STREETSCAPE DESIGN GUIDELINES

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1. SCOPE

1.1 Purpose

Streetscapes refer to the overall visual appearance and character of a street, road, or public open space. This guideline provides general requirements for street furniture, lighting, signage, and other elements that contribute to the look, feel, and functionality of pedestrian areas in the City.

Prior to starting work, a *Before You Dig Australia* inquiry should be completed to determine the locations of any existing services. If works are part of a new development on previously uncleared land a review of native vegetation should be completed, and native vegetation kept where possible.

1.2 Applicable Standards

The installation, materials and workmanship shall comply with all relevant current Australian Standards, Codes and Regulations and all reference codes and Standards listed in the prefaces to those standards and codes.

Where Australian Standards and Codes do not exist the appropriate International Standard or Codes shall apply. Request an instruction from the City for amendments to Standards, Codes or Regulations that come into effect during the works and affect the works of the contract.

Document	Title
AS 1100 Suite	Drawing Practice
AS/NZS 1158 Suite	Lighting for roads and public spaces
AS 1172 Suite	Sanitary plumbing products
AS 1428 Suite	Design for access and mobility
AS/NZS 1163	Cold-formed Steel Hollow Sections
AS/NZS 1680	Interior Lighting – Safe Movement
AS 2008	Bitumen for pavements
AS 2082	Timber – hardwood – visually stress-graded for structural purposes
AS 2150	Asphalt – a guide to good practice
AS 2890.3	Parking facilities – Bicycle facilities
AS/NZS 3500.1	Plumbing and drainage – Water services
AS/NZS 3500.2	Plumbing and drainage – Sanitary plumbing and drainage

Document	Title
AS/NZS 3678	Structural steel - Hot-rolled plates, floorplates and slabs
AS/NZS 3679 Suite	Structural steel - Hot-rolled bars and sections
AS 23907	Sharps injury protection - Requirements and test methods - Sharps containers (ISO 23907-2:2019, MOD)
AS 4086.1	Secondary batteries for use with stand-alone power systems
AS 4422	Playground surfacing – specifications, requirements and test methods
AS 4685 Suite	Playground equipment
AS/NZS 4455.1	Masonry units, pavers, flags and segmental retaining wall units
AS/NZS 4600	Cold-formed steel structures
AS/NZS 5139	Electrical installations - Safety of battery systems for use with power conversion equipment
AS 60529	Degrees of protection provided by enclosures (IP Code)
CKS-100	City Concrete Specifications
CKS-700	City Landscape Specification
CKS-900	City Subdivision Guidelines
City Strategy	City Playground Strategy 2023
IPWEA LGGSD	Institute of Public Works Engineering Australasia – Local Government Guidelines for Subdivision Development
MRWA LDGRPS	MRWA Lighting Design Guideline for Roadway and Public Spaces
MRWA 1830-0002 to 0005, 0013 to 0015	MRWA Drawings for standard signposts.

2. PUBLIC OPEN SPACES

2.1 General

Developers are required to submit a landscape plan for approval to develop public open spaces. Public open spaces and infrastructure should be designed to be accessible in accordance with the AS 1428 series.

Public open spaces shall be designed to enable passive surveillance by residents to:

- Minimise potential for crime and vandalism
- Ensure the safety of children, especially near play equipment

Public open spaces must take into consideration Crime Prevention through Environmental Design (CPTED) principles and apply them to new and renovation projects.

The developer shall allow for adequate power connection requirements for the full lifecycle of the public space.

Plantings shall comply with the City's Landscape specifications CKS-700. Drawings and specifications shall include a schedule stating the type, species, number, and size of the pot, seeds, trees, shrubs, ground covers, herbs, and grasses to be planted. The plan shall show the location and density of planting. Specifications shall show details on how the plants are planted, fertilised and protected.

All street furniture shall be a minimum of 1000mm clear of an accessible path of travel.

