SC6.13 Planning scheme policy for the utility code

SC6.13.1 Purpose

The purpose of this planning scheme policy is to:-

(a) provide advice about achieving outcomes in the **Utility code**; and

(b) identify and provide guidance about information that may be required to support a development application where subject to the **Utility code**.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.13.2 Application

This planning scheme policy applies to development for a renewable energy facility which requires assessment against the **Utility code**.

SC6.13.3 Advice relating to the establishment of a renewable energy facility

The following is advice for achieving outcomes in the **Utility code** relating to location and site suitability outcomes where involving development for a renewable energy facility:-

(a) compliance with Performance Outcomes PO1 of **Table 9.3.21.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Utility code** may be demonstrated in part or aided by the submission of supporting information prepared by a competent person which provides details about:-

  (i) the amount of electricity likely to be generated by, and the design voltage output of the proposed renewable energy facility;
  (ii) the proximity of the proposed renewable energy facility to existing electricity infrastructure (e.g. substations, power lines);
  (iii) whether existing electricity infrastructure has capacity to accept feed in from the proposed renewable energy facility; and
  (iv) the extent of any new or upgraded electricity infrastructure that would be required to accommodate the proposed renewable energy facility (other than connection to an existing power line in an adjoining road or easement).

Note—for the purposes of this planning scheme policy, a competent person is an appropriately qualified and experienced electrical engineer with appropriate and proven technical experience in providing advice about electricity infrastructure networks and augmentation requirements.

SC6.14 Planning scheme policy for development works

SC6.14.1 Introduction

SC6.14.1.1 Purpose

The purpose of this planning scheme policy is to:-

(a) provide advice and guidance about achieving outcomes in the relevant planning scheme codes as contained in the planning scheme;

(b) identify development and design standards for works undertaken as part of new developments which require Council approval and details standards and procedures for contributed assets with regard to construction, compliance and acceptance; and

(c) provide advice and guidance for the design and construction of infrastructure works which reflects sound practice in engineering, landscape, environmental management and natural resource planning and sustainability, while also addressing considerations relating to whole of life cycle costs, safety, accessibility, function and aesthetics.

Note—nothing in this planning scheme policy limits Council's discretion to request relevant information in accordance with the Act.

SC6.14.1.2 Application

(1) This planning scheme policy is to be read in conjunction with all codes in which reference is made to the **Planning scheme policy for development works**.

(2) This planning scheme policy is structured as follows:

SC6.14.1 Introduction
SC6.14.2 Road infrastructure
SC6.14.3 Stormwater management
SC6.14.4 Site development management
SC6.14.5 Local parks
SC6.14.6 Landscaping infrastructure
SC6.14.7 Coastal and waterfront structures
SC6.14.8 Constructed waterbodies
SC6.14.9 Earthworks
SC6.14.10 Specifications and construction

SC6.14.1.3 General advice

(1) The standards identified in this planning scheme policy apply to assessable development and to infrastructure, capital assets such as roads, bridges, parks, landscaping, dams, drainage, electrical, lighting, telecommunications and intelligent transport systems (ITS) which are required to be provided in conjunction with such assessable development.

(2) When undertaking development, developers and professionally qualified engineering practitioners who are registered with the Board of Professional Engineers Queensland (supervising RPEQ engineers) or suitably qualified and experienced persons, are to comply with the standards contained within this document, which are the minimum acceptable to satisfy the performance requirements of the planning scheme.

(3) Developers and supervising RPEQ engineers or suitably qualified and experienced persons may propose alternative solutions for Council approval to meet the objectives of these standards including sustainability, safety, legal and environmental considerations.

(4) Where published standards, guidelines, and documents are referenced in this planning scheme policy, it is to be interpreted that the reference is the most current version (including any amendments) of that published standard, guideline or document.

(5) The developer and supervising RPEQ engineer are responsible for ensuring the current edition of reference documents is used.

(6) All standard forms (e.g. as constructed certificates, CWITP etc.) will be made available by Council in electronic form.

(7) Council has adopted the IPWEAQ standard drawings for roads and drainage (except where modified).

Note—infrastructure guidelines and standards for development are available on Council's website.

SC6.14.1.4 Place making approach

(1) In the application of the standards identified in this planning scheme policy, developers and consultants should be aware that Council has adopted a place making approach to the development of designs for its unique community of communities.

(2) Place making is an integrated approach to working with communities on a broad range of issues from infrastructure to town centre management to community capacity building. It has a philosophy and methodology which is holistic, multidisciplinary and requires long term commitments to people, places and partnerships. It is a tool to achieve sustainable outcomes socially, economically and environmentally to provide our communities with a sense of place and belonging.

(3) In certain locations design standards for a place have already been developed. In greenfield and other situations where no design palette exists, the purpose of a place making approach is to build on the existing character and values of an area rather than contrive it. Accordingly there will be instances where conditions of a development approval will specifically require that design of infrastructure is consistent with Council's adopted place making approach for that locality.

(4) Council has adopted the Place Making Charter – People, Places and Partnerships to ensure that the unique characteristics and needs of our places, local communities and people are recognised and maintained. The Charter outlines Council's vision with 5 key principles and is supported by Council's Place Making Policy and Place Making Guidelines. The 5 key principles are:-

(a) community values and people are at the heart of place making;

(b) engaging and collaborating with stakeholders and community;

(c) building community capacity to take action;

(d) the look and feel of our community centres should reflect the values of the people and place; and

(e) achieving integrated and sustainable place outcomes.

(5) The Place Making Charter, Policy and Guidelines provide an understanding of how Council is undertaking a place making approach to improve its service to each individual community. It outlines Council's vision and highlights a number of place making initiatives and interventions that contribute towards providing a sense of place.

(6) The overarching philosophy in the design of all works that become contributed assets is to consider these spaces as places, and recognise that they have the ability to strengthen both our identity and our quality of life through good design.

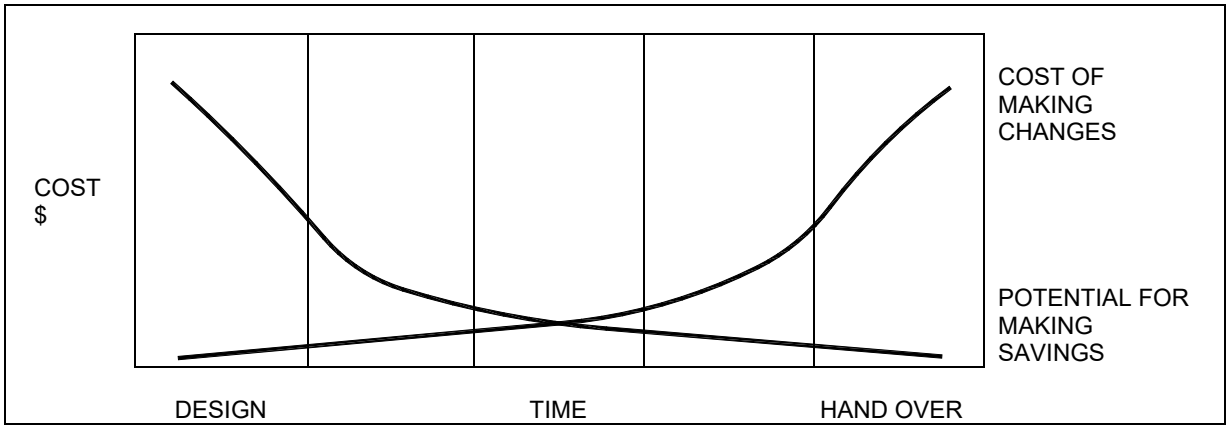
SC6.14.1.5 Life cycle costs and life cycle management plans

(1) The service provided by contributed assets ultimately becomes the responsibility of Council to deliver. To support this, Council requires that during the design phase, a life cycle approach be adopted that considers the ongoing management obligations of the asset.

(2) The required levels of service for contributed assets shall be met in the most cost-effective way, and therefore infrastructure is to be provided in a manner which maximises resource efficiency and minimises whole of life cycle costs.

(3) Early identification of costs enables effective decisions to be made in balancing performance, reliability, maintainability, maintenance support and other goals against life cycle costs. Decisions made early in an asset's life cycle, for example during the design phase, have a much greater influence on reducing life cycle costs than those made post handover, as shown diagrammatically in **Figure SC6.14.1A (Potential savings and cost relationship).**

Figure SC6.14.1A Potential savings and cost relationship



(4) The preparation of a life cycle management plan and funding options may be requested for those proposed contributed assets that are considered over and above the level of service represented by the standards contained in this planning scheme policy.

(5) For these assets to be acceptable to Council, the life cycle costing of the proposed asset needs to be evaluated to determine:-

(a) maintenance and operational requirements for the ongoing management of the asset; and

(b) the costs associated with the ongoing management of the asset.

(6) The maintenance, operational and replacement costs of these assets are to be evaluated over the operating life of the asset or for a minimum of 30 years. Applicants are to provide:-

(a) a detailed assessment of the relevant infrastructure network and how it operates;

(b) a detailed management system; and

(c) a forecast of ongoing maintenance costs associated with the operating life of the asset.

(7) A life cycle management plan, if required, is to consider all management options and strategies as part of the asset life cycle from planning to disposal. The objective of this is to consider lowest life cycle cost (rather than short term savings) when making asset management decisions.

(8) Strategies are to be defined for each stage. Recurrent costs are referred to in **Table SC6.14.1A (Life cycle expenditure categories)**.

Table SC6.14.1A Life cycle expenditure categories

Category	Definition	Typical examples
Maintenance	Expenditure related to the ongoing up keep of assets	Mowing, painting, inspections
Operations	Expenditure on day to day activity of business operations	Power costs, utility costs
Renewals / rehabilitation / replacement	Expenditure in maintaining the current level of service by reinstating the original life of the asset	Reseal, replacement
Upgrade / augmentation	Expenditure on upgrading the level of service by investment in an existing infrastructure or service	Widening or sealing of roads, traffic calming
Expansion	Expenditure on increasing the level of service by investment in new assets	New assets or services as part of a new subdivision
Disposal	Any costs associated with the disposal or decommissioning of assets	Sale of material or plant, road closure, removal of assets

SC6.14.1.6 Responsibilities – design and construction of engineering works

(1) All engineering infrastructure approved for construction (including works to be transferred to private ownership and works to be transferred to Council ownership as a contributed asset), is to be designed and supervised during construction by a supervising RPEQ engineer.

(2) The supervising RPEQ engineer is to ensure that all such infrastructure has been designed and constructed in accordance with the standards identified in this planning scheme policy and in accordance with sound engineering practice. Should the supervising RPEQ engineer propose a design which does not fall within the range of design alternatives which are consistent with the standards identified in this planning scheme policy, the supervising RPEQ engineer is to discuss the proposal with the relevant engineering and environmental assessment staff at an early stage to determine Council's attitude to the proposal.

(3) Council's standards for engineering design drawings lodged with development applications are detailed in **Appendix SC6.14A (Standards for engineering design drawings)** of **Section SC6.14.1 (Introduction)**.

(4) Drawings are to be lodged in electronic format as PDF and AutoCAD files complying with the Asset Design and As Constructed (ADAC) standard for use and direct transfer to Council's geographic information system (GIS) and Asset Management Systems.

(5) Stormwater catchment plans and drainage design calculations are to be lodged as supporting information to the design drawings.

(6) For development on existing allotments, site development plans are to show proposed site layout, existing contours/levels, proposed levels, proposed paved areas, proposed stormwater layout and levels, proposed driveway access and car parking layout with line marking and other relevant details.

(7) Design drawings are to detail existing and planned utility services and highlight any potential service conflicts.

(8) Specifications within design documentation detailing the requirements for the construction contractor inclusive of ADAC data and as constructed drawings are to be provided in electronic format to Council for approval.

Appendix SC6.14A Standards for engineering design drawings

Preliminary

(1) Standardisation of the presentation of engineering design plans submitted with an operational works (OPW), material change of use (MCU) or reconfiguring a lot (RAL) application is necessary for consistency in Council's and other service provider's records and desirable for facilitating Council's assessment.

General requirements

(2) Engineering drawings shall generally include, but not be limited to, the following:-

(a) cover sheet;

(b) locality plan;

(c) layout/staging (subdivision);

(d) earthworks, including roadworks and drainage;

(e) location of infrastructure (existing and/or proposed); and

(f) location of existing and proposed easements.

(3) The title block is to include:-

(a) estate name (if any);

(b) real property description and locality;

(c) developer's name and consultant's name(s);

(d) Council's development application number;

(e) scales and reference to AHD;

(f) plan number and sheet number;

(g) schedule and date of amendments;

(h) signed design certification, by an experienced designer;

(i) signed checking certification by a RPEQ engineer;

(j) north point; and

(k) amendments from a previous revision clouded, or otherwise highlighted.

(4) Scales used for all plans are to be those recommended by Standards Australia and Austroads, namely:-

(a) 1:1, 1:2 and 1:5 and multiples of 10 of these scales; or

(b) although not preferred, the scales 1:25 will be accepted and 1:125 and multiples and submultiples of 10 of these scales.

(5) **Table SC 6.14.2A (Scales for typical plans)** details Council's requirements with regard to preferred scales for streets and roadworks.

Table SC6.14.2A Scales for typical plans

Category	Typical examples	Scales
General	Overall layout plans	1:1000 or 1:500
	Longitudinal sections - horizontal	1:1000 or 1:500
	Longitudinal sections - vertical	1:100 or 1:50
Intersections, cul-de-sacs and slow points	Details	1:200, 1:100 or 1:250
	Cross sections	1:100
	Engineering details	1:20 or 1:10

(6) Linear dimensions on all roadwork plans are to be in metres, with the exception of some detail plans of small structures (e.g. manholes) and some standard plans (e.g. kerb and channel), which may be in millimetres.

(7) Cross section intervals are to:-

(a) be provided to roads at 20 metre intervals, with further subdivision of 10 metre to 5 metre intervals where necessary due to horizontal or vertical curvature;

(b) be shown at proposed culvert locations on rural roads;

(c) show culvert dimensions, levels and cover; and

(d) show cross sections of driveways where access profiles need level control.

(8) Chainages on plans shall be expressed to a minimum of 0.01m and generally commence on the bottom left hand corner and increase to the right.

(9) Levels shall be reduced to AHD. Reduced levels of road works, stormwater drainage, bench marks and reference pegs including PSMs are to be expressed to three decimal places (i.e. 0.001m).

(10) Grades for roads shall be shown to two significant figures and for pipes, three significant figures.

Requirements for specific plans

(11) The locality plan is to:-

(a) be at a scale of 1:25000;

(b) locate the subdivision in relation to adjacent towns, main roads, major streets, etc; and

(c) be included on layout/staging plan for large jobs or roadworks and drainage plan for smaller jobs.

(12) Layout/staging on plans are to include:-

(a) for large subdivisions, the relationship of all new roads to each other and to existing roads adjoining the subdivision;

(b) for small subdivisions, where all new roads can be shown on one detailed plan, the layout plan may be omitted; and

(c) where development is to be carried out by stages, the boundaries of proposed stages with stages identified by numbering and the method of connection (i.e. walkways, bikeways) between stages.

(13) Earthworks on plans are to include:-

(a) a legend;

(b) existing site contours and finished surface levels and contours;

(c) limits and levels of major lot cut and fill - distinguished by hatching and/or finished surface levels (FSLs) at corner of lots;

(d) fill quantities;

(e) location of cut and fill batters relative to lot boundaries;

(f) location and levels of retaining walls (if required);

(g) batter slopes;

(h) defined flood level (if appropriate);

(i) flood fill level (if appropriate); and

(j) planned locations of acid sulfate soils treatment as linked to an Acid Sulfate Soils Management Plan (refer to **Planning scheme policy for the acid sulfate soils overlay code** in the planning scheme).

Note—for small subdivisions, the earthwork details may be included on the roadworks and drainage plans.

(14) Road works and drainage on plans are to include:-

(a) a legend;

(b) road reserve boundaries;

(c) lot numbers and boundaries, both existing and proposed;

(d) centreline, or other construction line;

(e) chainages on centreline or construction line;

(f) bearings of the centreline or construction line;

(g) tangent point chainages of each curve;

(h) radius, arc length, tangent length and secant distance of each curve;

(i) chainage and the intersection point of road centrelines or construction lines;

(j) kerb lines, kerb radii, and chainage of all tangent points of the kerb line;

(k) edge of pavement, where no kerb is to be constructed;

(l) dimensioned road reserve, footpath, pavement widths and bikeways, where these differ from the standard cross section;

(m) existing contours/levels and finished surface levels, highlighting cut and fill areas;

(n) drainage catchment boundaries and identification reference (may be shown on separate catchment plan);

(o) drain line locations, diameters and identification;

(p) manhole locations, inlet and outlet invert levels and identification on long sections;

(q) gully locations and devices;

(r) location of proposed new utilities and existing utilities or other existing works within the site;

(s) location and levels of bench marks;

(t) north point; and

(u) line marking and signing (may be shown on separate plans).

(15) Longitudinal sections of roads on plans are to include:-

(a) chainages;

(b) existing surface or peg levels;

(c) design road centreline and kerb lip levels or kerb levels;

(d) design grades;

(e) chainages and levels of grade intersection points;

(f) chainages and levels of tangent points of vertical curves;

(g) chainages and levels of crest and sag locations;

(h) lengths and radii of vertical curves;

(i) super elevation diagrams showing transition lengths and rate of rotation;

(j) road classification with ESAs;

(k) minimum or nominal AC surfacing and pavement thicknesses;

(l) location of other services with cross roads; and

(m) a sight distance diagram for each direction of travel where warranted.

(16) Cross sections on plans are to include:-

(a) road reserve width;

(b) pavement widths;

(c) verge widths;

(d) crossfalls of pavement and verges;

(e) pavement depth - minimal or nominal;

(f) type of kerb and channel;

(g) type of pavement surfacing (include special surface treatments);

(h) subsoil drainage;

(i) footpaths;

(j) bikeways;

(k) above ground services;

(l) cross sections of roads;

(m) road reserve boundaries;

(n) pavement centreline and/or other construction line;

(o) natural ground; and

(p) design cross section.

(17) Longitudinal sections of drains on plans are to include:-

(a) chainages;

(b) existing surface levels;

(c) design finished surface and invert levels;

(d) manhole chainages and offsets and inlet and outlet invert levels;

(e) distances between manholes;

(f) grade of each pipe (anchor blocks where required);

(g) diameter of each pipe length;

(h) class of each pipe length;

(i) hydraulic grade line and design storm frequency;

(j) manhole diameters and/or reference to separate detail drawing; and

(k) water quality treatment device locations.

(18) Inter-allotment drainage plans are to include:-

(a) location and size of inter-allotment drainage lines;

(b) invert and surface levels at pits;

(c) location and size of pits;

(d) location and size of house connections;

(e) pipe material details;

(f) lengths and grades to all inter-allotment drainage lines; and

(g) labelling of inter-allotment drainage pits and receiving stormwater structures.

(19) Drainage calculations and catchment plans are to include:-

(a) north point;

(b) a plan of the development showing the road and lot boundaries;

(c) existing (where changes may affect adjacent properties) and finished surface contours (in different line types) at an interval close enough to define the terrain and allow definition of the sub catchments;

(d) contours that extend beyond the limits of the development site to fully define the limits of external catchments;

(e) subcatchment boundaries, labels and areas;

(f) a line diagram of drainage lines, manholes, gullies and outlet locations; and

(g) labelling of stormwater structures.

(20) Erosion and sediment control guidelines are contained in **Section SC6.14.4 (Site development management)** of this planning scheme policy.

(21) Electrical, lighting, telecommunications and intelligent transportation systems (ITS) drawings, where required, are to show:-

(a) legends, specification notes and compliance notes;

(b) location plan, drawing index and north point;

(c) road reserve boundaries, road names, lot numbers and property boundaries, footpaths and driveways;

(d) kerb lines or edge of pavement where no kerb is to be constructed;

(e) location of proposed new and existing utilities and all other existing services affecting the works;

(f) details of coordinated points of conflict with water, sewer, stormwater and all other services;

(g) cautionary notes for potential danger of conflict with electricity, telecommunications and all other services;

(h) chainages, locations and levels where required to define the work;

(i) cross sections, pit section details and detailed conduit plan/section details;

(j) detailed civil work, pit/conduit, pole, luminaire, switchboard, calculations and other required schedules;

(k) service point, network connection interface and district network service provider (DNSP) coordination details;

(l) single line diagrams and controls schematics;

(m) lighting isolux diagrams;

(n) traffic signals sequencing diagrams;

(o) compliance and certification schedules; and

(p) general arrangements of main switch boards and associated electrical equipment.

SC6.14.2 Road infrastructure

SC6.14.2.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance on the policy and standards required in relation to the provision of road infrastructure for new development in order to ensure transport infrastructure design construction satisfies Council's requirements;

(b) ensure environmental and safety expectations are met; and

(c) make adequate provision for persons with disabilities.

SC6.14.2.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Landslide hazard and steep land overlay code, Transport and parking code** and the **Works, services and infrastructure code**.

(2) This section is structured as follows:-

(a) **Sections SC6.14.2.1** and **SC6.14.2.2** provide the framework;

(b) **Sections SC6.14.2.3** to **SC6.14.2.5** provides the requirements and procedures for achieving the outcomes of the **Landslide hazard and steep land overlay code, Transport and parking code** and the **Works, services and infrastructure code** and to achieve the purpose of this section of the planning scheme policy; and

(c) **Section SC6.14.2.6** contains guidelines for achieving compliance with this section of the planning scheme policy.

SC6.14.2.3 Transport and road hierarchy

(1) Council's adopted road hierarchy is shown on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** in the **Transport and parking code**.

(2) The functions, roles and objectives of the various elements of the road hierarchy are detailed in **Tables SC6.17A to SC6.17E** of the **Planning scheme policy for the transport and parking code**.

SC6.14.2.4 Geometric and engineering design

(1) The design characteristics and requirements of the various road and street types are detailed in **Tables SC6.17B to SC6.17E** of the **Planning scheme policy for the transport and parking code**, including:-

(a) minimum reserve width;

(b) design speed;

(c) stopping and sight distance requirements;

(d) maximum traffic volume;

(e) number of general traffic lanes;

(f) vehicle property access;

(g) transit/bus lanes;

(h) on road cycling provisions;

(i) pathway facilities;

(j) pedestrian and cycle crossing treatments;

(k) on street parking;

(l) provision for public transport;

(m) intersections (restrictions, minimum spacing, etc.);

(n) intersection treatments;

(o) provision for turning traffic;

(p) medians;

(q) desirable and absolute maximum grades;

(r) longitudinal drainage;

(s) freight and dangerous goods route characteristics;

(t) LATM treatments; and

(u) street lighting categories.

(2) Type cross sections for streets and roads, showing required carriageway and verge elements, are included in **Appendix SC6.17A (Typical street and road cross sections)** of the **Planning scheme policy for the transport and parking code**.

(3) Where there is any discrepancy between guidelines:-

(a) the requirements specifically detailed in this section take precedence over other published guidelines, standards, or references; and

(b) the order of precedence of published guidelines, standards, or references will be in accordance with the order those publications are listed in **Section SC6.14.2.6** of this planning scheme policy.

(4) Compliance with Acceptable Outcome **AO4.4** of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** of the **Transport and parking code** may be demonstrated by the preparation and submission of a road safety audit:-

(a) certified by a qualified road safety auditor; and

(b) complying with Austroads Guide to Road Safety for all stages of the design and construction and operation of the transport infrastructure.

(5) **Table SC6.14.2A (Street and road works)** details Council requirements with regard to street and road works.

Table SC6.14.2A Street and road works

Element	Requirements
General	• Street and road works comply with:- o DTMR requirements, where access is proposed onto a State controlled road, or where the proposed development is likely to have significant impact on a State controlled road; o Austroads Guide to Road Safety for all stages of the design and construction and operation of the transport infrastructure; and o all other relevant guidelines detailed in **Section SC6.14.2.6**.

<table>
<tr><th>Element</th><th>Requirements</th></tr>
<tr><td>Horizontal and vertical alignment and grade</td><td>

Construct all changes to horizontal alignment with curves.
Vertical alignment to comply with:-

DTMR design manuals; and
Austroads design manuals.

Where there is kerb and channel, provide sag vertical curves at low points (with changes in grade ≤ 2%) with vertical curves of radii.
With regard to sag vertical curves on grade, instantaneous changes of grade (i.e. no vertical curve) will be considered where change of grade is <30/V% (where V is the design speed in km/h).
At intersections, the tangent point of the vertical curve is to be outside the line of the through road and have a minimum length of 10 metres.
A concrete invert is to be provided where the change in grade is <6%.
Vertical curves shall not mask the commencement of horizontal curves.

</td></tr>
<tr><td>Cross fall</td><td>

3% cross fall for asphalt and bitumen seal roads.
5% cross fall for unsealed shoulders.
Cross fall may be varied below general requirements if contoured design detail is provided to demonstrate adequate surface drainage of the pavement.

</td></tr>
<tr><td>Medians and islands</td><td>

Avoid split level roads.
Provide central medians on sub-arterial main streets to reduce delays and conflicts from queuing vehicles in the middle of the road and accompany with intersection upgrades for increased u-turns from eliminated right turns.
Median kerbs to be SM3 type with 200mm wide decorative concrete backing strip, or SM5 where not required for landscape character.
All medians comply with:-

Austroads design manuals; and
MUTCD for delineation and line marking, except for internal residential streets where line marking and signage is reduced for residential amenity, subject to noses of all islands/medians being adequately lit.

<table>
<tr><th>Element</th><th colspan="2">Requirement</th></tr>
<tr><td>Residual median width</td><td colspan="2">≥1.2 metres</td></tr>
<tr><td rowspan="3">Cross fall</td><td>Desirable</td><td>≤1 in 6 on landscaped medians on divided roads</td></tr>
<tr><td>Absolute maximum</td><td>1 in 4 on landscaped medians on divided roads</td></tr>
<tr><td>Pavement at openings</td><td>≤ 5%</td></tr>
<tr><td rowspan="2">Construction</td><td colspan="2">Where islands are designed to be mountable, provide full depth kerb into the pavement layer or form and pour a monolithic reinforced concrete island</td></tr>
<tr><td colspan="2">In existing pavements, cut back the asphalt surface a minimum of 300mm and reinstate to a minimum depth of 40mm</td></tr>
<tr><td rowspan="3">Surface</td><td>If >1 in 4 cross fall</td><td>Concrete</td></tr>
<tr><td>If <2 metres wide</td><td>Hard surfaced, with a texture and colour which will provide high level of contrast to the traffic carriageway</td></tr>
<tr><td>If ≥ 2 metres wide</td><td>Landscaped</td></tr>
<tr><td rowspan="2">Landscaping</td><td colspan="2">Ensures sight distances are not compromised at any stage, from initial planting to maturity</td></tr>
<tr><td colspan="2">Incorporates perimeter subsoil drainage to the underground drainage system</td></tr>
</table>
</td></tr>
<tr><td>Verges</td><td>

Accommodate WSUD devices designed and constructed to ensure they do not negatively impact on verge functions such as property access, pathways and general pedestrian movement (including on residential street verges where a pathway may not be required), street trees and other services.
Verges comply with:-

Council’s Standard Engineering Drawings for location of services and utilities and cross fall ≥ 1 in 6;
Appendix SC6.17A (Typical street and road cross sections) of the Planning scheme policy for the transport and parking code for widths and pathways, modifications to standard profiles may be appropriate in existing road reserves, to address issues with retainment, property access, pedestrian access and stormwater drainage;
the requirements of Section SC6.14.3 (Stormwater management) of

</td></tr>
</table>

Element	Requirements
	this planning scheme policy relating to WSUD devices; o SEQ Healthy Waterways design guidelines for WSUD devices; o Council's *Flooding and Stormwater Management Guidelines*; o incorporate planning considerations identified in **Table SC6.17P** of the **Planning scheme policy for the transport and parking code**. • Achieve minimum verge widths by:- o increasing the width to accommodate any WSUD elements; and o setting back or truncating allotment boundaries. • Width may be reduced to an absolute minimum of 3 metres, if on access places, access streets or neighbourhood collector streets, adjacent to speed management devices and a pathway is not required. • Avoid vertical retainment requiring handrails or barriers. • Fully turf, or landscape all verges fronting newly created streets, roads or allotments, including the provision of street trees.
Road furniture	• Comply with:- o DTMR's Road Planning Design Manual for warrants for installation and location of guardrails; o DTMR standards for installation of guardrails (guardrails to be in accordance with type specified for Sunshine Coast Council area); and o MUTCD for road edge guide post posts at all locations where kerb and channel is not constructed.
Electrical, lighting and telecommunications	• All electrical, lighting and telecommunications infrastructure shall comply with the following:- o Legislated requirements (including *National Construction Code*, *Electrical Safety Act 2002* and *Telecommunication Act 1997*); o Australian Standards, including *AS/NZS 3000 Electrical installations*, *AS/NZS 1158 Lighting for roads and public spaces* and referenced standards; o Telecommunications carrier regulations; o *Sunshine Coast Council Planning Scheme 2014*, with particular reference to Part 7 Local Plans and any other Parts, Schedules Appendices or Plans with electrical, lighting or telecommunication's implications; o Sunshine Coast Council Urban Lighting Master Plan; o IPWEA Standards, Specifications and Engineering Drawings with particular reference to RS-100 and RS-101; o DTMR Standards, Specifications and Engineering Drawings for works performed on State Controlled Roads or elsewhere as nominated by Council; o Energex Standards, Specifications and Engineering Drawings where works are performed on Electricity Network Infrastructure or elsewhere as specified; o Telecommunication specific Standards, Specifications and Engineering Drawings where works are performed on Telecommunications Network Infrastructure or elsewhere as specified; o Civil Aviation Authority for lighting in the vicinity of Airports; and o SCC Traffic Signals Installation Guide. • Lighting shall generally be as follows:- o Provided to enhance the safety, usability and/or aesthetic of the environment within which it is to be installed; o Coordinated to suit the overall operational and functional intent of the space, generally in accordance with the guidance and recommendations provided in *AS/NZS 1158*, together with broader environmental considerations associated with the area within which it is to be installed; o Lighting levels should be appropriate to the character and function of the area, taking into consideration neighbouring properties, wildlife and other environmental sensitivities as applicable; o Lighting devices should be selected to minimise energy consumption; o The principles and intent of *AS/NZS 4282:2019* to minimise the obtrusive effects of outdoor lighting. Specific compliance requirements will be at Council's discretion; and o Consider the principles and intent of the *National Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds*.

<table>
<tr><th>Element</th><th>Requirements</th></tr>
<tr><td></td><td>

Electrical distribution infrastructure shall generally be as follows:-

Fully compliant with AS/NZS 3000 and Energy QLD requirements (as applicable);
Equipment shall be suitable for installation within the environment in which it is to be installed, including consideration of public safety, material performance in coastal environments, maintainability, etc.;
Electrical provisioning shall factor in considerations for future flexibility/expansion wherever possible; and
Coordinated with other services and elements to minimise overall site disruption wherever possible.

</td></tr>
<tr><td>Line marking</td><td>

Comply with:-

MUTCD, including augmentation of line markings, chevrons and islands with retro reflective pavement markers;
Council’s Standard Engineering Drawings; and
the materials specified herein, noting that intersections with high turning volumes, may require thermoplastic materials for all pavement and line marking.

<table>
<tr><th>Material</th><th>Lines</th></tr>
<tr><td>Paint</td><td>Edge lines
Continuity lines
Turn/direction arrows
Diagonals/chevrons
Cycle lanes in accordance with DTMR supplementary Specification A (Cycleway Coloured Surface Coatings)</td></tr>
<tr><td>Thermoplastic</td><td>Cycle lane symbols
Zebra crossings
Stop bars and give way lines
Holding and exit lines (roundabouts)
Turn lines</td></tr>
</table>
</td></tr>
<tr><td>Signage</td><td>

Complies with:-

MUTCD including advance street name and direction signs on district collector streets, sub-arterial and arterial roads; and
Council’s Standard Engineering Drawings, with street and road name signs at all intersections, with a minimum height clearance of 2.2 metres.

Provide with loc-socket fittings and vandal proof bolts and class 1 anti-graffiti coating.
Use standard posts (not federation cast alloy style).

</td></tr>
<tr><td>Utilities and service crossings</td><td>

Comply with Council’s Standard Engineering Drawings for utility services within verge areas.
Bore services under any existing sealed street or road or paving.
Cross streets and roads at right angles, with any variance approved by Council.
Where existing pavements are disturbed for installation, reinstate the street or road in accordance with Council’s Standard Engineering Drawing to match the existing pavement and surfacing.
Kerb markers at every service utility/kerb crossing.
Utility services on Council owned infrastructure (e.g. culverts, bridges, boardwalks) or Council owned or controlled land, may be permitted subject to:-

the relevant service authority indemnifying Council against future costs of relocation; and
works being undertaken at no cost to Council, and in accordance with Council’s specific requirements.

</td></tr>
<tr><td>Fire Management</td><td>

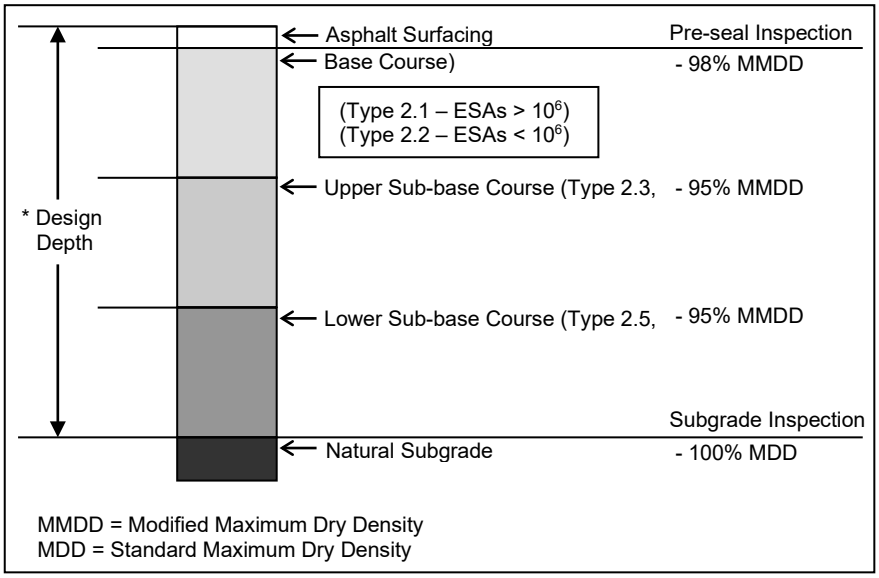
Road interfaces should be used for provision of fire management buffers when adjacent to bushland.
Access to fire trails from roads should provide a dedicated formalised restricted access. Council’s Open Space Landscape Infrastructure Manual (LIM) outlines the standards for heavy duty gates and signage.

</td></tr>
</table>

SC6.14.2.5 Road pavements and drainage

Table SC6.14.2B (Street and road pavements and drainage) details Council requirements with regard to pavements and drainage.

Table SC6.14.2B Street and road pavements and drainage

Element	Requirement
General	• Determine on the current and future hierarchy of the surrounding transport network, and the impacts of the proposed development on it. • Match existing pavement widths, where works are required on, or to extend an existing street or road and the existing pavement width is greater than specified herein
Design of flexible pavements	* The depth at which the joint subgrade inspection will be undertaken. The subgrade shall exhibit no visible signs of deformation under proof-rolling by a loaded water cart.  MMDD = Modified Maximum Dry Density MDD = Standard Maximum Dry Density • Comply with:- o the diagram above; o Austroads Guide to Pavement Technology Part 2: Pavement Structural Design; o DTMR Pavement Design Manual; o the four (4) day soaked California Bearing Ratio (CBR) value of the natural subgrade material (CBR tests are to be representative of the subgrade over the various lengths of road at the weakest material between 0-600mm below subgrade level); o minimum pavement thickness:- ▪ at least the minimum specified herein; ▪ base course 125mm; ▪ upper subbase course 125mm; ▪ lower subbase course (where required) 100mm; and ▪ full depth on shoulders (where the edge of the carriageway is not defined by kerb and channel); and o Austroads design manuals for tapers to existing construction, based on the design speed and constructed to the same standards as the road pavements. • Cement stabilised base or subbase courses are not preferred for new road construction. • If the subgrade at the time of construction will not support a load test vehicle without deformation, establish a working platform, where the design of pavement depth is based on a subgrade CBR of 3, ignoring the depth of subgrade replacement or improvement, comprising: o excavation of a suitable depth of subgrade material (minimum 250mm) and replacement with a minimum CBR 15 material; or o lime stabilisation of the subgrade; or o another method approved by Council. • Temporary turnarounds (e.g. at a development stage boundary) to be compacted gravel, minimum 150mm deep.

<table>
<tr><th>Element</th><th>Requirement</th></tr>
<tr><td>Design traffic loading and pavement thickness</td><td>

Design traffic loading using the minimum specified herein and increased:-

for staged development (where construction traffic for subsequent stages will use pavements constructed in preceding stages), to account for construction traffic, or reconstruct prior to the acceptance of works “off maintenance” of the last contributing stage of development; and
for industrial development, based on detailed traffic analysis, with a 25 year design pavement life.

<table>
<tr><th>Street/road</th><th>Minimum Design Traffic Loading (Equivalent Standard Axles)</th><th>Minimum Pavement Thickness (mm) (Excluding surfacing)</th><th>Asphalt Surfacing Minimum Thickness (mm)</th></tr>
<tr><td>Urban</td><td></td><td></td><td></td></tr>
<tr><td>Access place/laneway</td><td>5×10^4</td><td>250</td><td>35</td></tr>
<tr><td>Access street</td><td>1×10^5</td><td>250</td><td>35</td></tr>
<tr><td>Mixed use access street</td><td>6×10^5</td><td>275</td><td>35</td></tr>
<tr><td>Neighbourhood collector street</td><td>9×10^5</td><td>300</td><td>35</td></tr>
<tr><td>Neighbourhood collector street (bus route)</td><td>6×10^6</td><td>300</td><td>50</td></tr>
<tr><td>Neighbourhood mixed use collector street</td><td>6×10^6</td><td>300</td><td>50</td></tr>
<tr><td>District collector street</td><td>1×10^7</td><td>350</td><td>50</td></tr>
<tr><td>District main street</td><td>1.5×10^7</td><td>350</td><td>50</td></tr>
<tr><td>Sub-arterial or greater</td><td>Requires traffic assessment</td><td>Mechanistic or FEM design</td><td>50</td></tr>
<tr><td>Rural and rural residential</td><td></td><td></td><td></td></tr>
<tr><td>Access street/place</td><td>1×10^5</td><td>250</td><td>35</td></tr>
<tr><td>Neighbourhood collector</td><td>1×10^6</td><td>300</td><td>50</td></tr>
<tr><td>District collector</td><td>5×10^6</td><td>300</td><td>50</td></tr>
<tr><td>Sub-arterial road</td><td>1.5×10^7</td><td>350</td><td>50</td></tr>
<tr><td>Industrial</td><td></td><td></td><td></td></tr>
<tr><td>Industrial access street</td><td>5×10^6</td><td>350</td><td>50</td></tr>
<tr><td>Industrial collector street</td><td>1×10^7</td><td>350</td><td>50</td></tr>
<tr><td>Roundabouts</td><td></td><td></td><td></td></tr>
<tr><td>Minor</td><td>$<1 \times 10^6$</td><td>300</td><td>50</td></tr>
<tr><td>Major collector roads or above</td><td>$>1 \times 10^6$</td><td>Full depth asphalt (mechanistic or FEM design) – or concrete</td><td></td></tr>
<tr><td>Other</td><td></td><td></td><td></td></tr>
<tr><td>Carparks (minimum)</td><td>6×10^5</td><td>275</td><td>35</td></tr>
<tr><td>Bus bays (indented)</td><td></td><td>Concrete – min 175mm N32</td><td></td></tr>
</table>
</td></tr>
<tr><td>Surfacing of flexible pavements</td><td>

Asphaltic surfacing:-

at least the minimum thickness specified herein;
BCC Type 2 Austroads AC10 asphalt for up to 35mm thickness; and
BCC Type 3 or Austroads AC14 asphalt for >35mm thickness.

All streets and roads with asphaltic surfacing shall be under laid with a 7mm single seal (C170).
Sprayed seals may only be considered where matching existing works in rural areas. The standard design is a 14/7 double seal (C170), with all aggregate to be pre-coated.
Segmental paving is not an appropriate surface material for road pavements for Council road assets, unless specifically identified in a relevant centres design palette and approved by asset custodians.

</td></tr>
<tr><td>Concrete pavements</td><td>

Seek approval in principle prior to detailed design.
Comply with Austroads Guide to Pavement Technology.
40 year pavement design life.
Skid resistant surface (exposed aggregate finishes are only accepted where appropriate crushed/angular aggregates are specified).
Use full depth oxide coloured and/or exposed concrete, for thresholds and other areas where a contrast is required. Surface treatments are not accepted.
Surface pattern (or pattern formed by the joint of any surfacing) shall not cause confusion or be contradictory to the intended traffic flow.

</td></tr>
</table>

Element	Requirement
	• Colours and textures are to provide sufficient contrast with line marking and TGSI's.
Kerb and channel	• Comply with **Table SC6.17B (Urban transport corridors)**, **Table SC6.17C (Rural transport corridors)** and **Table SC6.17D (Industrial transport corridors)** of the **Planning scheme policy for the transport and parking code**. • All kerb and channel and barrier kerb shall use 32MPa compressive strength concrete and be placed using the slip form wet mix placement method (not slurry topped dry mix zero slump extruded). • Barrier kerb is required where parking is to be restricted on the verge and to protect street trees. • Barrier kerb for all roads and streets adjacent to parks and areas of high pedestrian use or other hazards. • Concrete inverts in trafficable areas are to be reinforced N32 concrete. • Minimum 1 metre transition length from different kerb profiles. • Minimum 1m^2 grouted rock for scour protection at kerb end terminations.
Bridges and culverts	• Decking preparation in accordance with MRTS 84 including surfacing with a minimum 50mm asphalt wearing course.
Subsurface drainage	• Comply with Council's Standard Engineering Drawings and to extend from underside of kerb and channel to a minimum of 50mm below lower subbase. • Provide cleaning points:- o at the end of each subsoil drainage line; o at each stormwater pit; and o at 50 metre intervals longitudinally. • Provide screw caps and subsoil drainage line pit entries at the downstream side of all on grade stormwater pits. • In minimum depth pavements, install subsoil drainage after the placement of the subbase.
Surface drainage	• Comply with:- o QUDM (neighbourhood and district collector streets and all roads are major roads and all other streets are minor roads when using QUDM); o Healthy Waterways WSUD Guidelines; o Council's *Flooding and Stormwater Management Guidelines*; o DTMR Road Drainage Design Manual; o **Section SC6.14.3 (Stormwater Management)** of this planning scheme policy, including provision of overland flow pits at all sag locations to a lawful point of discharge; o **Table SC6.17B (Urban transport corridors)**, **Table SC6.17C (Rural transport corridors)** and **Table SC6.17D (Industrial transport corridors)**, of the **Planning scheme policy for the transport and parking code** identifying the streets and roads where longitudinal drainage can typically be conveyed via swales. Preference to be given to piped drainage in activity centres and situations where there is medium and high turnover parking adjacent to pathways; o Council's Standard Engineering Drawing for kerb adaptors: ▪ positioned to avoid conflict with services; and ▪ shall be full height cast aluminium; o Council's Standard Engineering Drawing for gully pits, to be lip in line type and located:- ▪ on a straight where possible; ▪ to avoid clashes with other services and future driveway locations; and ▪ not on the apex of curves, particularly traffic calming deflected tee curves; and o Council's Standard Engineering Drawing for drainage pipes from the kerb adaptor to the property boundary, where a concrete pathway is proposed. • Ensure the downstream drainage system is not adversely affected. • Where the downstream drainage system does not have capacity to accept flows, undertake further investigation to determine upgrades or alternative treatments. • Locate the stormwater line from structure to structure beneath the kerb and channel. • Avoid skewing pipes across the street or road. • Provide:- o anti-ponding pits with a side entry, chamber and grate; o a concrete edge strip at the edge of the sealed carriageway, where

Element	Requirement
	swales are used on rural residential streets; o diversion drains, spaced 30-100 metres apart, depending on grade, soil type and diversion opportunities; o concrete or stone pitched chutes at outlets on steep embankments and batters; o erosion protection in all swales and catch drains liable to scour, which may include concrete inverts on steep grades; o catch drains/banks at the top of cut and fill batters; o swales that are diverted away from the carriageway at close intervals to minimise scour; and o swale outlets:- ▪ clear of likely building sites; and ▪ with energy dissipation and flow distribution devices before discharge of the stormwater into vegetated areas. • Kerb and channel may be required in cuttings and other particular locations, in lieu of swales.

SC6.14.2.6 Guidelines

(1) For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) Council's standard specifications and Standard Engineering Drawings (available on Council's website https://www.sunshinecoast.qld.gov.au/Development/Development-Tools-and-Guidelines/Infrastructure-Guidelines-and-Standards);

(b) DTMR Publications, including:-

(i) *Road Planning and Design Manua*l;
(ii) *Road Drainage Manual*;
(iii) *Manual of Uniform Traffic Control Devices*; and
(iv) *Pavement Design Manua*l.

(c) AUSTROADS Publications, including:-

(i) *AUSTROADS Guide to Road Design*;
(ii) *AUSTROADS Guide to Road Safety Part 6 – Road Safety Audit*;
(iii) *AUSTROADS Guide to Traffic Management*;
(iv) *AUSTROADS Guide to Pavement Technology*; and
(v) *AUSTROADS Design Vehicles and Turning Path Templates.*

(d) IPWEAQ Publications:-

(i) *Complete Streets: Guidelines for Urban Street Design*; and
(ii) *Queensland Streets: Design Guidelines for Subdivisional Streetworks.*

(e) *Queensland Urban Drainage Manua*l;

(f) South East Queensland Healthy Waterways Partnership Publications, including:-

(i) *WSUD Technical Design Guidelines for South East Queensland Construction*; and
(ii) *WSUD Deemed To Comply Solutions for SEQ.*

(g) *Energex Design Guide – Design of Public Lighting Installations*; and

(h) Australian Standards, including:-

(i) *AS1158 Public lighting (public walkways)*;
(ii) *AS1428 Design for access and mobility*;
(iii) *AS2890 Parking facilities*;
(iv) *AS1100 Technical drawing;*
(v) *AS1170.1 Structural design actions – Permanent, imposed and other actions;*
(vi) *AS/NZ3000 Electrical installations (known as the Australian/New Zealand wiring rules;*
(vii) *AS3600 Concrete structures;*
(viii) *AS3727 Pavements;*
(ix) *AS/NZ4282 Control of the obtrusive effects of outdoor lighting;* and
(x) AS/ACIF S009:2006 Installation requirements for customer cabling (Wiring rules).

(2) The following publication provides additional guidance regarding urban lighting:

(a) *Sunshine Coast Council – Urban Lighting Master Plan September 2016* – Version 2, Revision 3; and

(b) *National Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds January 2020.*

Note—relevant guideline documents in existence or available over the life time of this planning scheme policy are to be referenced and used where appropriate. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally.

SC6.14.3 Stormwater Management

SC6.14.3.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance on the policy and standards required in relation to the provision of stormwater infrastructure for new development; and

(b) ensure stormwater infrastructure design and construction satisfies Council's requirements and environmental and safety expectations.

SC6.14.3.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Stormwater management code** and the **Works, services and infrastructure code.**

(2) This section is structured as follows:-

(a) **Sections SC6.14.3.1** and **SC6.14.3.2** provide the framework;

(b) **Sections SC6.14.3.3** to **SC6.14.3.8** provides the requirements and procedures for achieving the outcomes of the **Stormwater management code** and the **Works, services and infrastructure code** and to achieve the purpose of this section of the planning scheme policy**;** and

(c) **Section SC6.15.3.10** contains guidelines for achieving compliance with this section of the planning scheme policy.

SC6.14.3.3 Design requirements – stormwater drainage systems

General

(1) The design of urban stormwater drainage systems is to be in accordance with the following guidelines with this order defining the precedence of any one document over another:-

(a) *Flooding and Stormwater Management Guidelines*, Sunshine Coast Council, 2020;

(b) QUDM;

(c) *Water Sensitive Urban Design Technical Design Guidelines prepared by Water by Design*; and

(d) *Australian Rainfall and Runoff* (ARR).

(2) The design of rural stormwater drainage systems is to be in accordance with the following guidelines with this order defining the precedence of any one document over another:-

(a) *DTMR – Road Drainage Manual*; and

(b) *Australian Rainfall and Runoff* (ARR).

(3) Drainage structures are to be in accordance with the IPWEAQ Standard Drawings.

(4) The QUDM landuse category corresponding to each urban planning scheme zone is to be in accordance with **Table SC6.14.3A (QUDM development categories by urban zone)**. The hydrologic methods for peak flow estimation are to be based on the methods specified in Council's *Flooding and Stormwater Management Guidelines* in preference to the methods specified in QUDM. The AEP for the minor and major event as well as the C_{10} value for each category is to also be in accordance with this Table. The AEP event is to include projected climate change effects at 2100.These values are representative of the ultimate development potential of a zoning and should be adopted for drainage design. For estimates of peak flows for pre-development/existing conditions, fi values are to be based on GIS analysis of existing site conditions.

Table SC6.14.3A QUDM development categories by urban zone

Planning Scheme Zone	QUDM Development Category	C_{10}	f_i	Minor Event AEP[4]	Major Event AEP[4]
Principal centre zone Major centre zone District centre zone Local centre zone	Central business and commercial	0.90	1.00	10%	1%
Low impact industry zone Medium impact industry zone High impact industry zone Waterfront and marine industry zone	Industrial	0.89	0.90	39%	1%
NA	Significant paved areas e.g. roads and carparks	0.89	0.90	NA	NA
Medium density residential zone High density residential zone Tourist accommodation zone	Urban residential - High density	0.89	0.90	10%	1%
Low density residential zone [1] Emerging community zone [1]	Urban residential - Low density	0.88	0.80	39%	1%
Rural zone Rural residential zone[2] Limited development (landscape residential) zone [2]	Rural or Rural residential	0.86	0.60	39%	1%
Open space zone Environmental management and conservation zone	Open space and parks, etc.	0.80	0.00	63%	1%
Sport and recreation zone Specialised centre zone Tourism zone Community facilities zone	Appropriate criteria for development in these zones will depend on the details of the proposal and will be subject to site-specific assessment				
Minor road <3000 AADT[3]	Kerb and channel flow – refer development category (minor event AEP) Cross drainage – 10%AEP				
Major road >3000 AADT[3]	Kerb and channel flow – 10%AEP Cross drainage – 2%AEP				

Notes –
1. If development within the Low density residential zone or Emerging community zone is denser than 20 dwellings per hectare then development is treated as QUDM development category Urban residential – High density
2. C_{10} and f_i parameters for the Rural residential zone, located within the Rural Residential Growth Management Boundary, apply to the whole of the lot (less any vegetation covenant). However, for the Limited development (landscape residential) zone and Rural residential zone, located outside the Urban Growth Management Boundary and the Rural Residential Growth Management Boundary, for all land outside of the building envelope the C_{10} and f_1 parameters are 0.82 and 0.2 respectively. For vegetation covenants, the parameters for the Environmental management and conservation zone apply
3. The design criteria apply to longitudinal drainage and cross-road drainage standards for local catchment flows only. For immunity standards for regional flooding refer to the **Flood hazard overlay code**. Higher standards for both regional and local catchment flood immunity may apply
4. The AEP is to include projected climate change effects at 2100

(5) Roofwater and allotment surface stormwater runoff (where relevant) within each lot is to be piped for the minor design storm and is to comply with *AS/NZS 3500.3 Plumbing and drainage Stormwater drainage* and QUDM.

Hydrological requirements

(6) Hydrologic estimates are to be undertaken in accordance with QUDM and ARR except as varied below:-

(a) rainfall intensities are to be obtained for the specific location being analysed and are to be in accordance with the recommendations of the Bureau of Meteorology (BoM) and ARR;

(b) a 20% increase in rainfall intensities above those supplied by BoM is to be applied in order to account for the effects of Climate Change; and

(c) methods as specified in the *Flooding and Stormwater Management Guidelines* released by Council.

Hydraulic requirements

(7) Hydraulic estimates of the drainage network are to be undertaken in accordance with QUDM and ARR except as varied below:-

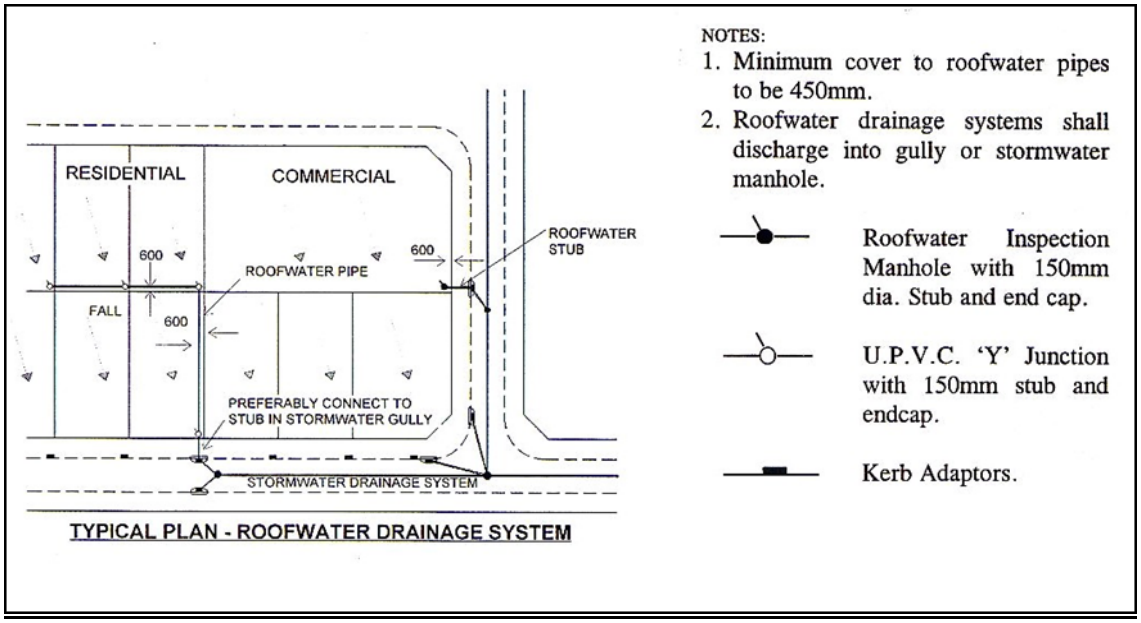
(a) a 800mm increase is to be applied to tailwater levels where discharges are to a tidal waterway in order to account for the effects of Climate Change; and

(b) hydraulic modelling of the major event is to be undertaken in sufficient detail to enable accurate levels to be provided to Council for the purposes of providing Flood Search results to future residents. This will generally imply 2-Dimensional modelling though simpler approaches may be acceptable on a case-by-case basis. This information is to be provided to Council as part of the lot table requirements of the flood hazard assessment and is to be certified by an RPEQ engineer. Refer to the **Planning scheme policy for the flood hazard overlay code**. Further guidance on lot table preparation is provided in the *Flooding and Stormwater Management Guidelines*.

Inter-allotment drainage and connections to existing Council system

(8) Inter-allotment stormwater systems or roofwater stormwater systems that take more than one allotment do not discharge to kerb and channel. The inter-allotment stormwater systems or roofwater stormwater systems are to be connected to a Council gully pit, field inlet or manhole to the satisfaction of Council. Roofwater systems may also connect via stub. Refer to **Figure SC6.14.3A (Inter-allotment stormwater locations)**. Inspection pits or field inlets (constructed at the low point of each allotment) are to be provided at regular intervals along the roofwater stormwater system and shall be in accordance with IPWEAQ Standard Drawing DS-0110.

Figure SC6.14.3A Inter-allotment stormwater locations



(9) A connection point at the lowest point is to be provided for each property. This connection point is to be a minimum of 90mm in diameter for Urban residential - Low density, 150mm for Urban residential - High density and 225mm for commercial or industrial development as defined in QUDM.

(10) To reduce sudden increases in roadway flow widths, discrete lot stormwater runoff discharges (that is not inter allotment drainage) in excess of 50 litres per second for the 5% AEP storm event are to be piped to a Council stormwater drainage system (i.e. gully (catchpit), access chamber, etc.) and not to the kerb and channel. All stormwater discharges to the kerb and channel will be subject to proving existing kerb and channel capacity.

(11) Where there is a requirement for the stormwater management system to connect to an existing Council asset, the connection is to:-

(a) not cause structural damage to or failure of the existing asset;

(b) be appropriately sealed; and
(c) not interfere with or reduce the intended purpose of the existing asset.

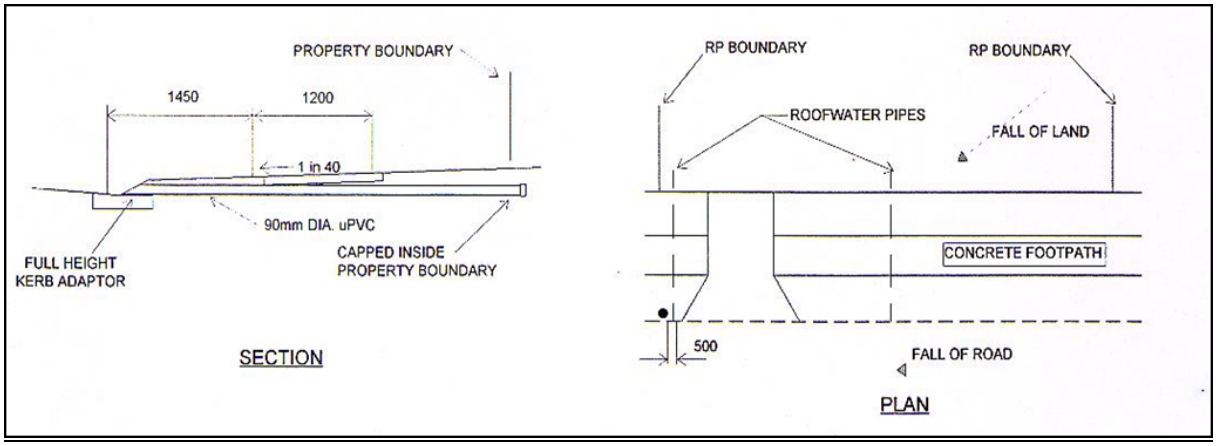
(12) For connecting pipes into enclosed stormwater networks, connections are to be made only to gully pits, manholes and field inlets. The connection is to be core-drilled and sealed with a two-part epoxy sealant.

(13) For the Urban residential - Low density development category, the following applies:-

(a) for allotments which do not fall towards the road reserve are to be provided with a rear of allotment roofwater and stormwater system in accordance with QUDM. A minimum Level 3 is required for all residential development (except rural and rural residential). This drainage system will be required regardless of the downhill property type; and

(b) for allotments which do fall towards the road reserve, two kerb adaptors are to be provided and are to conform to IPWEAQ Standard Drawing R-0081. Refer to **Figure SC6.14.3B (Residential outfalls towards the road)**. One should be located at the centre of the block and the other 500mm from the common boundary on the low side. Where a concrete footpath is to be constructed a 90mm diameter UPVC pipe is to extend from the adaptor to the property boundary in accordance with Council's Standard Engineering Drawings.

Figure SC6.14.3B Residential outfalls towards the road



(14) For the Urban residential - High density, central business, commercial and industrial development categories, the following applies:-

(a) when creating lots by subdivision for future development into the above uses, temporary inter-allotment drainage consisting of a field inlet and swale drains on the low side of the lot are to be provided so that excessive surface flows do not traverse the verge or flow to neighbouring properties. The field inlet is to connect to an underground point of connection to the trunk stormwater system which is sized for the future development category of the lot;

(b) the point of connection for each lot is to be provided generally at the lowest point and is to be piped and connect to the trunk drainage system at a manhole or gully. A stub is to be provided in new stormwater networks for this purpose, located 600mm within the front property boundary and 1.2m off the side boundary for lots which fall towards the street. Refer to **Figure SC6.14.3A (Inter-allotment stormwater locations)**;

(c) when developed into the ultimate landuse, these lots are to be provided with underground drainage for surface and roofwater corresponding to QUDM inter-allotment drainage category IV or V, dependent on scale. The inter-allotment drainage system is to connect directly to public land and/or infrastructure – the use of level spreaders and/or infiltration devices in lieu of a direct connection is not permitted; and

(d) with the exception of systems that manage the runoff from basement ramps (with no additional discharge onto the ramp), the use of pumped drainage systems will not be accepted due to the risk and consequences of failure and the on-going maintenance required for the system to function.

(15) For the Rural or Rural residential development category, the following applies:-

(a) for land in the Rural zone or Rural residential zone, stormwater runoff from the road reserve may be discharged directly onto the subject subdivision should it be impossible to direct stormwater to a watercourse;

(b) a stormwater reserve or easement will be required over the stormwater outlet from the road reserve. A property note informing property owners that stormwater discharge will occur during rainfall and that the amenity of their allotment could be reduced, may be applied;

(c) for Rural residential subdivisions, an inter-allotment drainage system is to be provided in order to protect the building envelopes of down-slope lots from runoff generated from upslope lot or external catchments. The drainage system is to consist of swale drains located in the upslope lot (where possible). The drains are to be sized to convey the 1%AEP CC event and are to be contained in a drainage easement where they flow through any private land other than the land in which the runoff is generated; and

(d) access to rural residential and rural building sites is to be flood free during a 39% AEP event and is to ensure that a low hazard criteria is met in the DFE. The safety of the site can be determined by the following equation: Low Hazard: $D + 0.3V \leq 0.8$ where D = depth of floodwater and is to be less than 0.8metre and V = velocity of floodwaters and less than 2m/sec.

Open Channels

(16) Existing waterways and buffer widths are to be retained and rehabilitated in accordance with the requirements of the **Biodiversity, waterways and wetlands overlay code**. The extent of flooding and immunity of development adjacent to waterways is to be in accordance with the requirements of the **Flood hazard overlay code** and the **Planning scheme policy for the flood hazard overlay code.**

(17) Any works within receiving waters, including natural channel design, are not to be counted as a treatment device in any stormwater treatment train models due to uncertainty relating to efficacy and the time required to achieve design performance.

(18) The design and construction of new open channels is to follow natural channel design principles and are to be in accordance with the *Brisbane City Council (BCC) Natural Channel Design Guidelines* and QUDM, with particular attention to the structural design requirements. Specific aspects to be addressed include:-

(a) channels are to be provided as either QUDM Type C4, C5, C6 or C7 densely vegetated channels. The choice of channel type is to be based on contributing catchment area in accordance with Table 9.2.1 of QUDM;

(b) use of rock or concrete in the base on the channel is to be avoided except where necessary to address channel stability and scour. Appropriate lining of the channel base is to be provided dependent on estimated velocities during establishment, with the preferred lining being either mulch covered by biodegradable netting or bio-degradable matting. Where rock is required due to expected velocities then rock is to be hand placed (not dumped) and plantings with suitable native species, so as not to impact on design flow rates, are to be implemented between the rock voids (pocket planting) such that a fully vegetated channel will establish;

(c) suitable native vegetation are to be incorporated into the channel and riparian batters to create fully closed ground cover;

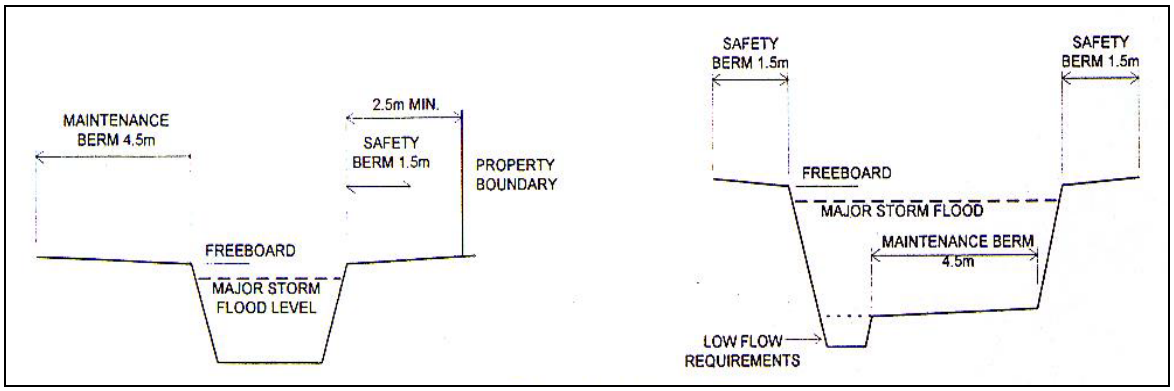
(d) Channels are to all be free draining with preferred minimum longitudinal grade of 0.5%.

(e) hydraulic capacity should be designed based on a minimum Manning's roughness value of 0.15 although greater values may be directed by Council where deemed appropriate. A sensitivity analysis should always be undertaken for a Manning's n 50% higher than design roughness to ensure the freeboard is not exceeded and for a Manning's n 50% lower than design roughness to ensure scour thresholds are not exceeded and hydraulic jumps do not occur; and

(f) safety and maintenance berms are to be included. Refer to **Figure SC6.14.3C (Berms)**. Maintenance berms are to incorporate a maintenance access track which is concrete and

a minimum width of 2.5 metres and the top of bank should be a minimum of 2.5 metres from any private property.

Figure SC6.14.3C Berms



(19) Open channels are to be designed to cater for the major design storm event and are to include freeboard provisions in accordance with QUDM. Open channels required in parkland or open space areas may be designed to cater for 5% AEP Climate Change (CC) flows and where practical are located on the periphery and avoid fragmentation of parkland or open spaces areas. The associated overbank flow areas, which cater for the difference between 1% AEP CC and 5% AEP CC flows are to be designed to ensure low velocities occur during flood, while enhancing amenity values during non-flood periods, noting that land below the 5% AEP CC flood level is ineligible for consideration as creditable open space.

(20) An extended maintenance period may be required until the channel has sufficiently stabilised and vegetative cover (including canopy) is well established. Performance bonds linked to specific design outcomes may be required for this purpose.

Overland flow paths

(21) Overland flow paths are to be designed in accordance with QUDM to accommodate the 1%AEP flow and to address the following additional requirements:-

(a) overland flow paths are preferably to be located in road reserves, parks, pathways or other Council controlled land. Overland flow paths created as a result of new development should not traverse private property;

(b) overland flow paths are shaped so that the 1% AEP CC storm flow is fully contained within the flow path, reserve or easement with a minimum 100mm freeboard to adjoining lots and 300mm freeboard to adjacent floor levels in accordance with QUDM;

(c) particular attention is to be paid to the preservation of existing overland flow paths, the obstruction of which may cause flooding or ponding of stormwater on adjoining properties;

(d) details and calculations are required for all overland flow paths. Calculations are to demonstrate that overland flow will not enter lots during a 1% AEP flow CC and that freeboard is achieved during this event. Stormwater calculations, cross sections and plan layouts are to be provided for any proposed overland flow path. The applicant is required to ensure that as-constructed levels are consistent with those shown on the approved engineering drawings;

(e) for developments (particularly in-fill) which would result in no overland flowpaths being available, particular attention is to be given to the preparation of the Severe Storm Impact Statement. In such situations assessment of the consequences of events up to PMF is to be undertaken and consideration should be given to providing underground drainage to PMF capacity, dependent on the impacts; and

(f) for developments other than noted in (e), the Severe Storm Impact Statement is to be completed to demonstrate that the concept landform and associated structures do not introduce new hazards off-site or unforeseen hazards on-site for events greater that the DFE. The *Flooding and Stormwater Management Guidelines* contain detailed guidance on undertaking severe storm assessments.

Public safety

(22) The enclosed stormwater network (including manholes, GPTs, gully manholes and other enclosed structures) is to be designed in accordance with *AS 2865 Confined Spaces* and particular attention is required in regard to *Section 7 of AS 2865*.

(23) Detailed safety requirements for all ponded water bodies proposed for areas of public open space are as follows:-

(a) side slopes are to be no steeper than 1:6 (H:V), with recommended slopes of 1:8 (H:V);

(b) water's edge is to be offset at least 15 metres from allotment boundaries or roadways except where suitable buffer treatments or safety fencing are provided;

(c) interim fencing is required between the construction and establishment of vegetation within the water body (typically after construction is complete and during the on-maintenance period) where any part of the water body is deeper than 350mm; and

(d) areas are to be fenced and gated in any areas where the above safety requirements are not met (e.g. in maintenance access areas).

(24) Urban waterways and stormwater drainage systems can represent a significant safety risk during storms and times of flood. The design of urban waterways and stormwater drainage systems that require safety fencing is strongly discouraged and should only be used if it is impractical or unfeasible to design the system such that it does not represent an unacceptable risk. Risks associated with urban waterways and stormwater drainage systems shall be managed in accordance with QUDM. Potential for blockage and the implications for hydraulic design performance are also to be considered when contemplating such fences.

Stormwater network layout

(25) The stormwater network layout is to be generally in accordance with QUDM. However, pipe work within the verge is generally not permitted.

(26) Alignments may vary depending on the location of sewer mains and pits but are to be generally located as follows:-

(a) rear boundary within 2.5 metres; and

(b) side boundary within 1.2 metres.

(27) Manhole covers within road carriage ways are to be located to reduce potential noise created by covers that are driven over.

(28) Gully to gully drain lines are acceptable for pipes 600 mm diameter or less provided that the design complies with all the following:-

(a) gullies are consistent with Council's Standard Engineering Drawings;

(b) acute angles in connecting pipes are avoided to minimise head losses;

(c) potential interference with other utility services on the footpath is avoided;

(d) the major stormwater line (spine) of the gully to gully system is constructed on one side of the road only. Any gullies on the opposite side of the road are to be connected directly across the road. Under no circumstances are spines of gully to gully systems permitted on both sides of the road; and

(e) the gully pit is appropriately benched.

(29) Gully manholes are not considered to be appropriate and are not a preferred solution. However, there are rare instances that gully manholes are necessary. Accordingly, gully manholes may be approved provided that compliance with all of the following is achieved:-

(a) the inlet and manhole is at the same point (e.g. at the sag of the road);

(b) it is the only alternative to a multi-grated inlet;

(c) written advice from the responsible utility authority is submitted stating that the existing services will preclude the construction of the conventional herringbone layout without substantial utility service relocation costs;

(d) Council's standard components such as lintels and grates are to be used wherever possible;

(e) hydraulic analysis and structural testing data are to accompany the design if it is proposed to use alternative components;

(f) the gully manholes are not to pose a public safety risk; and

(g) the gully manhole complies with the requirements as detailed in this section.

Pipes

(30) Pipes within the stormwater conveyance system shall have a minimum diameter of 375mm including anti-ponding gullies.

(31) Pipes of 300mm are acceptable for driveway or road culverts providing that if the capacity is exceeded there is no risk or worsening to other assets.

(32) While Council will approve the use of any structurally sound pipe, fibre reinforced cement (FRC) pipes will not be accepted under any circumstances. Prior approval is to be sought for the use of any pipe other than a steel reinforced concrete pipe (RCP). Saltwater cover RCPs are to be used in locations where the stormwater network may be subject to tidal wetting and drying. This requirement should also consider whether sea level rise within the design life of the pipe is likely to affect the pipe.

(33) Rubber ring joint pipes are to be used for all pipes. Prior approval is to be sought for the use of external band joint pipes. Butt joint pipes are not permitted.

(34) Service and construction loadings are to be calculated in accordance with *AS 3725 Design for installation of buried concrete pipes*. In many cases, construction loading will be the critical load case for selection of pipe class. *AS 4058 Precast Concrete Pipes (Pressure and Non-Pressure)* is to apply for testing requirements or where standard steel reinforced concrete pipes may be exposed to aggressive conditions.

(35) To counteract premature pipe cracking, the following is required:-

(a) the design and selection of the pipe type and class is to consider construction loading (based upon the calculations described above), which is usually the critical load case for pipes < 900mm diameter;

(b) stormwater plans issued for construction are required to indicate for each drain line the following:-

(i) pipe type and class;
(ii) installation type; and
(iii) construction method (layer thickness, compaction plant);

(c) design aids available from concrete pipe manufacturers may be used and are recommended. These include software for calculation of loads on pipes to *AS 3725 Design for installation of buried concrete pipes* (tables and charts). It is recommended that charts showing the relationship between compaction equipment and pipe class are also included with the engineering drawings;

(d) no more than two weeks before the on-maintenance inspection and prior to the formal acceptance of on-maintenance, closed circuit television (CCTV) inspection is required to demonstrate that the standard of the stormwater network is acceptable to Council. CCTV inspections can be arranged through suitably qualified service providers. Any defects identified by the inspection are to be repaired or replaced or as directed by Council. A follow up camera survey is required to demonstrate that the remediation measures are satisfactory. The CCTV pipe surveys are required to conform to Council's standard inspection and reporting protocols; and

(e) cracked pipes shall be rejected. Hairline or crazing cracks associated with concrete shrinkage are permitted.

Box culverts

(36) Box culverts may be used where low vertical clearances exist or as approved. However, circular sections are to be used in enclosed stormwater networks wherever possible.

(37) Box sections are to be constructed from precast reinforced concrete box culvert sections.

(38) The minimum dimension of a box culvert is to be 375mm.

Manholes

(39) Manholes are to be designed and constructed in accordance with Standard Engineering Drawings from IPWEAQ or DTMR or equivalent. Any manholes required outside these standards are to be structurally certified by a RPEQ engineer.

(40) Benching is not recommended. However, deflection devices may be used if improved hydraulic efficiency is required.

(41) Manholes are to be avoided in road pavements and trafficable areas wherever possible. Typically stormwater drainage systems are to be designed from gully pit to gully pit.

(42) Precast manholes are acceptable.

(43) The spacing of manholes is to be in accordance with QUDM.

(44) Where stormwater manholes are located in major stormwater event flow paths or where the design hydraulic grade line is above the top of the manhole, bolt down manhole covers are required.

Gully pits and catch pits

(45) Council will permit the following types of gullies or catchpits (or alternative brands that meet the same specifications):-

(a) IPWEAQ Gully with cast iron bicycle-safe grate roadway type, lip in line (Refer IPWEAQ Standard Drawing DS-063); and

(b) inlets are to be provided with Max Q bicycle-safe grates only. Fluted grates and concrete filled covers will not be permitted.

(46) Inlet capacity charts for IPWEAQ are available in QUDM. Designers are to use these charts and the appropriate provisions for blockage as set out in QUDM.

(47) All gullies or catchpits are to be designed so as to be Lip-in-line (Refer IPWEAQ Standard Drawings DS-063 and DS-067).

(48) Existing Lip-in-line pits in conflict with proposed infrastructure such as driveways must be relocated so as to not be in conflict.

(49) Allowable flow widths and capacity are as follows:-

(a) multilane roads (with more than one lane travelling in one direction) and intersections on State controlled roads and side streets connecting to State controlled roads (up to the end of the auxiliary lanes or tapers leading onto the state-controlled road) – refer to Section 11.2.2 of the *DTMR - Road Drainage Manual 2019*; and

(b) sub-arterial roads, trunk collector roads, collector streets, access streets, and all other intersections apart from those noted in (a) - refer to QUDM.

(50) None of the requirements outlined in this section reduces the depth requirements stipulated elsewhere in these guides.

(51) On rural roads the design flows or ponding in the table drain is not to encroach upon the shoulder for the longitudinal or cross drainage.

Field inlets and pipe outlets

(52) For inlets within or outlets to an overland flow path, the design is to generally be in accordance with IPWEAQ Standard Drawing DS-0080. Maintenance and amenity factors are also to be considered.

(53) Field inlets are to comply with the following:-

(a) IPWEAQ Field Inlet Type 1 and 2 (Refer Standard Drawing DS-0050) or alternatives that meet the same specifications;

(b) field inlets (and surcharge pits) are to be designed and constructed in accordance with the above mentioned standard drawing or DTMR equivalent; and

(c) A minimum 50% blockage factor is to be adopted for design calculations; where Australian Rainfall and Runoff design guidance indicates a higher design blockage factor, this is to be adopted. Where debris is expected, a raised grate inlet with a locking device is required.

(54) Pipe outlets are to comply with the following:-

(a) energy dissipaters will generally be required at all outlets to reduce velocity to acceptable levels. Refer to QUDM for permissible velocities;

(b) drowned outlets are not to be used without prior approval, except where enclosed drains outlet to a canal. All drowned outlets are to be marked at the outlet end for marine safety and maintenance;

(c) for inlet headwalls where the pipe invert is located below the natural channel invert such that a standard field inlet is not warranted (e.g. the drop is less than the pipe diameter), a masonry "inverted curtain wall" is to be constructed across the headwall apron in preference to stone pitching outside the headwall; and

(d) *BCC Stormwater Outlets in Parks and Waterways* for design of drop structures and stormwater outlets.

Structural design

(55) Designers are referred to QUDM for the structural design of the enclosed stormwater network. Further information on pipe, RCBC bedding and backfilling can be gained from IPWEAQ Standard Drawings or DTMR equivalent.

SC6.14.3.4 Design requirements – discharge rights and land tenure

Provision of reserves and easements within development sites

(1) Stormwater reserve or where appropriate road reserve will generally be required over all stormwater flow paths and their verges within a development site, unless specially approved in the following circumstances:-

(a) development of rural size lots;

(b) development of rural residential size lots where:-

(i) the catchment is smaller than 5 hectares;
(ii) the flow path does not adjoin a park area; and
(iii) blockage of the flow path will not cause flooding of adjoining lots;

(c) development of urban land where:-

(i) Council-controlled land (current or future) does not drain into the flow path;
(ii) the catchment is smaller than one hectare; and
(iii) blockage of the flow path will not cause flooding of adjoining lots;

(d) concentrated surface flows and/or stormwater infrastructure not required to be in stormwater reserve shall be contained within stormwater easement with widths in accordance with QUDM.

(2) Stormwater reserve or where appropriate park or road reserve will be required over all areas containing detention basins, and other stormwater quality improvement devices, and verges required to adequately serve or maintain these devices. The reserve will not be less than 5 metres wide. Where GPT's are unable to be located in a stormwater reserve or road reserve, they may be located in a park or open space, where it does not compromise the park or open space function.

Provision of discharge rights for external up-slope catchments

(3) Formal discharge rights are to be provided to accommodate all roof and surface water runoff originating from the external up-slope catchment flowing through the development site or diverted by the development. Either drainage reserve or drainage easement is to be provided through the development site according to the land use, catchment area and other considerations as specified under sub-section (1).

(4) Where stormwater runoff from adjacent or upstream properties enters the proposed development site, a stormwater network is to be provided within the new works to accommodate such flows. The stormwater network is to ensure that no stormwater ponding occurs on any adjacent or upstream properties.

(5) The stormwater network is to be designed to accommodate a fully developed upstream catchment. The stormwater network is to also be designed so that it can be constructed up to the development site's boundaries and extended in the future to accommodate future development without disturbing existing or recently proposed development.

Discharge rights required through downstream private land

(6) Where development proposes to discharge through adjacent or downstream private property, easements are required over all associated stormwater networks (natural and constructed), which traverse the private property. Easement widths are to be in accordance with QUDM. All costs associated with the provision of an easement are to be borne by the applicant. An easement may only be considered to be unnecessary in rare circumstances where the applicant can demonstrate that there are no lawful works a downstream owner could undertake to block the drainage feature (infrastructure, gully, watercourse) or that the consequences of a lawful blockage are negligible. The *Flooding and Stormwater Management Guidelines* provided further detail on the implementation of this policy.

(7) An applicant proposing to discharge stormwater runoff from a proposed development site onto any adjoining and/or downstream property, is to provide Council with a legally binding document granting consent to a future easement from all property owners through which this runoff may flow. That agreement shall be legally registered so as to be binding against the property, and not only the current owner. In addition, the land subject to the proposed easement is to form part of the development application. The easement is to be registered prior to Council approving any development application for operational works for the development. Easements widths across affected properties are to be in accordance with the QUDM.

Easements generally

(8) No three dimensional or volumetric drainage easements will be permitted.

(9) All drainage easements required over downstream properties shall be registered prior to Operational Works approval. All drainage easements internal to the development site shall be registered prior to plan seal being granted by Council.

(10) The building of structures over or upon easements is not generally in the interest of the party that is vested in the easement. Accordingly, development applications that involve a proposal to build over or upon easements are required to obtain prior written permission from the Stormwater Asset Custodian, and demonstrate that:-

(a) the proposal does not conflict with the terms of the easement agreement;

(b) the proposed structure or the construction of the proposed structure does not increase loadings on the underground infrastructure assets;

(c) the stormwater network through the easement does not include an overland flowpath or an open channel;

(d) the proposed structure does not restrict (or prevent) access of maintenance staff and plant; and

(e) fencing allows free passage of flow (with appropriate allowance made for blockage in the hydraulic design).

Vestment

(11) Vestment of all reserves and easements to Council shall only occur after written consent is obtained from the relevant stormwater asset custodian and land custodians within Council and include all stormwater networks structures and/or facilities which are or will be the responsibility of Council to preserve and maintain.

(12) Roofwater/inter-allotment stormwater systems and associated cut off/swale drains are considered as private drains and future maintenance responsibility will vest with the property owners. An easement in favour of Council will be required over these stormwater systems.

Easement dimensions

(13) Easements to be registered in favour of Council are to comply with QUDM and have a minimum width of 4 metres except where the easement is for inter-allotment stormwater systems.

(14) Easements over inter-allotment stormwater systems are to be minimum width of 2.0m for pipes up to 300mm in diameter. All pipes 300mm in diameter or larger are to be covered by easement widths in accordance with QUDM.

(15) Existing easements in favour of Council, will only be extinguished where the need for the stormwater network through the land not in Council control is determined to be no longer warranted. All costs associated with the surrendering of an easement are to be borne by the applicant. In some cases, Council may require compensation for the loss of the rights under the easement.

Overland flow easements

(16) Overland flow easements allow for the passage of stormwater runoff or redirection of flow across the natural land surface. These easements prohibit any activities or works which may obstruct or impede the flow of stormwater runoff unless prior approval is provided. Designs of overland flow path are to take into account future fencing that may be constructed across the easement. Overland flow easements shall be in favour of Council and are to comply with the following:-

(a) any fences to be constructed across easements or along the easement boundary are to provide sufficient access for Council's maintenance or future construction by either the provision of gates or removable sections that are wide enough to allow access;

(b) fencing is to allow free passage of flow (with appropriate allowance made for blockage in the hydraulic design); and

(c) survey levels provided on the design plans are to form the basis of the levels required for the overland flow. Survey levels are acceptable on the registered plan of subdivision and provided to AHD.

Access easements

(17) Access easements permit Council to have access from the nearest surveyed road to any stormwater easements, in order to carry out maintenance and/or construction activities or works. This will normally be a requirement of all other stormwater-related easements in favour of Council. Access easements are to comply with the following:-

(a) in order for stormwater management facilities to function at their designated level of service, most will require some level of periodic inspection, maintenance works, cleaning or repairs. Therefore, consideration is to be given to the maintenance of the stormwater system and stormwater quality management facilities during the design process; and

(b) reasonable access for both personnel and equipment is one of the most critical design considerations of both the enclosed and open stormwater networks. Any proposed landscaping is to be designed in conjunction with access requirements.

Maintenance

(18) Maintenance of stormwater reserves and easements are to comply with the following:-

(a) stormwater easements are to be covered by a binding agreement between Council and the landholder;

(b) trees and understorey vegetation are not to be planted on stormwater easements/reserves without the prior written consent of Council;

(c) native vegetation is to be retained on the easement/reserve;

(d) environmental weeds and invasive plants are to be treated and/or removed from any reserve or easement as obligated under the Biosecurity Act 2014;

(e) drain surfaces (batters and base) are constructed to a standard that ensures effective machine access and operation for maintenance;

(f) no structures, excavation, filling, or stormwater works are to be commenced on an easement or reserve without the prior written consent of Council; and

(g) maintenance (including costs) of all stormwater quality management facilities is an important consideration and a detailed management plan or maintenance strategy is to be produced for each facility and submitted to Council for review prior to development approval for operational works.

SC6.14.3.5 Design requirements – impact mitigation and actionable nuisance

(1) Development is required to not cause unacceptable impacts to infrastructure or property external to the development site. Combined with the issues specified in **SC16.14.3.3**, these considerations can be considered to cover the range of issues known traditionally as 'lawful point of discharge' as used in the acceptable outcomes of the **Stormwater management code**.

(2) Applicants are required to consider the impacts associated with the physical changes of discharge characteristics resulting from the development and whether the consequences of these impacts constitute an actionable nuisance. The consequences will be specific to both the nature of the development and the physical characteristics of the downstream land and drainage system. Where the change in discharge characteristics results in damage to the downstream property or affects the downstream owners established use or ongoing enjoyment of their land then an actionable nuisance has occurred. This consequence of development is unacceptable and mitigation options are required to be implemented.

(3) Where a physical change in discharge characteristics is predicted to occur as a result of development and a reduction in the performance of the trunk drainage network or other public infrastructure has the potential to result, then options to mitigate the impact are also required to be implemented.

Detention basins and peak flow management

(4) Changes in peak flow are only one aspect of discharge characteristics which can be altered by development but can have significant impacts on the extent and duration of flooding on downstream land and infrastructure.

(5) QUDM identifies that, in the absence of total catchment management planning, the objective of flood control detention systems is the protection of land and control of peak discharges immediately downstream of the development/basin to match pre-development discharge in peak and timing. In some instances, this may be informed by a Council Master Drainage Study. Where available, Council Master Drainage Study requirements take precedence over site based assessments of flood detention.

(6) The performance requirements for stormwater detention systems are therefore to either:-

(a) deliver the infrastructure required by a Council Master Drainage Study; or

(b) demonstrate no increase in the post-development peak 39%, 18%, 10%, 5%, 1% AEP , 1% AEP CC event discharge immediately downstream of the development compared to pre-development, for all storm durations up to and including a duration that is 2x the pre development critical duration or 3-hour duration, whichever is the greater; and

(c) demonstrate that changes on property external to the development site in relation to peak levels and flows, timing of peak flows, duration of inundation, lot coverage by flood extent and flow velocity will not cause an unacceptable impact or nuisance as detailed in the

Flooding and Stormwater Management Guidelines. Refer to **Table SC6.14.3B (Triggers for application of peak flow management objective)**.

Table SC6.14.3B Triggers for application of peak flow management objectives

Situation	Application of peak flow management objective
Runoff discharges directly to a watercourse (defined under the *Water Act 2000*) or tidal waters (defined under the *Coastal Protection and Management Act 1995*[1]) and either: a) The site is in the lower third of the waterway catchment; or b) Peak site discharge in the 1%AEP event represents less than 1% of the peak discharge in the receiving waterway in the 39%AEP event; or c) Development site area <1% of the catchment area of receiving waterway at the point of discharge.	Exempt
The entire downstream major and minor drainage system has been sized to accept unmitigated peak flows from the development within acceptable limits	Exempt
All other development	Apply

Note-
1. Tidal waters under this exemption are to have minimum dimensions of more that 1m depth and cross sectional area 2.5m^2

(7) Design of detention basins is to be undertaken using an ensemble storms approach as specified in ARR and detailed in the *Flooding and Stormwater Management Guidelines*. Basins are to incorporate all features specified by QUDM (including freeboard, outlet properties and protection, embankments and safety features) except as noted below:-

(a) low flow provisions are to be catered for. This is to be a minimum of 63% AEP and should be piped or provided with a low-flow channel between the inlet and outlet structure and downstream if necessary. The basin floor is to have a minimum grade of 1v in 150h; and

(b) WSUD features such as bioretention basins or wetlands may be co-located with detention basins in order to minimise the overall footprint of the devices. The extended detention volume associated with the WSUD device is not to be included in the available detention storage calculations.

SC6.14.3.6 Design requirements – open space complementary co-location and integration

(1) Complementary co-location and integration of stormwater with open space are allowed, however minimum land requirements for open space are to be provided in addition to land for stormwater purposes. Only open space areas which achieve the flood immunity requirements specified in **Table SC14.5.5 (Local park specifications)** for either fluvial flooding or stormwater (i.e. including overland flowpaths, detention basins, vegetated channels or WSUD devices) may be considered for credit towards the LGIP trunk open space network or minimum land required for non-trunk open space (i.e. local recreation park). In practice this means that stormwater infrastructure will require additional area to the trunk and non-trunk open space requirements, even if the stormwater and open space infrastructure is contiguous. The following points (2) to (6) are provided in this context.

(2) The natural stormwater corridor should be retained in land designated for public open space, i.e. park, stormwater or road reserve.

(3) Pipe stormwater networks are generally required through parks incorporating active uses. Care should be taken over the design of surcharge pits and inlet structures, so as to ensure that safety and amenity criteria are satisfied.

(4) The complementary co-location and integration of stormwater with open space (e.g. stormwater networks and park networks) need to be considered holistically as part of the whole planning process to ensure that the final design avoids fragmentation of open space, minimises level differences and reduces the hazard associated with the stormwater function to eliminate the

need for fencing or retaining walls. Council's *Open Space Landscape Infrastructure Manual* (LIM) provides further guidance on demonstrating effective and complementary co-location and integration of stormwater with open space.

(5) All park embellishments are to achieve flood immunity requirements specified in **Table SC14.5.5 (Local park specifications)** for both fluvial flooding and stormwater overland flow paths.

(6) Land used for the sole purpose of maintaining stormwater assets shall be excluded from creditable trunk and non-trunk open space.

SC6.14.3.7 Design requirements – hydrology and waterway stability

Waterway stability management

(1) Development prevents increased channel bed and bank erosion in watercourses by limiting changes in flow rate and flow duration within receiving waters. This will be achieved by matching the post-development peak 63% AEP event discharge within the receiving waterway to the pre-development peak 63% AEP discharge.

(2) The waterway stability objective is only applicable when runoff from the site passes through or drains to natural channels, non-tidal waterways or wetlands as detailed in **Table SC6.14.3C (Triggers for application of waterway stability management objective)**.

Table SC6.14.3C Triggers for application of waterway stability management objective

Situation	Application of Waterway Stability Management Objective
Runoff from or within the site does not pass through or drain to natural channels, non-tidal waterways or wetlands	Exempt
Runoff from or within the site passes through or drains to natural channels, non-tidal waterways or wetlands	Apply if development type is not exempt from application of stormwater quality design objectives

(3) Compliance with this design objective can be demonstrated using design procedures detailed in the *Flooding and Stormwater Management Guidelines*.

Frequent flow management

(4) Development protects in-stream ecology by maintaining pre-development low flow discharge regimes.

(5) The frequent flow management objective is only applicable to non-tidal receiving waterways and when runoff from the site passes through or drains to high ecological value (HEV) receiving waters which have catchments with low (<5%) existing catchment imperviousness.

(6) In such situations the development is considered to have high likelihood of causing irreversible impact on the receiving environment and development should be avoided. If not avoided, site-specific frequent flow objectives will be required to be derived based on the nature of the receiving environment. Such objectives may be very difficult to achieve without significant stormwater harvesting and reuse schemes.

SC6.14.3.8 Design requirements – stormwater quality

Design objectives for stormwater quality management

(1) Development protects or enhances the environmental values and water quality of receiving waters or buffer areas within or downstream of the site by achieving the design objectives for stormwater quality management specified in **Table SC6.14.3D (Stormwater quality design objectives – operational (post construction) phase of development)** prior to discharge to receiving waters or buffer areas within or downstream of the site.

Table SC6.14.3D Stormwater quality design objectives – operational (post construction) phase of development

Pollutant	Minimum reductions in mean annual loads from unmitigated development (%)
Total suspended solids (TSS)	80
Total phosphorous (TP)	60
Total nitrogen (TN)	45
Gross pollutants > 5mm	90

(2) The stormwater quality design objectives are only applicable when required by **Table SC6.14.3E (Triggers for application of stormwater quality design objectives)**. For development where the stormwater quality design objectives are not applicable alternative measures appropriate for the scale of development are outlined.

Table SC6.14.3E Triggers for application of stormwater quality design objectives[3]

Development type		Application of stormwater quality design objectives	Alternative management measures required
Dual occupancy		Exempt from stormwater quality design objectives	Nil
MCU for purposes other than industrial use (refer QUDM)	Lot size < 2500m^2	Stormwater quality design objectives apply unless alternative management measures are implemented in full	Single harvesting tank for roofwater and reuse to communal landscape areas (via automated irrigation system), outdoor taps and bin washdown plus ground-level impervious areas graded to either landscaped areas or gully pit baskets
	Lot size ≥ 2500m^2 and Fraction impervious <25%	Stormwater quality design objectives apply unless alternative management measures are implemented in full[1]	As for sites < 2500m^2 plus: Provide vegetated buffers to waterways and drainage lines
	Lot size ≥ 2500m^2 and Fraction impervious >25%	Stormwater quality design objectives apply to the developed portion of the site	
MCU for industrial use	Lot size < 850m^2	Stormwater quality design objectives apply unless alternative management measures are implemented in full	Single harvesting tank for roofwater and reuse to communal landscape areas (via automated irrigation system), outdoor taps and bin washdown plus ground-level impervious areas graded to either landscaped areas or gully pit baskets
	Lot ≥ size 850m	Stormwater quality design objectives apply to the developed portion of the site[2]	
Reconfiguring a lot in all zones other than the rural zone	Reconfiguring involving 6 or more lots that includes a new road	Stormwater quality design objectives apply	
	Reconfiguring involving less than 6 lots or that does not include a new road	Stormwater quality design objectives apply unless alternative management measures are implemented in full	Incorporate swales into site drainage. Protect vegetated buffers to waterways and drainage lines. Ensure adequate maintenance access along buffer boundaries. Grade shared-access and

Development type		Application of stormwater quality design objectives	Alternative management measures required
			hatchet-lot driveways to swales or landscaped areas.
	Reconfiguration involving proposed lot sizes ≥ 6,000m^2	Stormwater quality design objectives apply unless alternative management measures are implemented in full	Harvesting and reuse of stormwater (rainwater tanks). Provide vegetated buffers to waterways and drainage lines Ensure adequate maintenance access along buffer boundaries.
Reconfiguring a Lot in the rural zone		Stormwater quality design objectives apply unless alternative management measures are implemented in full	Provide vegetated buffers to waterways and drainage lines Ensure adequate maintenance access along buffer boundaries.

Notes –
1. Sparse or distributed sites (e.g. cabins spread over a site) are exempt from WSUD targets where the total fraction imperviousness will by less than 25%.
2. For sites between 850m2 and 2500m2, the WSUD load reduction targets only apply if it is reasonable to extend the existing piping system to the site. The calculation to determine a reasonable extension is: reasonable length of pipe (m) = site area (m2))/50.
3. Compliance methodologies for demonstrating compliance with the stormwater quality design objectives and further details on the required alternative management measures are provided in the Flooding and Stormwater Management Guidelines.

Stormwater quality treatment measures – Guiding Principles

(3) Constructed water bodies including ponds and lakes are not to be used as stormwater quality treatment measures.

(4) Stormwater quality treatment measures for new development are not to be located in receiving waters, including constructed water bodies.

(5) Riparian rehabilitation (including riparian buffer planting and bank stabilisation) required to comply with other requirements of the planning scheme may not be counted towards the stormwater quality design objectives.

(6) Source controls such as education, street sweeping and rubbish bins are not considered as stormwater quality treatment measures. Education relates to prompting a social and cultural shift in the attitudes and practices of the community. It is important to note that these source controls are critical to improving stormwater quality, but they cannot be considered as stormwater quality treatment measures to achieve required stormwater quality design objectives.

(7) Cleanout or maintenance will need to utilise plant and equipment currently in use by Council. The contributed assets are to be designed and constructed so that they can be maintained and operated without specialised equipment that is not currently available to Council's maintenance operations.

(8) Detailed life cycle costing is required for the entire treatment train system with particular reference to replacement costs of asset parts such as filter media. Treatment systems dedicated to Council as public assets are to be designed to minimise maintenance, renewal and adaption costs and the requirement for specialised equipment, materials or maintenance techniques.

(9) Treatment systems that are vegetated and use natural processes and materials shall be used whenever practicable to enhance biodiversity and landscape benefits.

(10) Treatment systems are to be designed to eliminate or minimise health, safety and aesthetic hazards. Safety is to be addressed in the design of all stormwater quality treatment measures without the need for fencing.

(11) Where the maintenance will be carried out by a body corporate the maintenance requirements for the stormwater quality treatment system shall be included within the community management statement and budget. The maintenance requirements are to include:-

(a) a plan showing the location of the individual components of the system;

(b) manufacturer's data and product information sheets for any proprietary devices;

(c) location of inspection and monitoring points shown clearly on the plan;

(d) a schedule or timetable for the proposed regular inspection, maintenance and monitoring of the devices; and

(e) all inspection, maintenance and monitoring requirements fully costed. Where costs exceed those expected for non-proprietary bioretention devices then a maintenance contract may be required by Council prior to endorsement of the community management scheme or commencement of use.

(12) The *Flooding and Stormwater Management Guidelines* provide guidance which is to be followed on design and implementation on a range of specific stormwater quality treatment measures.

Proprietary and Emerging stormwater quality treatment measures

(13) Proprietary products are to demonstrate that they provided stormwater treatment in a manner that is complementary to and integrates with the environment in which it is situated.

(14) Proprietary products are to also demonstrate that they are using natural processes to provide treatment, to the greatest extent possible.

(15) