

4.0

# Public Domain Design Overlays

This section translates the contextual and master planning objectives embodied in the Urban Framework section of the Strategy. Each of the following diagrams represents a public domain typology or overlay that when coordinated will provide the elements necessary to develop a consistent and cohesive high quality public domain.

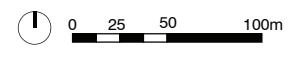
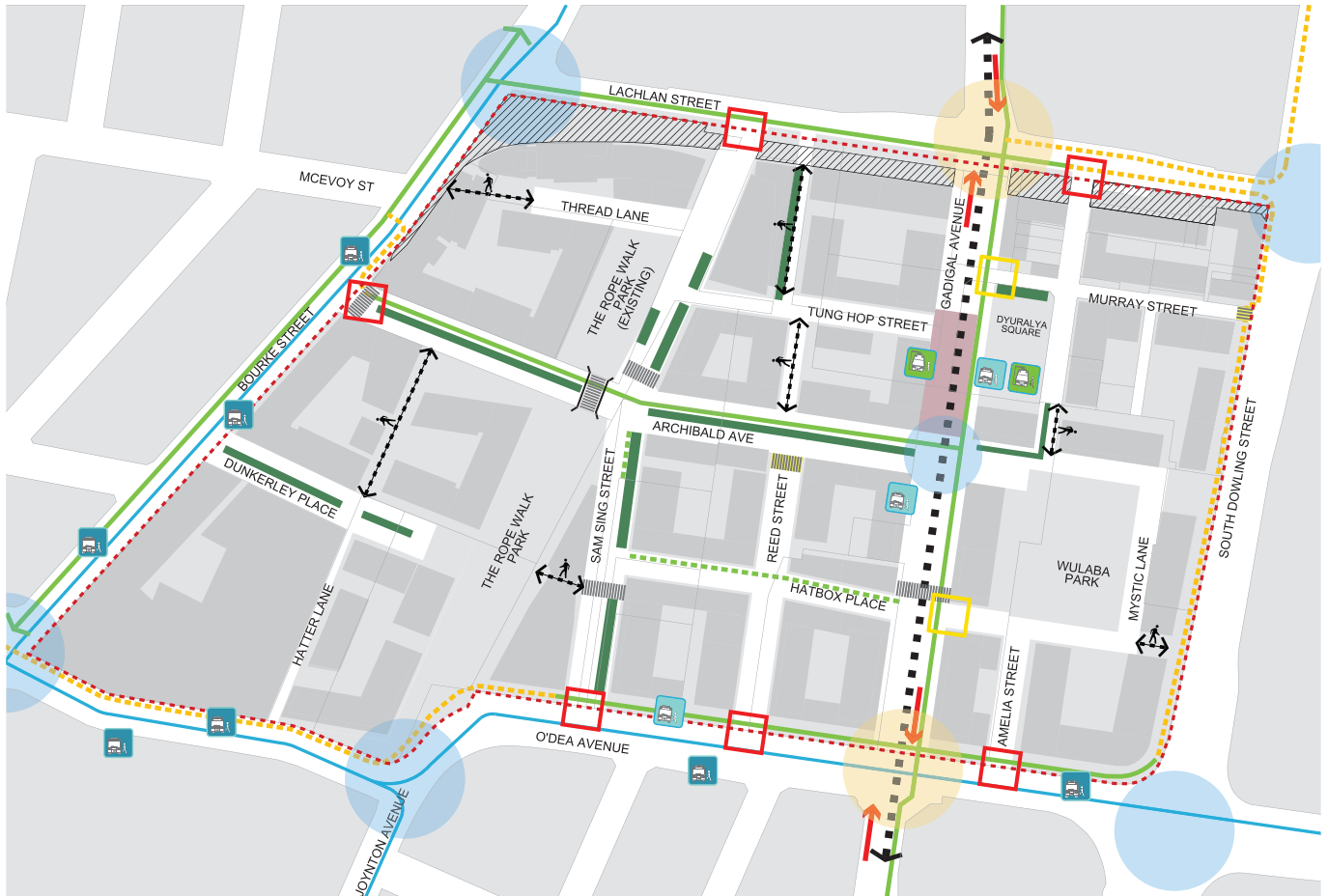
Correct placement and design coordination of urban elements is essential to good streetscape and public domain design. Well placed and coordinated elements:

- reinforce the street hierarchy;
- provide required paths of travel and pedestrian priority;
- provide a clear and direct composition that reinforces the major elements;
- are integrated seamlessly into the paved ground plane;
- suit the location of other street elements; and
- are located consistently throughout the public domain to reflect the overall character of the precinct.

The following section includes the following public domain design overlays:

- 4.1 Street Geometry;
- 4.2 Pavement and Kerb Types;
- 4.3 Public Domain Furniture and Street Lighting;
- 4.5 Street Trees and Planting; and
- 4.6 Water Management and Water Sensitive Urban Design.

# 4.1 Street Geometry



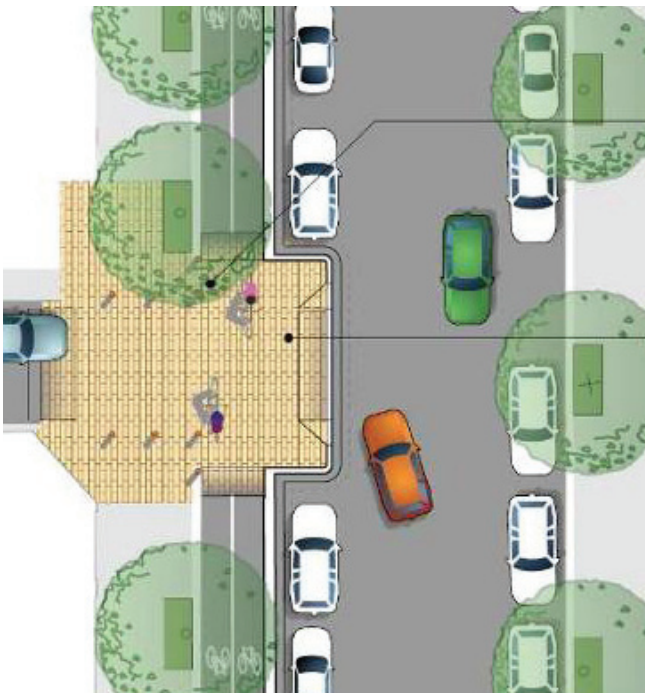
**KEY**

- |  |   |  |   |  |  |
|--|---|--|---|--|--|
|  | SIGNED 40 KM/H ZONE<br>(30 KM/H DESIGN SPEED)       |  | SEPARATED BI-DIRECTIONAL CYCLEWAY                       |  | FUTURE LIGHT RAIL STOP                       |
|  | FUTURE ROAD WIDENING                                |  | SEPARATED CONTRAFLOW CYCLEWAY                           |  | PROPOSED IN-LANE BUS STOP LOCATION           |
|  | FUTURE LIGHT RAIL PLATFORM ZONE                     |  | SHARED PEDESTRIAN / CYCLE PATH                          |  | EXISTING IN-LANE BUS STOP LOCATION           |
|  | PEDESTRIAN/CYCLE ONLY THROUGH SITE LINK             |  | FUTURE LIGHT RAIL (SHORT TERM PLANTED CENTRAL MEDIAN)   |  | MARKED PEDESTRIAN CROSSING                   |
|  | CONTROLLED INTERSECTION                             |  | EXISTING BUS ROUTE                                      |  | FOOTPATH CONTINUATION OR PEDESTRIAN CROSSING |
|  | CONTROLLED INTERSECTION-PUBLIC TRANSPORT AHEAD ONLY |  | BI-DIRECTIONAL CYCLEWAY SHARED ENVIRONMENT INTERSECTION |  | RAISED THRESHOLD CROSSING                    |
|  |   |  | BI-DIRECTIONAL CYCLEWAY BEND OUT INTERSECTION           |  | BIOSWALE                                     |
|  |   |  |   |  | BUS JUMP LANE                                |

## Street Geometry

Streets are critical to the liveability and sustainability of urban environments and are important places for people to meet and socialise. Street Geometry must be in accordance with the latest edition of all the relevant Australian Standards and with the Sydney Streets Code 2013. They must follow the design guidelines, key principles and requirements as well as:

- Ensure a people priority public realm by creating a balanced traffic environment where high considerations are given to pedestrian movements, cycling infrastructure and public activities;
- Reflect the street hierarchy and create different types of experience;
- Prioritise space for pedestrians (minimum width of 2m for pedestrian through zones and 1m for public domain furniture zones) and the safe crossing of carriageways;
- Locate street trees within the parking bays to visually narrow the carriageway, maximise clear path of travel for pedestrians and to ensure that tree roots are located away from the utilities zones of influence (typically located in the footpaths and carriageways);
- Allow references to the site's geographical and cultural history;
- Be sufficiently robust to withstand heavy use and be easily maintained; and
- Maximise permeability for water infiltration and passive irrigation, including opportunities for porous paving in the parking bays.



Separated two step bi-directional cycleway intersection crossing



Mass planting beds within the parking bays (Bourke Street)



Raised pedestrian crossing



Footpath continuation








Separated bi-directional cycleway

# 4.2 Pavement & Kerb Types



## KEY

	FOOTPATH PAVEMENT TYPE	KERB & GUTTER TYPE	DISH DRAIN TYPE	PARKING BAYS
	<b>CU1</b> CONCRETE UNIT PAVER	BLUESTONE <sup>^</sup>	INSITU CONCRETE	TRIHEX/ECO INTERLOCKING PAVER OR EQUIVALENT
	<b>CU2</b> CONCRETE UNIT PAVER	INSITU CONCRETE	INSITU CONCRETE	TRIHEX/ECO INTERLOCKING PAVER OR EQUIVALENT
	<b>CI</b> 'GREEN' CONCRETE*	INSITU CONCRETE	INSITU CONCRETE	TRIHEX/ECO INTERLOCKING PAVER OR EQUIVALENT
<b>SHARED ZONES &amp; PEDESTRIAN/ CYCLE ONLY AREAS</b>				
	<b>CU3</b> CONCRETE UNIT PAVER OR BI-PAVER <sup>^^</sup>	FLUSH	N/A	N/A
	<b>TI</b> TRIHEX/ECO INTERLOCKING OR EQUIVALENT	FLUSH	N/A	TRIHEX/ECO INTERLOCKING PAVER OR EQUIVALENT

 FUTURE STREET UPGRADE TO MATCH **CU2** MATERIALS PALETTE

 EXISTING THROUGH SITE LINK

\* Honed and laid insitu with saw cut pattern

<sup>^</sup> Insitu concrete gutter when required

<sup>^^</sup> Subject to local site drainage conditions and emergency vehicles trafficability requirements.

## Pavement and Kerb

The pavement and kerb materials are consistent with the local street, shared zones and laneways palette of the Sydney Street Code 2013. Material palette variations to the code have been included on Archibald and Gadigal Avenues to recognise the site specific conditions formed by active ground floor local retail, non- residential uses, short term transit bus stops and future light rail links (refer to diagrams 3.1, 3.3, 3.5 and 3.6).

The street pavements and materials palettes must be consistent with the design objectives, key principles and requirements of the latest edition of all the relevant Australian Standards and the Sydney Streets Code 2013. The primary design principles for the choice of paving and kerb materials include:

- Sustainable, locally sourced, high durability, low embodied energy;
- Flexible and easy to remove and re-lay;
- Create a high quality pedestrian environment with materials that are robust, durable and easy to maintain; and
- Reinforce streetscape hierarchy, uses and character of the Lachlan precinct and the surrounding neighbourhoods, including targeted application of higher quality pavement for areas around transport hubs, public activities, recreational uses and shopfront retail.



Archibald Avenue shopfront paving treatment



'Green' concrete laid insitu



Concrete unit paving



Dish drains and open pit raingardens



Infill pit lids












Trihex paving

# 4.3 Public Domain Furniture & Lighting



## KEY

- |   |   |   |  |
|---|---|---|--|
|  | PRECINCT BOUNDARY   |  | PEDESTRIAN/ CYCLE ONLY THROUGH SITE LINK   |
|  | <b>CSS1-</b> CITY STANDARD LIGHT POLE* WITH GE R250 LED LUMINAIRE AND CITY STANDARD STREETS PUBLIC DOMAIN FURNITURE PALETTE                 |  | <b>CSPS2-</b> CITY STANDARD PEDESTRIAN POLE WITH POST TOP GE ODYSSEY LED LUMINAIRE AND CITY STANDARD STREETS PUBLIC DOMAIN FURNITURE PALETTE |
|  | <b>CSS2-</b> CITY STANDARD TZA PEDESTRIAN FACING LIGHT POLE AND CITY STANDARD STREETS PUBLIC DOMAIN FURNITURE PALETTE                       |  | <b>CSP-</b> CITY STANDARD PARK LIGHT POLE WITH GE EVOLVE LUMINAIRE AND CITY STANDARD PARK FURNITURE PALETTE                                  |
|  | <b>CSPS1-</b> CITY STANDARD PEDESTRIAN POLE WITH POST TOP GE EVOLVE LED LUMINAIRE AND CITY STANDARD STREETS PUBLIC DOMAIN FURNITURE PALETTE |  | <b>STC-</b> SHORT AND MID TERM CYCLE STORAGE OPPORTUNITIES (U-BAR RACKS)   |
|   |   |  | CITY STANDARD BUS SHELTER  |

\* Use additional pole, pole top light or back of pole luminaires to provide required lighting for pedestrians, cyclists and motorist. Subject to City assessment/approval and in accordance to the light levels specified in the Sydney Lights Design Code Draft 2014 (or as amended).

## Public Domain Furniture and Lighting

The public domain furniture and lighting selection is to be in accordance with the latest edition of all the relevant Australian Standards, Sydney Street Code 2013 (local areas standard public domain furniture palette), Sydney Lights Design Code Draft 2014 (or as amended) and the Sydney Parks Code 2011 (city standard park furniture).

The public domain furniture in Lachlan precinct are to achieve the following objectives:

- Reinforce the public domain character by providing adequate amenities to add functionality and vitality to the public realm;
- Appropriately placed for convenient use, such as social seating as focus points for communal activity or consolidated at key crossing points and pedestrian desire lines,
- Achieve heritage and environmental principles, through possible purpose built elements that help identify the site's geographical and cultural history (subject to City assessment and approval);
- Minimise life cycle costs and maintenance requirements;
- Coordinated with street trees, to complement street calming applications;
- Provide clear path of travel unobstructed by public domain furniture and outdoor seating arrangements; and
- Locate bicycle racks at regular intervals and consolidated at key destination points such as bus stops, retail and commercial areas and adjacent to key open spaces.

The lighting objectives for the public domain are to:

- Provide illumination at night to ensure public safety, public enjoyment, architectural appreciation, and night-time entertainment, for pedestrians, cyclists and motorists;
- Implement high environmental lighting standards to conserve energy and minimise the unnecessary emission of light pollution and greenhouse gases;
- Promote a glare free environment for traffic and pedestrians; and
- Utilise the latest technology for effective conversion of light into illumination.

All lighting will be fitted with low energy demanding LED or similar technology. To further reduce energy consumption and light pollution, the lighting levels may be staged in a way to provide safely lit movement corridors and areas of reduced lighting levels elsewhere.



Water fountain



Bins



Seating



U-racks bicycle storage



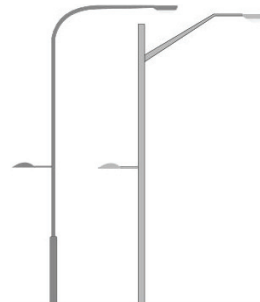
Bollard



Feature lighting



City standard park pole top lighting



City of Sydney Lightpole (with additional luminaires)



City standard TZA pedestrian facing light pole



# 4.4 Street Trees & Planting



## KEY

PRECINCT BOUNDARY

	Aa	Acacia binervia (Coastal Myall)		Eq	Elaeocarpus eumundi (Eumundi Quondong)		Pa	Platanus acerifolia (London Plane)
	Ab	Acer buergerianum (Trident Maple)		Er	Elaeocarpus reticulatus (Blue Berry Ash)		Ps	Populus simonii (Simons Poplar)
	Ar	Agathis robusta (Queensland Kauri)		Ga	Gordonia axillaris (Gordonia)		Pc	Pistacia chinensis (Chinese Pistachio)
	Ac	Angophora costata (Smooth Barked Apple)		Kp	Koelreuteria paniculata (Golden Rain Tree)		Ss	Sapium sebiferum (Chinese Tallow Tree)
	Bc	Backhousia citriodora (Lemon Myrtle)		Li	Lagerstroemia indica (Crepe Myrtle)		TI	Tristaniopsis laurina (Water Gum)
	Bd	Brachychiton discolor (Lace Bark Tree)		Lt	Liriodendron tulipifera (Tulip Tree)		Ug	Ulmus glabra 'Lutescens' (Golden Elm)
	Ca	Cupaniopsis anacardioides (Tuckeroo)		La	Livistona australis (Cabbage Tree Palm)		Wf	Waterhousia floribunda (Weeping Lilli Pilli)
	Cm	Corymbia maculata (Spotted Gum)		Lc	Lophostemon confertus (Brush Box)			



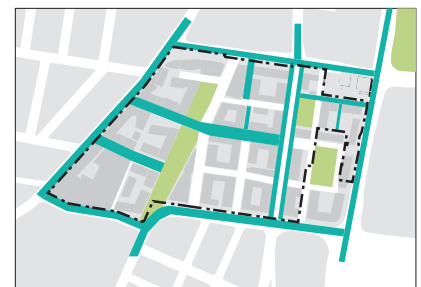
### DECIDUOUS TREE / AUTUMN COLOUR



### SPRING COLOUR PARK LINKAGE



### NATIVE SP / HABITAT CONNECTIONS



## Street Trees and Planting

Street trees are one of a city's most important natural assets. They are crucial to maintaining the high quality of our public realm and achieving the Sustainable Sydney 2030 strategy, by assisting the creation of green corridors and increased canopy cover.

Street trees are the predominant elements that define the character and atmosphere of the public domain. However, they must withstand often harsh conditions such as low light levels due to building heights, strong winds and soil compaction.

The street tree species have been chosen based on the following set of objectives:

- Tree species selection that can provide seasonal interest such as autumn colours and flower displays to mark the changes of the year;
- Use street trees with a strong flowering display along streets that form connections to parks;
- Street tree planting reinforces the visual and physical connectivity of the street network, creating a distinctive visual pattern and rhythm of the street;
- A historical connection with tree species choice can be made that relate to previous uses and styles of the site. This reinforces the character of the neighbourhood and strengthens the neighbourhood's identity;
- Tree species selection has been chosen to connect with the adjacent neighbourhoods where possible;
- The tree species choice is in response to the micro climates created by the adjacent developments that include building heights, street widths, land uses and maximise winter sun in public plazas and parks;
- Where possible, North-South streets feature deciduous trees that allow for sunlight within the winter months, to filter through to the street level;
- The continuation of Gum trees along Defries Avenue is extended; and
- Preserve and protect existing significant trees where possible throughout the precinct.

There are opportunities to include understorey and shrub planting to further define spaces and create habitats. Considerations include:

- Utilise locally indigenous plant species that form the local ecological community;
- Maximise use of provenance stock to retain and increase local biodiversity;
- Create habitat linkage within the local council area, to encourage biodiversity through habitat corridors; and
- Avoid monoculture planting and provide a variety of plant mixes to ensure long term success, promoting biodiversity and adds visual interest.



Deciduous trees for winter sunlight



Strong flower display form connections to parks



Native trees form habitat connections

# 4.5 Water Management & WSUD



## KEY

- PRECINCT BOUNDARY
- OPEN SPACES
- FUTURE ROAD WIDENING

- MAJOR OVERLAND FLOWS
- DIRECTION OF LOCALISED OVERLAND FLOW
- EXISTING LOW POINT (PONDING)
- EXISTING TOPOGRAPHIC BOWL-LEVELS TO BE LIFTED

- BIOSWALES
- TERRABOND (OR EQUIVALENT) POROUS FILL TREE BASE TREATMENT
- TREE GRATE BASE TREATMENT
- OPEN WSUD TREE PITS, RAIN GARDENS OR MASS PLANTING (SUBJECT TO FLOOD AND MUSIC MODELLING)

## Water Management and Water Sensitive Urban Design (WSUD)

The Water Sensitive Urban Design Strategy for the Lachlan precinct will make best use of public domain areas to treat as much stormwater as possible. The target reductions are:

Pollutant	Target Reduction
Total suspended solids (TSS)	85%
Total Phosphorus (TP)	65%
Total Nitrogen (TN)	45%
Gross pollutants(GP)	90%

In accordance with the City of Sydney WSUD Policy, water sensitive urban design should be incorporated in at least 10% of opportunities presented by renewal of streets and open spaces. It is anticipated that all stormwater run-off from the private domain is treated and harvested within the building boundaries as local treatment and may further reduce water demands by providing water for irrigation of the private domain.

The topography of Lachlan precinct slopes from the north-east to the south-west with the eastern quarter of the site characterised by an undulating landform. The larger portion of the site is generally flat and low lying. The broader Green Square area is liable to flooding and the major overland flowpaths for Lachlan have been identified along South Dowling Street from the Moore Park Golf Course, and a low point located in proximity to Lachlan Street and Sam Sing Street. The stormwater system generally run east-west below O'Dea Avenue road surface and north-west through The Rope Walk park. Major piped culverts are located around the junction of O'Dea and Joynton Avenues. Water Sensitive Urban Design (WSUD) has been introduced to large areas of the precinct to account for excess stormwater and overland flow. These form elements of the natural landscape design and public space areas.

The selection and application of water sensitive urban design should include the following functional and design considerations:

- The catchment area draining to the raingarden. Undersized raingardens will require more frequent maintenance. Ensure that systems are appropriately sized for the catchment;
- The gutter invert at the inlet to the raingarden in an important basis for the design. The extended detention level should be set based on this level, if set too high this may lead to excessive ponding on the street;
- Appropriate location of treatment systems and inclusion of trees where possible. Tree species selection is considered that tolerate drought and water inundation;
- Gross pollutant management needs particular consideration in busy commercial streets;
- Further to catchment analysis, peak flows during major design events should be assessed. Inlet & outlet design need careful consideration to prevent scour or bypass. All systems need to be able to cater for high flows;
- Bioretention levels should be reviewed to ensure systems have sufficient ponding area; and
- The level of the bioretention surface is critical. This should be flat and 100mm - 200mm below the extended detention (outlet) level. Vegetation selection needs to be relevant to site conditions.



Coordination with street furniture



Bioswales



Rain gardens