2.2 Design Plans

Design plans shall show the following details (in accordance with IPWEA LGGSD):

- Cadastral boundaries of the site
- Existing services
- Survey marks
- Fences
- Significant vegetation and trees
- Existing and proposed contours
- Existing or proposed buildings
- Proposed access roads and parking areas
- Pedestrian and cyclist facilities
- Disabled access facilities
- Existing or proposed stormwater or drainage management facilities
- Playground equipment
- Proposed irrigation system
- Other features pertinent to the development of the public open space
- Areas and details of native vegetation proposed to be removed
- Street furniture

2.3 Public Toilets

Public toilets should be located on a continuous accessible path of travel from other accessible facilities in the area, such as car parks, picnic areas and shops. Developers shall submit toilet facility designs for the City's approval as required.

3. FURNITURE

3.1 Park Bench Seating

Park benches shall comply with the dimensional requirements in AS 1428.2 Clause 27.2. All benches shall be chemically anchored to a concrete footing and not cast-in concrete to enable future relocation.

3.2 Drinking Fountains

Drinking fountains shall be provided in public spaces to aid with hydration and prevent heat stress. The preferred drinking fountain model is the Civiq Aquafil Bold 850BF Drinking fountain & bottle fill stations with swinging dog bowl.

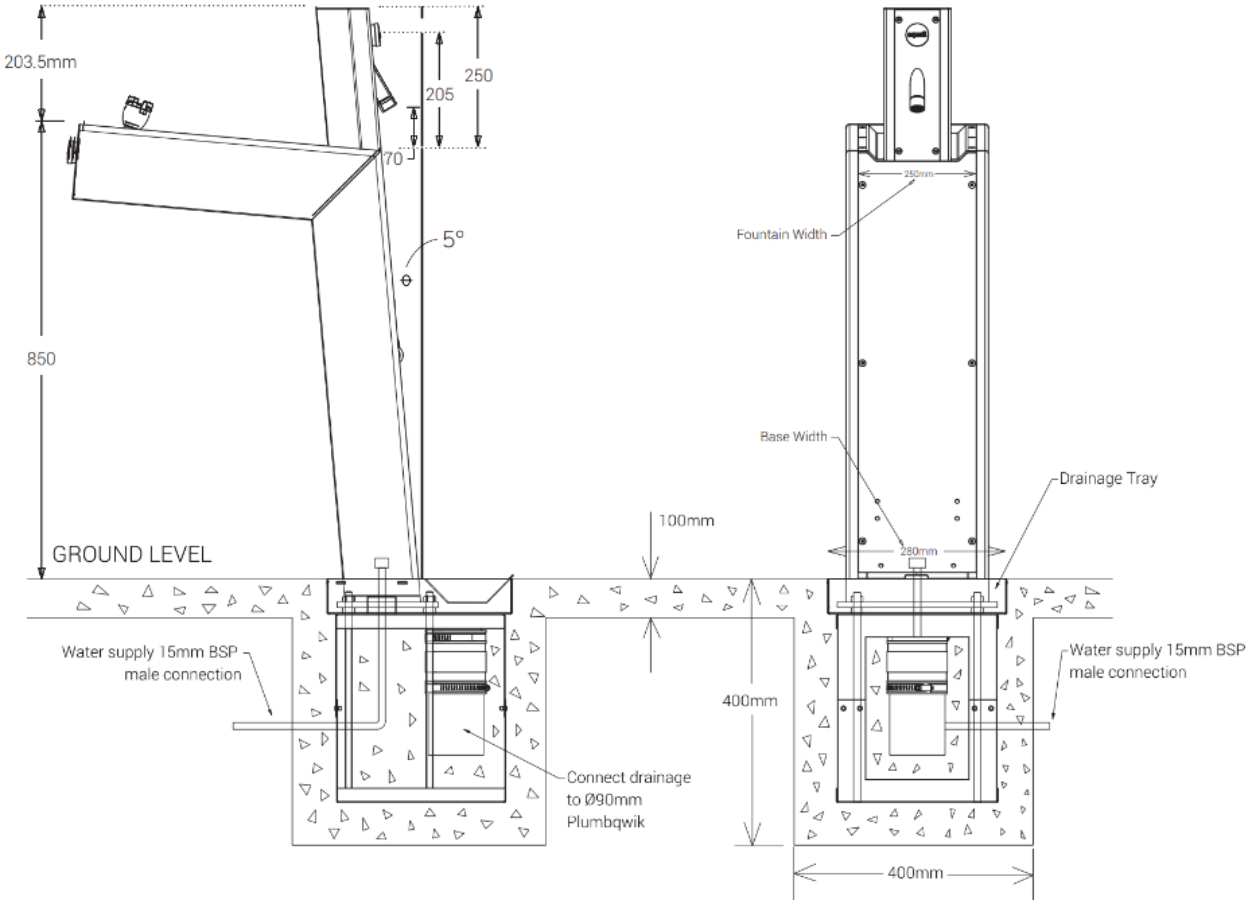

Figure 1: Drinking fountain requirements – Civiq Aquafil Bold 850BF.

An isolation valve shall be designed and installed just upstream of the drinking fountain to enable maintenance. This isolation valve shall be located in an accessible, lockable valve box adjacent to the drinking fountain.

Drinking fountains shall comply with AS 1428.2 Clause 27.3; fountains and the water trajectory shall have the minimum access dimensions in AS 1428.2 Figure 33.

3.3 Bicycle Facilities

Bicycle parking shall be designed in accordance with AS 2890.3.

Bicycle racks shall be located at least 2250mm clear from buildings and 750mm clear from the face of the roadside kerb in accordance with AS 2890.3 Figure 2.3.

Bicycle racks shall be chemically anchored to a concrete foundation.

Racks must be designed to support the bicycle frame – racks that only support the front wheel of the bicycle shall be avoided in accordance with WALGA P&DBRWA Clause 11.2 to avoid damage to bicycles.

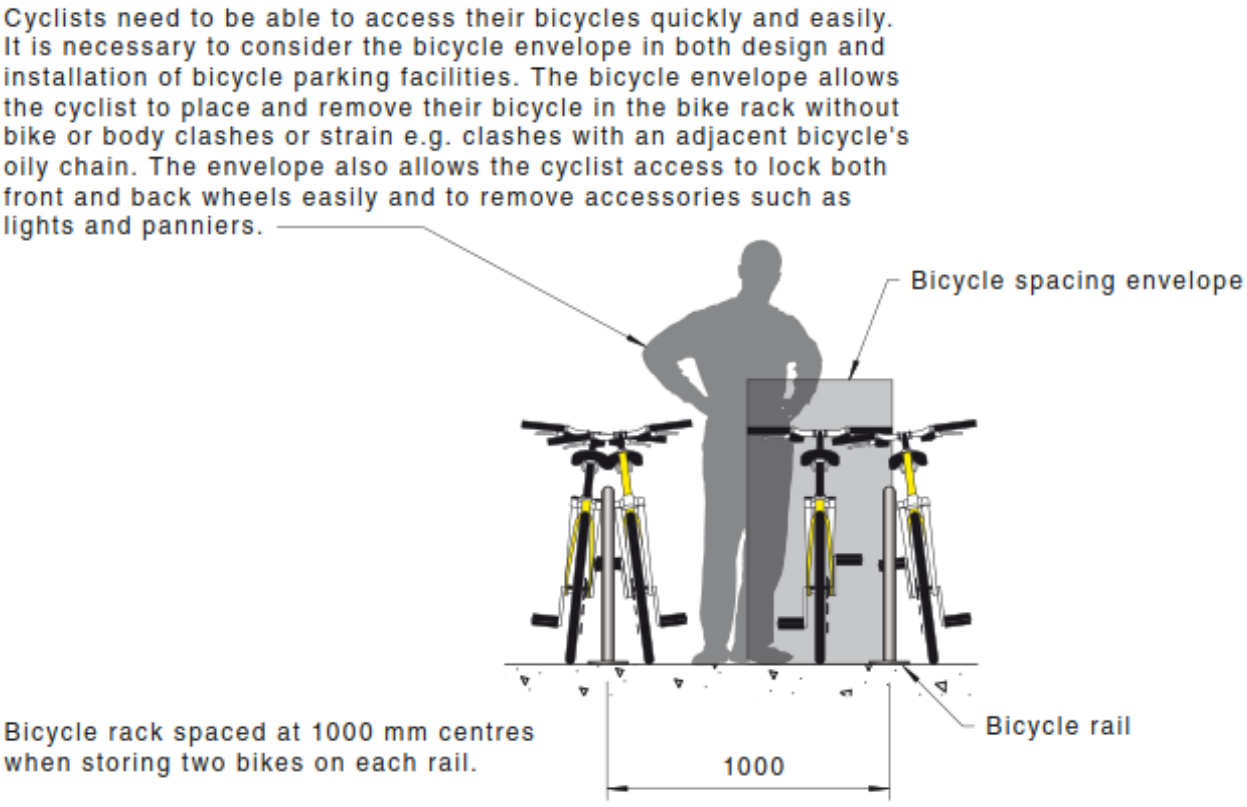

Figure 2: Bicycle rack space envelope - Extract from AS 2890.3 Figure 2.2

Bicycle parking adjacent to roads with a speed limit greater than 60km/h should be protected by a pedestrian barrier in accordance with AS 2890.3.

3.4 Play Equipment

All play equipment shall meet the requirements of the AS 4685 series of standards.

All playground equipment with a free fall height greater than 600mm must have an impact attenuation surface complying with AS 4685.1 Clause 4.2.8.5.2 and AS 4422.

Playgrounds shall be appropriately shaded in accordance with AS4685.0 Appendix A.

Playgrounds shall meet the intent of the City's Playground Strategy 2023.

3.5 Irrigation

Irrigation used for public open spaces shall comply with the City's irrigation specification.

Sprinkler water distribution footprints shall overlap adjacent sprinkler footprints.

3.6 Rubbish Bins

Rubbish bin enclosures used in the City shall comply with Table 1 and Figure 3.

Table 1: Preferred Bin Enclosures

	Bin Item # (Refer to Figure 3)		
	A	**B**	**C**
Application	City Centre 240L Bin Enclosure	Park 240L Bin Enclosure	City Centre Round Bin

	Bin Item # (Refer to Figure 3)		
	A	**B**	**C**
Model	LR6164	Allure (Norfolk)	K0279B Custom Litter Receptacle Karratha
Description	Perforated Bin Enclosure	Bin surround	316SS Bin enclosure with mild steel galvanised inner liner
Required product options	Flat Lid 304SSF 304 Stainless Steel – Satin Polished Body Square Perforations No signage required Locking mechanism	Pressed metal electro-plated and powder coat finish – Citi Pearl Locking mechanism	316 Stainless Steel Curved Lid, Body, Frame, Lock and 400mm Chain Extended leg fixing supplied as a single unit.
Dimensions (mm)	1090H x 800L x 700W	1370H x 800L x 800W	N/A
Volume (L)	240	240	
Preferred Supplier	MC628 Commercial Systems Australia	ME175 Exteria	MC628 Commercial Systems Australia
Approximate Lead Time	8 weeks	5 weeks	8 weeks
City Stores #	S5630	S5621	S5625

A B C

Figure 3: Preferred Bin Enclosures

Bins shall be located in areas allowing for clearance of a full door opening and enabling full access.

Outdoor bins shall be anchored to a concrete slab, minimum 100mm thick, 2m x 2m. The foundation underneath

the slab shall be compacted to 95% MMDD, with a minimum of 80mm thick crushed blue metal aggregate.

3.7 Street Signage

Signs, signage structures and footings shall be designed for AS 1170 Wind Region D.

Street signs shall be designed to AS 1742.5.

The City requires that street signs be manufactured to the following specifications:

Table 2: Street Sign Requirements

	Speed Limit <80km/h	Speed Limit >80km/h	Reference
Lettering height (mm)	100	130	AS 1742.5 Table 2.1
Sign-plate height (mm)	150	200	
Sign-plate	Hollow Extrusion		
Length	1000	1000	AS 1742.5 Clause 2.2
Number of posts	2	2	
Sided	Double-sided		
Background	3M Class 1 Diamond Grade Reflective Sheeting Minimum 10-year service life.		
Lettering	Series DN or CN		
Mounting height	Between 2.5m and 3.0m from ground level to the underside of the sign-plate		

- Wording to be centrally located on the sign plate with the abbreviation to be 50mm lettering at the top right-hand side of the street name.
- Anti-graffiti film is to be applied.
- Signs are to be mounted either on two (2) 60 OD posts or onto Horizon Power poles where they are opposite an intersection.
- All brackets are to be supplied with a sign plate.
- Lateral placement on urban roads to be on the 2.7m alignment unless otherwise approved.
- Lateral placement on rural roads to be at least 600 mm clear of the outer edge of the road shoulder.
- Main Roads WA provide standard methods for the size of sign structures:
  - Use MRWA Drawing 1830-0002 to determine wind speed region and terrain category
  - Use MRWA Drawing 1830-0003 to determine sign area and post spacing
  - Use MRWA Drawing 1830-0004 and 1830-0005 to determine the force acting on the sign
  - Use MRWA Drawing 2130-0654 for post-selection
  - Use MRWA Drawings 1830-0013, 1830-0014 and 1830-0015 to determine footing dimensions and reinforcement required

Refer to Figure 4 below for typical street signplate and footing detail.

Street name abbreviations shall be in accordance with Figure 5.

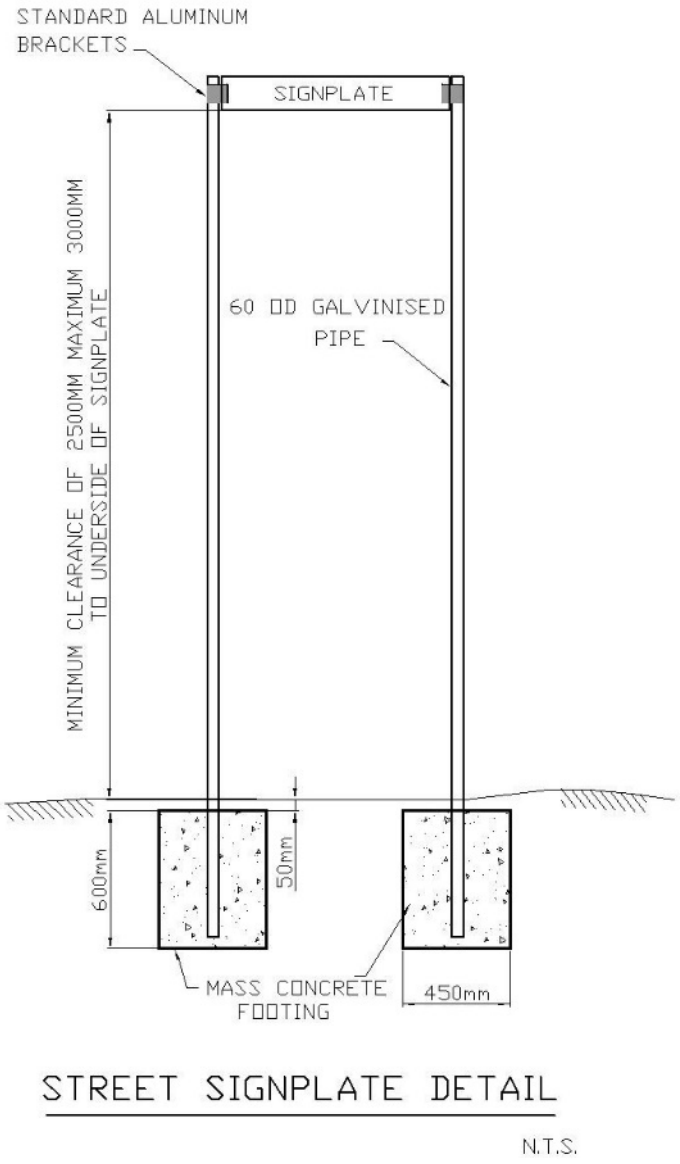

Figure 4: Street Signplate Detail

Access	ACS	Heights	HTS
Alley	ALY	Highway	HWY
Approach	APP	Interchange	I/C
Arcade	ARC	Junction	JNC
Avenue	AV	Lane	LA
Banan	BA	Link	LNK
Bend	BND	Loop	LP
Boardwalk	BWK	Mall	ML
Boulevard(e)	BVD	Motorway	MWY
Brace, Brae	BR	Parade	PDE
Break	BRK	Parkway	PWY
Bypass	BPS	Pass	PA
Centre	CTR	Passage	PSG
Chase	CH	Place	PL
Circuit	CCT	Plaza	PL
Circle, Circlet	CIR	Point	PT
Circus	CCS	Promenade	PRM
Close	CL	Quadrant	QDR
Concourse	CON	Quay	QY
Corner	CNR	Rise	RS
Court	CT	Road	RD
Crescent	CR	Square	SQ
Cutting	CTG	Street	ST
Drive	DR	Subway	SWY
Edge	ED	Terrace	TCE
Entrance	ENT	Tollway	TWY
Esplanade	ESP	Track	TK
Expressway	EXP	Trail	TL
Freeway	FWY	Underpass	U/P
Gardens	GDN	Viaduct	VDT
Gate	GT	Walk	WK
Glade, Glen	GL	Way (not usually abbreviated)	WY
Grange	GRA	Wharf	WF
Green	GRN		
Grove	GR		
Gully	GLY		

Figure 5: Street Name Abbreviations – Extract from AS2890.3 Appendix D.

Refer to IPWEA Standard Drawing RS-130 “Street Name Sign and Location” for further details.

4. RESIDENTIAL REQUIREMENTS

4.1 Fencing

Residential fencing abutting a public open space shall be visually permeable in accordance with IPWEA LGGSD Clause 6.1.

4.2 Verges

Verges shall be designed in accordance with IPWEA LGGSD Clause 3.3.4:

- Verge grading should fall a minimum of 1:50 from the property boundary to the top of the kerb.
- In areas of steep grades and accessways, the verge can be graded to suit the natural land contours
- Verges on the high side of a local distributor road may fall 1:50 towards the road and battered to suit the finished contours at a maximum 1:6 slope.

- Verge surface to be comprised of compactable material to ensure the material does not wash away. This City's recommended verge treatment is stabilised gravel with street trees.
- Minimum verge width 4m.
- Maximum grade of grassed verge areas 1:6, maximum grade of planted verge areas 1:4.
- Refer to the Utility Providers Code of Practice for service alignments, including street trees and lights.
- Refer to the City's Design Guidelines for Footpath for path alignment.

4.3 Cross Overs

Refer to the City's Crossover Policy and standard drawings.

4.4 Paths

Refer to the City's Footpath Design Guidelines.

5. STREET LIGHTING

Prior to design and supply, a desktop review of the sites proposed by the City should be undertaken. The purpose of this review is to inform suitable lighting for site and location plan that considers:

- The location of services (BYDA).
- Proximity and potential spill effect on residential properties.
- Footing/pole locations; and
- Achieving uniform lux levels.

5.1 Site Lighting And Location Plan

Lighting design to include a site lighting and location plan. This should include the following:

- Exact number of lights required to achieve a P2, PR2, PP2, PA2, PE2 and PC2 lighting category as prescribed in AS/NZS 1158.2 and AS/NZS 1158.3.1.
- Exact location of light poles (and battery pits if required).
- The distance between neighbouring poles.
- Complete lux design nominating anticipated lux level and light spread across the nominated site.
- Light and solar panel orientation.
- Identification of poles that require light shields to mitigate light spillage into residential properties.
- Identification of any areas that may require tree lopping/shrub removal; and
- Identification of any areas that may require rock pitching to support footing installation.

5.2 Design Package Requirements

Finished design package to include, but is not limited to, the following:

- AutoCAD drawing specifications and pdf.
- Certificate of Design Compliance and Engineering certification for Region D and Importance Category 2.
- Certified set of design drawings, including shop detail drawings.
- Manufacturer Data Report (MDR).

- Manufacturer Warranty.
- Installation and Operation Manual (IOM).
- Maintenance and Troubleshooting Manual.

5.3 Lighting Design Criteria

The following design criteria apply to Solar lighting:

Table 3: Lighting Design Criteria

Criteria	Value	Standard/Reference
Lighting Subcategory	P2	AS/NZS 1158.3.1
Wind Rating of pole footings, poles, solar panels and luminaires	Region D Importance Level 2	AS/NZS 1170.2
Technology	Light Emitting Diode (LED)	
Ambient Temperature (minimum requirements)	0 to 50°C	
Required light pole & electronics temperature rating	Minimum 70°C	
Relative Humidity (minimum requirements)	35% to 55%	
Direct Normal Solar Irradiation	28 MJ/m^2	
Protective Coatings – Minimum Dry Film Thickness	75µm Zinc Rich Primer 175µm Two-Pack Epoxy 75µm Acrylic polyurethane finish or 600 µm Hot Dipped Galvanising	AS 2312.1 AS/NZS 4680 AS/NZS 1214
Design Life	25 years	
Ingress Protection Rating	IP10 Indoor IP65 Outdoor	AS 60529:2004
Impact Rating	IK10	IEC 62262
Pole Material	Hot Dipped Galvanised Steel or Aluminium	
Minimum height	13.7m	MRWA Lighting Design Guideline for Roadway and Public Spaces
Recommended Dimensions	As per Australian Standard	AS 1798
Hours of Operation	Dusk till Dawn 365 days per year	
Photovoltaic Power Output	200kW Minimum and to be suitable for light power demand	

Designers shall ensure any lighting equipment models have readily available replacement stock within Australia.

Battery houses must be pad-lockable keyed to CofK key system and include vandal-resistant screws.

Products supplied shall be suitable for extreme heat, dust, water ingress and Cyclones as per the following environmental conditions:

Holes and surfaces shall be free of burrs and sharp edges to allow the installation of electrical cables into the pole without damage. Curved sections shall be smooth and free of kinks, ripples and galvanising defects.

Battery compartments shall have appropriate seals to prevent corrosion of terminals based on previous issues with water ingress.

Preference will be given to products that are readily available within WA for maintenance purposes.

Batteries are to be suitable for the harsh climatic conditions of the region and meet all AS standards, including AS 4086.1 and AS/NZS 5139. Battery to be rated at a Minimum of 150 Amp Hours and AGM or Gel type. Battery Low voltage load disconnect must be set not to exceed 50% Depth Of Discharge (DOC). Batteries shall be able to provide enough power for a minimum of 2 days of cloud cover.

The solar controller/regulator shall be located within the light pole. The regulator shall be of Maximum Power Point Tracking (MPPT) Type and sized to match the PV module. The regulator must have internal temperature charge compensation. Regulator must be set to battery manufacture charge temperature Coefficients (as stated in the battery spec sheet).

Batteries should be located in a lockable electrical cabinet located above ground. Batteries should not be housed in pits to minimise the risk of water ingress/damage.

Holes and surfaces shall be free of burrs and sharp edges to allow the installation of electrical cables into the pole without damage. Curved sections shall be smooth and free of kinks, ripples and galvanising defects.

The supplier shall be responsible for providing a full package warranty and ongoing maintenance support for the supply of replacement parts.

6. MATERIALS

Materials used in the construction of public open spaces shall comply with the following Australian Standards:

Material	Standards
Concrete	CKS-100, AS 1379
Bitumen for pavements	AS 2008
Asphalt	AS 2150
Masonry Pavers	AS/NZS 4455
Structural Timber	AS 2082
Structural Steel	AS/NZS 1163, AS/NZS 3678 AS/NZS 3679, AS 4600

Upon request, contractors shall supply the City with Material Data Certificates demonstrating compliance to these standards.

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Previous Policy Number:	**N/A**
Last Reviewed:	**January 2025**
Next Reviewed:	**January 2026**
Responsible Officer:	**Principal Engineer Coordinator**