individual paving materials (as identified in paragraph 3.3) and / or components should (or should not be used within this context.

2.1.2. Public Realm Manual Character Areas:

Area A: City Centre / Bay

Area B: Conservation Areas

Area C: Non-Residential

Area D: Residential

2.1.3. n circumstances where there is an overlap between Areas, the identified hierarchy will be observed.

2.1.4. Within each chapter, in addition to the Manual's 'standard' materials / components, a series of higher specification 'landmark' items are also identified, which can be used to further raise the design standard for an area and help to define and enhance gateway sites and areas of special character / significance within their surroundings.

Character Area A: City Centre / Bay

2.1.5.   The palette for the city centre sets out the highest quality of
materials and associated performances requirements to
reflect its role as a focal point for commerce, employment,
shopping, leisure, culture / social activities and in recognition
of the areas exceptionally high levels of footfall.

Key Principles:

- Primary Paving Material: r anite 3.3.1)
- Kerbstone: Conservation
- Landmark Kerbstone: ranite
- Street urniture: City Centre Design as identified

Character Area B: Conservation Areas (as identified in the Deposit Cardiff LDP 2006-2026):

2.1.6.   The materials identified are intended to ensure that the public realm preserves, enhances and
integrates appropriately with the historic environment.

Key Principles:

- Paving Design 1:   Reinstatement of historic pennant where existing   3.3.2D
- Paving Design 2:   Black macadam with feature banding (3.3.6
- Paving Design 3:   New pennant for landmark schemes / gateways 3.3.2B
- Kerbstone: Conservation
- Landmark Kerbstone: r anite
- Street urniture: Conservation Design as identified

Character Area C: Non Residential

2.1.7.   This palette extends to all landuses not identified in paragraphs 2.1.5 / 2.1.6 / 2.1.8 and includes both
new and existing; district, local and neighbourhood centres, business parks, supermarkets, schools,
parks, leisure facilities and commercial / industrial areas etc. The palette has been selected to provide
for intensive usage and creates a degree of design flexibility that will enable the creation of areas of
distinctive local character.

Key Principles:

- Primary Paving Material: Concrete slab 3.3.4A
- Kerbstone: Concrete or conservation
- eature Banding / Street urniture Zones: Concrete products

Character Area D: Residential:

2.1.8. This palette is intended for use within new development sites and existing residential areas across the City.

Key Principles (New Residential Areas):

- Primary Paving Material: Concrete blocks / setts (3.3.4C-E
- Kerbstone: Concrete or conservation
- Shared Surfaces / Parking Courts: Block paving / permeable block 3.3.4C-E
- Cycleways: Macadam 3.3.6

Key Principles (Existing Residential Areas):

- Paving Design 1:   Continued use of Public Realm Manual materials (as identified in paragraph 3.3
- Paving Design 2:   Black macadam 3.3.6
- Standard Kerb: Concrete or conservation to match existing

High Street

3.   ootways, Carriageways and Surfaces

3.1   Footway Surfaces

3.1.1.   An aim of the Public Realm Manual is to reduce the overall number of paving materials used across the city. Five materials are widely established and form the recommended palette:

ranite

Pennant

Clay Pavers

Concrete Products

Macadam

3.1.2.   To help ensure consistency within the streetscape and to aid future maintenance and resource efficiency section 3.3 identifies overarching specifications for each material.

3.2   Carriageway Surfaces

3.2.1.   The primary material for carriageway surfaces is black macadam.

3.2.2.   Block paving (and permeable block paving will need to be considered on a site-by-site basis and should only be used within the context of shared space / pedestrian priority initiatives and within parking courts / surface car parks.

3.2.3.   Within the city centre, block paving can be used to enhance pedestrian crossings where installed flush with the carriageway.

3.3   Paving Materials Palette

3.3.1:
ranite

Specification:	Slabs	Planks
	• Colour: Pink (Mixed Shades , White or Grey • i nish: Flame Textured / Sawn Edge • Dimensions: 600-900) x 600 x 65mm min • Trafficked Area Thickness: 80mm min	• Colour: Black • i nish: Flame Textured / Sawn Edge • Dimensions: 300,450,600) x 150 x 80mm min

Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	• ootways • Trafficked and Non-Trafficked Pedestrian Spaces	• Street Furniture Zones
Conservation Areas	• N/A	• N/A
Non-Residential	• As a Landmark Material	• As a Landmark Street Furniture Zone) Material
Residential	• N/A	• N/A

3.3.1:
Granite

Specification:	Blocks	Setts
	• Colour: rey or Whi te • i nish: Flame Textured / Sawn Edge • Dimensions: 200 x 100 x 80mm min	• Colour: Black, Grey, White or Pink (mixed shades) • i nish: Flame Textured / Sawn Edge • Dimensions: 100 x 100 x 80mm min

Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	• Banding Course • Pedestrian Crossings • Trafficked Areas	• Banding Course • Parking / Loading Bays
Conservation Area	• Landmark Banding Course	• Landmark Banding Course
Non-Residential	• Landmark Banding Course	• Landmark Banding Course
Residential	• N/A	• N/A

3.3 Paving Materials Palette

3.3.2A: Sawn Pennant		
3.3.2B: lamed Pennant		

Specification:	Slabs Sawn Finish	Slabs lamed Finish
	• Colour: Mixed Colour or Blue • i nish: Sawn • Widths: 300, 450 and 600mm • Thickness: 65mm min	• Colour: Blue-Grey • i nish: Flamed • Widths: 300, 450 and 600mm • Thickness: 65mm min
Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	• ootways • Non-Trafficked Pedestrian Areas	• N/A
Conservation Areas	• N/A	• ootways • Non-Trafficked Pedestrian Areas
Non-Residential	• N/A	• N/A
Residential	• N/A	• N/A

3.3.2C: Pennant Block		
3.3.2D: Reclaimed Pennant		

Specification:	Blocks / Setts (Sawn or Flamed Finish)	Reclaimed Slabs
	• Colour: Mixed Colour, Blue or Blue-Grey • i nish: Sawn or Flamed • Blocks: 200 x 100 x 65mm min • Setts: 100 x 100 x 65mm min	• Colour: Blue-Grey • i nish: N/A • Thickness: Should exceed 65mm min
Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	• Banding Course (Sawn Finish	• To Repair / Enhance Existing Footways and Non-Trafficked Pedestrian Areas
Conservation Areas	• Banding Course (Flamed Finish	• To Repair / Enhance Existing Footways and Non-Trafficked Pedestrian Areas
Non-Residential	• N/A	• N/A
Residential	• N/A	• N/A

3.3   Paving Materials Palette

3.3.3: Clay Pavers		
Specification:	**Red Clay Paver** ▪ i nish: Dragfaced Chamfered ▪ Dimensions*: 200 x 100 x 65mm min	**Blue Clay Paver** ▪ i nish: Dragfaced Chamfered ▪ Dimensions*: 200 x 100 x 65mm min
	Public Realm Manual Character Areas / Recommended Application of Materials:	
City Centre / Bay	▪ ootways (Bay only ▪ Non-Trafficked Pedestrian Areas (Bay only)	▪ Banding Course
Conservation Areas	▪ N/A	▪ N/A
Non-Residential	▪ N/A	▪ N/A
Residential	▪ N/A	▪ N/A

3.3.4 A: Concrete Slabs		
Specification:	**Textured** ▪ Colour: Silver Grey or 'Off the Shelf' options ▪ in ish: Textured / Exposed Aggregate ▪ Dimensions*: 400 x 400 x 65mm min	**Standard** ▪ Colour: rey ▪ Dimensions*: 400 x 400 x 65mm min
	Public Realm Manual Character Areas / Recommended Application of Materials:	
City Centre / Bay	▪ ootways (Silver-grey only ▪ Non-Trafficked Pedestrian Areas (Silver-grey only	▪ N/A
Conservation Areas	▪ N/A	▪ N/A
Non-Residential	▪ ootways ▪ Non-Trafficked Pedestrian Areas	▪ ootways ▪ Non-Trafficked Pedestrian Areas
Residential	▪ N/A	▪ N/A

*: Thickness may be reduced according to manufacturer's recommendations

3.3   Paving Materials Palette

3.3.4B: Concrete Planks 3.3.4C: Concrete Blocks	Planks	Standard Block, or Exposed Aggregate Block
Specification:	• Colours: 'Off the Shelf' options • in ish: Textured / Exposed Aggregate • Dimensions*: (300,450,600 x 150 x 65mm min	• Colours: 'Off the Shelf' options • Bond Pattern: Herringbone / Stretcher Course • Dimensions: 200 x 100 x 80mm min
Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	• N/A	• Trafficked Areas • Banding Course
Conservation Areas	• N/A	• N/A
Non-Residential	• Street Furniture Zones	• ootways • Surface Car Parks / Parking Bays • Banding Course
Residential	• N/A	• ootways • Trafficked Areas / Shared Surfaces • Parking Courts / Parking Bays • Banding Course

3.3.4D: Concrete Setts 3.3.4E: Tegular Setts	Setts	Tegular
Specification:	• Colour: 'Off the Shelf' options • Bond Pattern: Stretcher Course • Dimensions: 120,160,240 x 160 x 80mm min	• Colour: 'Off the Shelf' options • Bond Pattern: Stretcher Course • Dimensions: 120,160,240 x 160 x 80mm min
Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	• N/A	• N/A
Conservation Areas	• Banding Course	• Banding Course
Non-Residential	• ootways • Surface Car Parks / Parking Bays • Banding Course	• ootways • Surface Car Parks / Parking Bays • Banding Course
Residential	• ootways • Trafficked Areas / Shared Surfaces • Parking Courts / Parking Bays • Banding Course	• ootways • Trafficked Areas / Shared Surfaces • Parking Courts / Parking Bays • Banding Course

3.3　Paving Materials Palette

3.3.4 :
Permeable Block
Paving (SuDs

3.3.5:
Resin Bound
 ravel

Specification:	SuDs (assessed on a site-by-site basis) ▪ Colour: 'Off the Shelf' options ▪ Bond Pattern: Herringbone / Stretcher Course ▪ Dimensions: 200 x 100 x 80mm min	Resin Bound Gravel ▪ Colour: Buff (or 'off the shelf option'
Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	▪ N/A	▪ N/A
Conservation Areas	▪ N/A	▪ N/A
Non-Residential	▪ Surface Car Parks	▪ N/A
Residential	▪ Trafficked Areas / Shared Surfaces ▪ Parking Courts / Parking Bays	▪ Street Furniture Zones (considered on site-by-site basis

3.3.6:
Macadam

Specification:	ootway ▪ Colour: Black ▪ Surface Course: 6mm	Carriageway ▪ Colour: Black ▪ Surface Course: 10mm / 14mm
Public Realm Manual Character Areas / Recommended Application of Materials:		
City Centre / Bay	▪ ootway	▪ Carriageway
Conservation Areas	▪ ootway	▪ Carriageway
Non-Residential	▪ ootway	▪ Carriageway
Residential	▪ ootway	▪ Carriageway

NOTE: When adjoining a grass verge, all macadam footways should be bounded with a (minimum 50mm flattop concrete edging strip.

3.4 Paving Construction Methods

3.4.1.   When designing a public realm scheme, it needs to be ensured that there is an understanding of the end use of the street and that the design / construction of any paved area is appropriate, particularly in trafficked areas and sections of paving where vehicle overrun is likely.

3.4.2.   The construction of the foundation is significant as its failure can in turn lead to the breaking up of the surface material. The use of high quality paving materials and a sufficient depth of slab can still be susceptible to failure if the foundation laid is not suitable for the use of the street or public space. The use of large elements of paving in areas where vehicles are likely to over-run or use the area will need special treatment to ensure that the units remain intact and do not crack.

3.5 Paving Construction General Principles:

Natural Materials i.e.   ranite or Pennant , Footway / Carriageway:

Slab	65mm to 80mm
Bedding	30mm min Steintec (or similar specialist bedding mortar
Cement Bound Granular Material CB M) Base	150mm to 300mm depending on traffic loading
Sub-base	As required by ground conditions

Concrete / Clay Products, Footway:

Slab	65mm to 80mm (or as per manufactures recommendations
Bedding	50mm sharp sand compacted to 30mm
Base	Min 100mm
Sub-base	As required by ground conditions

Concrete Products, Carriageway:

Slab	80mm (or as per manufactures recommendations
Bedding	50mm sharp sand compacted to 30mm
Base	Min 200mm
Sub-base	As required by ground conditions

3.5.1   urther Guidance is provided in the Cardiff Highway Specifications.

3.6   Tactile Paving

3.6.1.   **Blister Surface** > For use at controlled and uncontrolled pedestrian crossings:

- Dimensions: 400 x 400 x 50mm
- Blisters: 36 blisters per slab
- inish: Textured concrete or natural stone
- Colours: Red at controlled crossings / Buff or material linked to wider scheme design at uncontrolled crossings

- Controlled Crossings: Zebra, Pelican, Puffin, Toucan and traffic signalised junctions with pedestrian phases.

3.6.2.   **Rounded Bar** > To warn of the presence of specific hazards (steps or on street LRT :

- Dimensions: 400 x 400 x 50mm
- Surface: Continuous raised rounded bar
- inish: Textured concrete or natural stone
- Colours: Buff or linked to wider scheme design
- Alignment: orizontal to direction of travel

3.6.3.   **lattop Bar** > Where a footway joins a shared (pedestrian / cycle route:

- Dimensions: 400 x 400 x 50mm
- Surface: Continuous raised flattop bar
- inish: Textured concrete or natural stone
- Colours: Buff or linked to wider scheme design
- Alignment: Horizontal to direction of travel (footway) / vertical to direction of travel (Cycleway .

3.6.4.   **Tactile Paving Boarders:**

- Paving slabs: Tactile directly abuts adjoining paving slab
- Block paving: 50mm flattop concrete edging strip
- Macadam: 50mm flattop concrete edging strip

3.6.5.   u rther u idance: DETR, Guidance on the use of tactile paving surfaces 5th une 2007

3.7   Kerbstones

3.7.1.   **Conservation Kerb**: Countywide Standard Design:

- Colour: Silver Grey or linked to wider scheme design

3.7.2.   **Concrete Kerb**: Countywide Standard Design:

- Colour: N/A - concrete

3.7.3.   **ranite Kerb:** Landmark material for City Centre and Conservation Areas:

- Colour: Silver-grey or linked to wider scheme design

3.7.4.   **Bus Boarder**:

- Dimensions: 180mm upstand
- Standard Finish: Precast Concrete
- Landmark Finish: Granite

3.8 Carriageway Channels

- To be considered on a site by site basis
- Dimensions: 255 x 125mm
- Standard Finish: Concrete
- Landmark Finish: Granite

3.9 Band Courses

- To be considered on a site by site basis
- Single band course material to be used throughout individual schemes
- Minimum unit size 100 x 100mm
- Maximum joint 8mm

3.10 nspection Covers

- Recessed paver infill covers to be used where permitted
- nspection covers should be aligned with direction of paving
- nsert material and paving layout to match / align with surrounding scheme
- nspection covers should directly abut adjoining paving slabs and not include a brick boarder

3.11 Drainage Channels (To be determined on a site-by-site basis)

3.11.1. Max-e Channel

- Material: Concrete or natural stone
- Dimensions: Various

3.11.2. Block Paved Channel

- Material: Concrete or natural stone
- Dimensions: Blockwork 200 x 100 x 65 or 80mm
- Layout: 3 block or 4 block channel

3.11.3. luted Channel

- Material: Concrete or natural stone
- Dimensions: 255 x 914 x 75mm   11mm groves

3.11.4. Slot Drain

- Material: alvanised steel or cast iron
- Dimensions: Various

3.12 Surface Dressings

- Coloured surface dressings are not generally used to demarcate sections of the highway, i.e. bus lanes, cycle paths.

3.13 Road Markings

- Road markings used to regulate traffic should be clear, well positioned and kept to a minimum where they convey essential information only.

- 50mm wide yellow line markings can be applied in BS381C no. 310 (Primrose) to contribute toward the character and appearance of a public realm scheme e.g. within Conservation Areas)

3.14   ootway C rossovers

- Vehicle crossovers should be constructed from the same material as the adjoining footways.

- The construction of the crossover (slab depth / sub base specification   will need to accommodate the magnitude of loading it will be subject to (i.e. 'light' cars or 'heavy' delivery or goods vehicles . Refer to Paragraph 3.5

- The width of the crossover should accommodate the path of the vehicles using it without mounting the adjacent footway.

- Transition kerbs should be used to form the dropped kerb arrangement.

- Planning consent is required for the creation or alteration to vehicle crossovers on all Classified Roads (i.e. those given a numbered prefix with A, B or C).

3.15 Controlled Pedestrian Crossings

- Pedestrian crossing facilities should be as simple and uncluttered as possible and fully integrated within the design of the street through the choice of paving materials and street furniture.

- A straight across arrangement is the preferred design solution as it can create less of a delay for pedestrians and is easier for pushchairs, wheelchairs (and at Toucan crossings cyclists) to negotiate.

- The need for and location of guard railings should be considered as part of the safety audit for each crossing point and not installed as a matter of course. At staggered crossing islands, a raised kerb may provide an alternative solution for demarcating the pedestrian route.

- Within the city centre, granite block paving can be used to enhance pedestrian crossings where it is installed flush with the carriageway.

- Traffic light columns: Standard colour Jet Black (RAL9005)

Staggered crossing at Mary Ann Street

Straight across crossing at Adam Street

Granite block detailing within the City Centre

3.16 Cycling Provision

- Cycle facilities across the county include; on-carriageway cycle lanes, off-carriageway cycle routes and adjacent / shared paths.

- Where signage is required to demarcate off-carriageway cycle paths / tracks, it should be simple, concise, reduced to the minimum size and number that will comply with the regulations and be carefully sited.

- Detailed guidance is provided by the Design Guidance Active Travel Wales Act 2013 December 2014 and Cardiff Cycle Design Guide (u ly 2011).

Discrete repeater sign

Cycling facility at Cardiff Bridge

3.17 Lay-bys

- Streets incorporating lay-bys should be wide enough to comfortably accommodate the additional space required without having a substantial impact on pedestrian movement.

- n order to maintain a consistent pavement line along the length of the street, lay-bys should be bounded by a kerb edge consistent with the adjoining footway.

- Lay-bys should be constructed for a material that complements the adjacent footway, i.e. in areas of the city where granite has been used for the footways a matching block should be specified

- Due to the heavy trafficking of lay-bys, a suitably robust material and construction method will need to be used to withstand the high level of vehicle movements.

Granite block paved lay-by at St Mary Street

3.18 Raised Carriageway Surfaces

3.18.1.   Raised Tables, Pedestrian Crossings and Traffic Calming Measures:

- Raised tables should be constructed from macadam throughout. The use of block paving and kerbstones should be avoided, particularly on routes with high traffic flows.
- Design Principles: Generally ramps should have a 1:16 gradient, with a maximum rise of 75mm and a minimum level platform of 6m.

Raised table macadam crossing at James Street

3.19 Shared Surfaces:

- Within residential areas and in instances where the carriageway surface is raised toward or consistent with the level of the adjoining footway, the vehicle 'transition zone' (ramp should be constructed from macadam.
- Design Principles: Generally ramps should have a 1:16 gradient with a maximum rise of 75mm.

Macadam Carriageway	Macadam Ramp	Macadam Transition Zone	Block Paved Shared Surface (With Conservation Kerb Boarder)
	1:16 Gradient	2m	
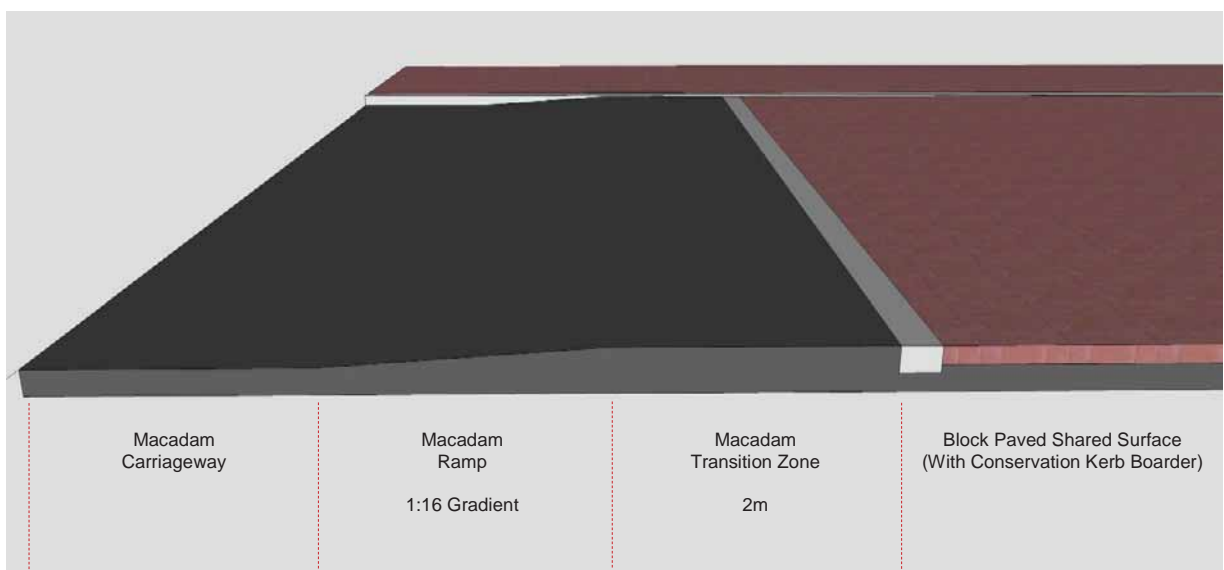
Canada Road

4. Street Furniture

4.1. Cycle Stands:

4.1.1. Countywide Standard Design:

- 'Sheffield' style
- Size: 750 x 750mm
- in ish: Polished stainless steel (city centre / landmark , galvanised steel, or polyester powder coated
- Colour Options: Jet Black RAL 9005) or Moss Green (RAL 6005)

4.1.2. Standard Installation Details:

- Stands to be spaced at 1200mm (1000mm minimum only acceptable where space is limited
- Bay length 2000mm (1800mm minimum only acceptable where space is limited
- Root fixed to concrete foundation to manufacture's detail
- in ished paving surface to be core drilled to receive root fixing

4.1.3.   n circumstances where cycle stands are not bounded by other street furniture, the first and last stand should incorporate a tapping rail and colour contrasting visibility band to aid the visually impaired:

4.2. Litter Bin and Recycling Bin (City Centre / Bay)

4.2.1. **Litter Bin:**

- Size: 1020 x 535 x 535mm
- Capacity of 120 litres

4.2.2. **Combined Litter / Recycling Bin:**

- Size: 1020 x 915 x 535mm
- Capacity of 240 litres

4.2.3. Standard eatures for City Centre / Bay Litter Bin and Combined Litter / Recycling Bin:

- Colour Options: Jet Black RAL 9005), White Aluminium (RAL 9006 or Moss Green (RAL 6005)

- Material: Steel
- in ish: Polyester Powder Coated
- 4 litter posting apertures
- Pyramid Top with cigarette tray
- ron t opening slam shut door with Cardiff Council specification locking mechanism
- Base: 4 fixing holes and fixed flush to the floor to prevent accumulation of dirt around the base.
- nternal container: Polythene liner with safety top edge and 2 handles
- nclusion of a watertight drip tray and / or internal container to prevent leakage.
- Stainless steel posting apertures
- Bilingual text and illustrations: Laser cut into bins with (1 a black backing plate for silver bins, (2 silver backing plate for black and green bins and 3 a green backing plate for Recycling text.
- Visibility Banding: Either 1 laser cut into bin with a reflective red backing plate or 2 two colour contrasting bands.

4.2   Litter Bins Other Areas

4.2.4.   **Litter Bin:**

- Size: 1088 x 600 x 600mm
- Capacity of 112 litres

- Material: Heavy duty polythene
- 4 litter posting apertures
- Pyramid top with circular ash tray
- ron t opening slam shut door with Cardiff Council specification locking mechanism
- Base: 4 fixing holes and fixed flush to the floor to prevent accumulation of dirt around the base.
- nternal container: Polythene liner with safety top edge and 2 handles
- in ish: Black, with colour contrasting gold lettering / visibility bands
- Bilingual ('Litter' / 'Sbwriel') text and 2 x Cardiff Council logo

4.2.5.   **Post Mounted Litter Bin** (to be considered on a site-by-site basis):

- Size: 711 x 432 x 318mm
- Capacity of 50 litres

- Material: Polythene body and lid with standard post fixing brackets
- UV resistant and high impact construction
- inged self locking top
- in ish: Black, with colour contrasting (gold) Cardiff Council Logo

4.2.6.   Post-mounted bins can be of use in areas where limited access or space mean that a free-standing litter bin is inappropriate. However, they should not be used in areas of very high footfall as their limited capacity would mean that they would quickly over-flow.

4.2.7.   Post-mounted bins should be positioned at an appropriate height, whilst taking into account the potential for its positioning to cause an obstruction to pedestrian movement.

4.3. Bollards

4.3.1. **Style 1**: Stainless Steel:

City Centre / Landmark Design

- 141mm diameter
- 900mm height
- Bead blasted body / polished top
- Recessed visibility band

- Design Option 1: Root Fixed
- Design Option 2: Removable / Socketed

Countywide Standard Design

- 140mm diameter
- 1000mm height
- Stainless Steel
- Semi domed top
- Recessed visibility band

- Design Option 1: Root Fixed
- Design Option 2: Removable / Socketed

4.3.2. **Style 2**: Cast Iron: Countywide Standard Design:

- 227mm diameter
- 985mm height
- Cast Iron
- Visibility band

- Design Option 1: Root Fixed
- Design Option 2: Removable / Socketed

4.3.3. **Style 3**: Polyurethane reboundable : Countywide Standard Design:

- 200mm diameter (at base
- 967mm height
- Polyurethane
- Visibility band

- Design Option 1: Root Fixed
- Design Option 2: Removable / Socketed

4.3.4. **Style 4**: Timber: Countywide Standard Design:

- 200mm diameter
- 1000mm height
- a rdwood timber
- Visibility band

- Design Option 1: Root Fixed
- Design Option 2: Removable / Socketed

4.4. PAS68 Bollards: Countywide Standard Design:

4.4.1. BS PAS68 is a performance classification for vehicle security barriers and their foundations when they are subjected to a horizontal impact. Tests are conducted at varying speeds and with different types of vehicle in order to establish an impact rating at which a vehicle is prevented from penetrating the associated barrier.

4.4.2. The PAS68 rating required at each individual site will vary according to the specific layout of the surrounding streets and a Vehicle Dynamics Assessment will need to be carried out for each location.

4.4.3. The maximum air space between PAS68 bollards must not exceed 1.2 meters.

4.4.4. Standard Sleeve Design: Stainless steel sleeve, semi domed, two black visibility bands

4.4.5. **Static Bollards**:

- Diameter: 219 or 323mm inc sleeve)
- e ight: 1000mm
- ou ndation: Shallow Mount

4.4.6. **Automated Bollards**:

- Diameter: 209 or 305mm
- e ight: 1000mm

4.4.7. **Lift Assist Bollards**:

- Diameter: 203mm
- e ight: 1000mm

4.5. Bus Shelters

4.5.1. Bus shelters form an important part of the overall journey quality for public transport users. Layout options include an enclosed shelter or cantilevered shelter depending on footway widths and associated pedestrian movement space within the surrounding area.

4.5.2. The siting / layout of bus shelters and use of advertising panels will need to be considered on a site-by-site basis, taking account of potential impact on surrounding landuses and the visual impact on Listed Buildings and Conservation Areas.

4.5.3. Advertisement consent will be required where an advertising panel is incorporated within a bus shelter. Where the end panel is used for advertising, it should be at the downstream end of the shelter so that people can see buses approaching.

4.5.4. Layout Options:

Enclosed shelter (Style 1)   Cantilevered shelter Style 1

4.5.5. Design Options

- **Style 1**: Clear Glass Roof: City Centre / Bay Standard Design and Countywide Landmark Design
- **Style 2**: Green 'Roll-Top' or 'Flat' Roof: Countywide Standard Design (Excluding City Centre / Bay

Style 2: Green 'Flat' Roof   Style 2: Green 'Roll Top' Roof

4.5.6. Standard specifications:

- Leaning rail element Colour: Burgess Red
- 'Real-time' LED display
- Perspex timetable information screen

4.6. Seating

4.6.1.   Seating can provide resting places for pedestrians and locations where people can enjoy surrounding views. Within pedestrianised areas (and where space permits), they can be oriented to create areas for social interaction.

4.6.2.   Benches provide informal seating, whilst seats with back rests offer an additional level of support that can help create resting points for extended periods of time. In both circumstances, the inclusion of armrests can assist less mobile people.

4.6.3.   There should be sufficient space for a pushchair, wheelchair or scooter to pull up alongside a companion and / or a firm surface end of the seat / bench to enable parking.

4.6.4.   **Style 1**: Steel: (Countywide Standard Design :

- Stainless steel or polyester powder coated steel
- Seat or bench options
- Straight or curved options
- Powder coated: Jet Black (RAL 9005)

4.6.5.   **Style 2**: Steel / Timber: (City Centre / Bay or Landmark Design :

- Stainless steel / hardwood
- Seat or bench options

4.6.6.   **Style 3**: Granite: (City Centre / Bay or Landmark Design :

- Median height 470-480mm
- Straight or curved options
- Design Options: Armrests and skateboard studs

4.6.7.   Style 4: Recycled Plastic: Not widely used :

- Timber effect
- Seat or bench option
- Colour Options: Black or brown
- Submerged fixing

4.7.   uardrails

4.7.1.   The need for and location of guard railings should be considered on a site-by-site basis and not installed as a matter of course. Three design options are available, depending on the individual requirements of a site. Panels are available in galvanised steel or galvanised / powder coated (RAL 9005 – Jet Black .

Style 1: Standard inline infill bar railing

Style 2: High visibility railing

- Staggered bar arrangement to increase visibility through the railing

Style 3: Visibility panel railing

- ap at top of railing to aid visibility for children and wheelchair / scooter users.

4.8. Skateboard Straps

4.8.1 Designing out skateboarding should be considered as part of the initial design phase of a public realm scheme. If it is not possible to design out skateboarding along walls, plinths and benches, then skateboard straps should be considered as a means of prevention.

4.8.2 When selecting a design of skateboard strap, consideration needs to be given to the aesthetic impact that that it will have on the surrounding environment. The chosen design must be of a sufficient size / robustness for its intended use, however it should also complement the design of the wider public realm scheme and the item of street furniture or paving material to which it is attached.

4.8.3 Specification: A skateboard strap should have a double fixing / mounting point and should not have any projecting elements that could be enable / assist its forcible removal.

4.9. Historic Features

4.9.1. Cardiff contains a wide range of historic features that contribute toward the character and heritage of the city, including: memorials and statues, listed structures, pennant paving and granite kerbstones, post boxes, boundary walls and railings, basement lights and street name signs.

4.9.2. istoric features should be considered from the outset of a public realm scheme and form an integral part of the design of a street or public space.

4.10. Public Art

4.10.1. Public art can help to develop a positive identity for an area; it can create landmarks, provide a meaningful way to engage with local communities and help create local distinctiveness and a sense of place.

4.10.2. Public Art can be diverse in form and function. It does not only encompass sculptural or monumental features, but can also include elements integrated into the design of buildings, structures and landscaping, artworks defining routes and interchanges across a site, or artistic design enhancing functional elements of a scheme, such as seating or signage.

4.10.3. As members of a design team, artists can engage creatively with communities in order to explore and articulate issues of local significance. They can contribute to development and regeneration projects through research or as commentators and can produce permanent or temporary public art that address the context and functions of specific sites.

4.10.4. Public art should be considered early in the design process and form part of the overall design vision of a public realm scheme, with concepts being an integral part of development proposals.

4.10.5. Further guidance is provided in the Cardiff Public Art Strategy 2005) and Cardiff Public Art Supplementary Planning   uidance (2006).

Heol-y-Frenhines
Queen Street

↑

Castell Caerdydd
Cardiff Castle

Stori Caerdydd
The Cardiff Story

Gorsaf Ganolog
Central Station

Stadiwm y Mileniwm
Millennium Stadium

Gerddi Soffia
Sophia Gardens

Canolfan Croeso
Tourist Information

City Centre Wayfinding

5. Signage and Wayfinding

5.1 ingerposts

5.1.1. City Centre Standard Design excluding Cardiff Bay Waterfront :

Post:

- Square
- eight: 2950mm
- Material: Stainless Steel
- Text / Illustrations: Bilingual Street Name / Dragon Logo inclusion of braille & embossed text should be considered
- lluminated red strip: Powered by solar cell mounted on the top of the post.

Paddle Signs:

- Dimensions: 400 x 600mm
- Up to four directional panels
- Pictograms to aid interpretation
- Non-illuminated coloured core between panels
- Bilingual text

5.1.2. Countywide Standard Design (Excluding City Centre :

Post:

- Circular
- ½ Collar Spacers: (To allow for additional paddle signs)
- in ial: Dome
- 150mm white 'visibility' band
- nclusion of braille & embossed text should be considered

Paddle Signs:

- Double finger 1/2 collar
- Preferred font size: 40mm
- Preferred font colour / type face: White / Helvetica
- on t Style: Flat
- ont ustification: Post justified
- Walking distances: Miles (or yards for short distances)
- Bilingual text

Colour Options:

- Cardiff Bay: Oxford Blue BS381 105)
- Parks: Moss Green RAL 6005)
- Other Areas: et Black (RAL 9005)

5.2 Tourist Information Panels

5.2.1. City Centre Standard Design:

Design Components:

- Duel aspect sign.
- alv anized steel frame, glass panels and granite plinth.
- Bilingual text
- Solar powered illuminated red band
- Dimensions: 450 x 2850 x 130mm
- nclusion of braille & embossed text should be considered

Section 1 (Top : 450 x 180mm:

- Street Name and Cardiff Council Logo.

Section 2: 450 x 750mm:

- Wayfinding and associated pictograms.

Section 3: 450 x 850mm:

- Local area map 400 x 400mm
- Simplified contextual map 250 x 250mm
- Key and associated pictograms.
- Maps digitally printed on vinyl / applied to rear face of 10mm toughened glass.
- 60mm Braille overlay strip positioned between maps.

Section 4 (Base : 450x900mm.

- r anite Plinth with Cardiff Council Dragon Logo.

5.2.2. County Wide e neral Principles (Excluding City Centre :

Enclosed 'Poster Display':

- Material: Stainless steel
- Colour: RAL9005 (e t Black), RAL6005 (Moss Green
- Opening: as hinged top or side
- Security: Anti vandal locks / toughened glass
- Ventilation: Permanent ventilation system
- Backing Board: Magnetic (galvanised or powder coated
- ix ings: Wall or post mounted
- Dimensions: To suit individual site requirements
- Post: Circular or square
- in ial: Dome

5.3   Notice Boards / Interpretation Panels

Countywide General Principles:

- Material: Stainless steel
- Colour: RAL9005 (e t Black), RAL6005 (Moss Green
- Layout: Single or double sided
- Security: Tamper resistant fixings
- raphics Pan el: Removable
- Dimensions: To suit individual site requirements
- Post: Square or circular
- in ial: Dome

5.4   Street Name Signs

- Design: To be considered on a site by site basis
- Bilingual text
- Standard font style and text sizes

5.5   Traffic Signs

5.5.1. When implementing signage and road markings, mandatory requirements are outlined by the Traffic Signs Regulations and General Directions (TSRGD).

5.5.2. The Department for Transport's (D T Traffic Signs Manual gives advice on the use of signs and road markings, it identifies that: Whilst taking into account these regulations, there is often scope to consider the wider picture and make a balanced judgement to ensure that due consideration is given to all functional and aesthetic requirements, as outlined in the DfT's Local Transport Note (LTN 1/08 Traffic Management and Streetscape 2008 .

5.6   Directional Traffic Bollards

5.6.1.   Non-Illuminated Bollard: Countywide Standard Design:

- Dimensions: 1046 x 398 x 200mm
- Colour: Black
- Signage   ace: 300mm diameter
- Reflectivity to front / side / rear
- mpact resistant
- Single or dual sided options
- Surface mounted

5.6.2.   lluminated Bollard: Countywide Standard Design:

- Dimensions: 1046 x 398 x 200mm
- Colour: White
- Signage   ace: 300mm diameter
- Reflectivity to front / side / rear
- mpact resistant
- Single or dual sided options
- Surface mounted
- Submerged LED base light (24v / 230v

5.6.3.   Stainless Steel Bollard: City Centre Landmark Design:

- Dimensions: 1125 x 600 x 60mm
- 316 stainless steel brushed 60mm tubing
- Core drilled fixing
- llumination via pavement mounted up lighter

6. Street Lighting

6.1 Lighting Columns

6.1.1.   e neral Principles:

- Style 1: Aluminium column
- Style 2:   alvanised steel column

- Within the City Centre / Conservation Areas and for larger public realm projects, alternative lighting column designs can be selected to help contribute toward the character and appearance of an area.
- The painting of street lighting columns and associated feeder pillars shall be determined on the individual merit of any proposed new lighting scheme.

| Bespoke Design City Centre | 'Conservation' Style Column | Example Aluminium Column | Example Galvanised Steel Column |

6.1.2.   Street lighting is required to be designed in accordance with BS5489 'Code of practice for road lighting' and in conjunction with the Council's Street Lighting Policy.

6.1.3.   Appropriate levels of illumination will be determined on a site-by-site basis, based on anticipated vehicular traffic, pedestrian footfall, risk of crime and other environmental considerations.

6.1.4.   The layout of street lighting will be determined on a site-by-site basis, based on five general arrangements: (i staggered, (ii) single sided, (iii) opposite, (iv twin central and (v twin central plus opposite.

6.1.5.   There is a commitment to reducing street lighting energy consumption and carbon emissions. Significant progress continues to be made with regard to the specification and scope use of LED lighting and as such, street lighting specifications will be considered on a site-by-site basis as schemes come forward.

6.1.6.   e stive Lighting: Within the City Centre / Bay and District, Local and Neighbourhood centres, new street lighting schemes should consider opportunities to incorporate power supply access to enable festive lighting. This will need to be considered (and approved on an individual scheme basis.

Bridge Street Square

7. Street Trees

7.1 Tree Planting:

7.1.1. Trees help to enhance the attractiveness of the city, its character, sense of maturity and overall quality. They bring nature to the urban environment, help to protect buildings from the elements, enhance views, provide shade and assist in energy conservation. They act as dust filters, noise barriers and can help to improve air quality.

7.1.2. The creation, maintenance and enhancement of a sustainable urban forest, is critical in ensuring that Cardiff is a liveable City. Trees can contribute to visual amenity, increase biodiversity, cool the air, trap pollutants, reduce wind speeds and intercept rainfall. New tree planting in the public realm is an important component of a sustainable urban forest and should be subject to detailed scrutiny at the design stage by a Landscape Architect, Arboriculturist, Soil Scientist and Engineers.

7.1.3. Key design principles prior to considering tree planting are:

- The above and below ground growing space available.
- The composition and structural characteristics of soils.
- The scale and character of the streetscape.

7.1.4. Key design principles once the feasibility of tree planting has been established are:

- The tree species or cultivar will be selected according to the above and below ground growing space available but fewer trees capable of achieving larger size rather than larger numbers of smaller trees will generally be preferred.
- The tree species or cultivar will be selected on the basis of identified aesthetic qualities.
- The tree species or cultivar will be selected on the basis of its likely tolerance to prevailing site conditions including soils, drainage, exposure, pollution and de-icing salt.
- The size at planting will be determined based on local conditions in terms of soils, exposure and likelihood of vandalism.
- Single species planting will be avoided unless overriding design considerations necessitate it, and as a rule of thumb, no more than 10% of any species, 20% of any species in a genus and 30% of any species within a family will be planted to minimise the risks of destructive pest and disease outbreaks.
- Wherever possible trees will be planted into un-compacted, vegetated soil soft landscape rather than hard surfaced environments.
- Tree hole and tree pit design will be designed to maximise usable soil volume.
- Tree hole and tree pit design will be site specific and product suppliers will contribute to the final design to ensure that it is fit for purpose.
- A full planting and post-planting aftercare methodology will be provided and will accord with best practice and industry standards such as BS 8545:2014, BS 3882:2007 and Trees in Hard Landscapes: A Guide for Delivery (TDA , 2014   .

7.2 Trees in Hard Landscaping

7.2.1. Urban soils are typically degraded so that their functionality in terms of enabling healthy tree growth is limited without significant remediation or replacement. Soils underlying engineered surfaces including paving are often compacted to bulk densities that prevent or impede tree root growth, and prevent or impede soil functions essential to tree health.

7.2.2. To ensure that tree planting in hard landscaping is successful, the following requirements should be met:

- Sufficient usable soil volume is available for the tree species to be planted to ensure effective anchorage and healthy long-term growth.
- it for purpose root barriers or deflectors are in place but are not used routinely or without consideration of site specific growing conditions and tree rooting characteristics.
- Tree hole and tree pit surfacing treatments including grilles and guards do not impede the healthy growth of trees and are suitable for the character of the streetscape.
- rrigation and aeration specifications for tree holes and tree pits are optimal.
- Tree support specifications staking or anchoring are appropriate to the tree and site conditions and are adjusted and removed as necessary.

7.2.3. Above and below ground tree pit design will need to be determined on a site-by-site basis.

7.2.4. nnovative designs of tree planting for example planting trees in blocks, rather than lines can be investigated for appropriate sites.

7.3 Tree Grilles:

Option 1: Cast Iron r ille:

- Dimensions: Various (1200 x 1200mm Standard
- Colour: RAL9005 (e t Black)
- rame: Medium or   eavy duty as required
- Square grille pattern to enable pedestrian overrun
- r ille locking mechanism to prevent unauthorised removal
- ncorporation of apertures for irregation tubes
- nfill: Resin bound gravel, or other approved material

Option 2: Preformed Resin Bound Gravel Grille:

- Dimensions: Various (1200 x 1200mm Standard
- Colour: Buff / to suit surrounding public realm scheme
- rame: Medium or   eavy duty as required
- ncorporation of apertures for irregation tubes
- Centre infill: Gravel, slate or other approved material

7.4   Tree Guards:

- Compatible with Cast Iron Tree r ille
- eight: 1800mm
- Colour: RAL9005 (e t Black)
- in ial 60mm sphere
- Securely fixed to tree grille and aligned vertically
- Adjustable ground fixings to allow guard to be positioned vertically for trees planted on a gradient.

7.5   Large Tree Grilles:

Option 1: Removable Section Tree Grille:

- Shape: Square
- nfill Material: Paving to match surrounding area
-   rame: Mild or stainless steel grade 304 or 316
- Dimensions: Manufactured to suit paving size
- Removable Sections: half or quarter frame

Option 2: Resin Bound Gravel:

- Resin bound gravel surface with collar and loose fill gravel infill around tree
- Colour: Buff or to match surrounding scheme)
- Adjoining boarder: Slab or kerb edging (no small setts)
- Need to ensure that access is retained to root ventilation and irrigation systems

## 7.6   Mature Street Trees in the footway general principles :

- Tree root 'zone' infilled with rubber granular surfacing or resin bound gravel.
- Aluminium edging where existing tree roots abut paving to avoid the need for excavation or concrete haunching.
- Adjoining footway to be resurfaced using materials palette established in the surrounding area.
- n instances where a tree significantly impacts upon pedestrian movement space and / or kerb alignment, options for footway buildouts should be considered.
- Schemes will need to be considered on a site-by-site basis.

7.7   Uplighters:

- The need for uplighters should be considered on a site-by-site basis.
- nstallation kit should include a reinforced frame, tubular housing and electrical connection box.

- rame dimensions: 400x400mm
- To be set within paving slabs (not within small setts)

7.8.   Planters not widely used :
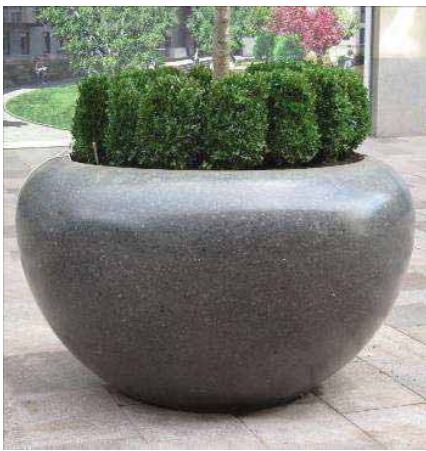
7.8.1.   An identified longterm management and maintenance plan should be established proir to the installation of new tree planters.

7.8.2.   r anite Planter: City Centre Design:

- Dimensions: 1900 x 1100mm
- Material: Polished Granite
- PAS68 option available

7.8.3.   Outside City Centre: No standard design, however planters should be flush to the floor to avoid the accumulation dirt / litter.

7.9   Below Ground Tree Pit Design (e neral Principles :

7.9.1.   Tree Pits:

- The tree hole is the immediate planting area whereas the tree pit includes all the usable soil volume to be made available to the tree.
- Existing soil composition and structure will be assessed for suitability to support healthy long-term tree growth. Testing shall include soil p , water percolation rates and compaction.
- f existing soils cannot be remediated in accordance with guidelines in BS 8545:2014, BS 3998:2010, The Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (DE RA, 2009) and 'The Impact of Subsoil Compaction on Soil Functionality & Landscape' DE RA, 2006), to provide a suitable rooting medium for trees, then new topsoil and subsoil will be imported and installed as necessary (in accordance with BS 3882:2007 and the DE RA Code .
- f existing soils will be compacted by engineering operations to bulk densities that prevent or severely impede tree root growth then usable soil volumes will be provided by structural tree soils or soil crates and by providing root break out zones and corridors linking with existing soft landscape.

- The installation of structural soils or crates shall be subject to submission of a site specific design and installation specification by the product supplier.
- Continuous, linked tree pits shall be used wherever possible.
- Topsoil depths will not normally extend below 400mm depth and soil ameliorants including fertiliser, compost and mycorrhizal fungi will only be applied where site specific analysis and the product specification provides evidence that benefits to healthy tree growth will result.
- Aeration and irrigation specifications will be optimal and designed on a site specific basis.
- Provision of drainage layers and positive drainage using pipes shall be dependent on site specific conditions established following percolation tests and knowledge of the composition of existing or imported soils. The type of drainage to be provided shall be drawn up following consultation with a drainage engineer, soil scientist, landscape architect and arboriculturist.

Minimum target usable soil volumes shall be provided as follows: -

- Small species tree   3m diameter spread : 5m³ volume.
- Medium species tree   5m diameter spread : 15m³ volume.
- Large species tree   8m diameter spread : 30m³ volume.

7.9.2.   Anchoring:

- Underground guying using deadman anchors or anchors driven into the ground
- Deadman anchors preferable where services may be present or ground will not hold spikes
- Anchors may need adjustment over time to keep tree secure and upright
- Staking may be used where agreed, but tree ties must be regularly adjusted to avoid damage to tree
- Stakes should be reduced in height after first year to allow tree trunk to strengthen.

7.9.3.   Root Barriers:

- Root barriers can protect underground services where present
- Root directors can guide roots downwards away from paving
- Barriers / directors must be combined with adequate sized tree pits to allow sufficient root spread

7.9.4.   rrigation and Aeration Tubes:

- To be used on all schemes unless otherwise agreed
- rrigation tube to be fitted with permanent tamper resistant grille or cap, preferably fixed into tree grille or tree pit surface
- n non-permeable paving, aeration tube to be installed with 2-4 tamper resistant grilles set in paving

The Big Egg, Henke Court

8.   eneral Equipment

8.1   Utility Boxes and Feeder Pillars

8.1.1.   t is important that utility boxes and feeder pillars are successfully integrated within the public realm.

8.1.2.   To help minimise their impact on pedestrian movement and views / vistas along a street, they should be suitably aligned with the direction of pedestrian flow and wherever possible either sited at the back of the footway, or grouped with other street furniture.

8.1.3.   Cabinets should be finished in a colour that coordinates with surrounding street furniture. Consideration should be give to the use of an anti-graffiti / anti-fly posting finish.

8.2   CCTV

8.2.1.   CCTV columns should integrate with the design of surrounding street furniture and the overarching character of the public realm.

8.2.2.   Colour Options: Stainless Steel, RAL9006 White Aluminium), or RAL9005 (Jet Black

8.2.3.   CCTV cameras should be mounted on the most slender pole design possible, but must not be subject to camera shake.

8.2.4.   Consideration should be given to attaching cameras to adjacent buildings or structures, provided that the owner gives consent and subject to planning and listed building consent as necessary.

8.3   Telephone Kiosks (subject to Highway / Planning Consent

8.3.1.   The design, positioning and grouping of phone kiosks can impact on visibility, legibility and pedestrian movement along a street.

8.3.2.   With the exception of the historic K6 unit, the preferred phone kiosk design is an open sided (i.e. not enclosed or partially enclosed) structure to help maximise accessibility for members of the public.

8.3.3.   Phone kiosks should only be considered in locations where they would not encroach on pedestrian movement space along a street.

8.4   Post Boxes

8.4.1.   Traditional pillar boxes contribute towards local distinctiveness and heritage.

8.4.2.   Post boxes should be located at the edge of a footway or aligned with other street furniture to avoid impacting on pedestrian movement.

8.4.3.   They should be bordered by sufficient hardstanding to ensure that they are accessible to all users.

8.5   Pay and Display Machines

8.5.1.   Standard Countywide Design:

8.5.2.   Machines should be positioned where there are sufficient levels of natural surveillance and bordered by sufficient hardstanding to ensure that they are accessible to all users.

8.5.3.   They should be located where there is sufficient room within the footway and aligned with existing street furniture to allow clear pedestrian walkways.

8.6   Poster Drums (subject to Highway / Planning Consent)

8.6.1.   Poster drums should only be installed where appropriate. They should be of a sympathetic scale / design to their surroundings and will need to be considered on a site by site basis taking account of issues including:

- Physical impact on pedestrian movement space
- Visual impact in relation to Listed Buildings, Conservation Areas and surrounding landuses.
- Ongoing management and maintenance

8.7   r it Boxes

8.7.1   Standard Countywide Design:

- Colour: Green
- Storage Capacity: 400kg
- ig h grade polyethylene
- Reinforced lid with 270 degree opening

9. Activities and Displays in Pedestrian Areas

9.1 Street Cafes

9.1.1. Street cafés the use of tables and chairs outside cafés, pubs and restaurant premises) are licensed on the public highway (footway) under Section 115E of the Highways Act 1980. A guidance note on Street Cafés on the Highway (2006 has been produced by the Council, which is intended to help businesses understand where street cafés might be permitted, the permissions that are required and how applications will be assessed.

9.1.2. e neral Principles:

- Street Cafes should not obstruct the highway or create a hazard for pedestrians.
- A clear route must be maintained for those walking past the premises which should not be less than 2m.
- A portable means of enclosure such as barriers must normally be provided.
- Tables and chairs should be of a high quality and uniform style.
- The area must be well maintained in terms of cleanliness and general appearance.
- Licenses may be granted up to a maximum of one year and are renewable annually.
- Tables and chairs should be taken in outside hours of operation and building owners are responsible for the maintenance of any bins and planters that they provide.
- The period of the day for which permission is granted may be limited by the needs of servicing vehicles using the street.

9.2 Portable Advertising Boards ('A' Boards)

9.2.1. Anyone proposing to place a structure for the purpose of selling goods on a Highway that is maintained at public expense will be required to apply for a license from the Council.

9.2.2. Licence for the Erection of Structures Carrying   oods for Sale under Section 115 of the ig hways Act 1980.

9.2.3. A licence for the erection of portable advertising boards (A Boards) is valid for a maximum of 12 months.

CARDIFF
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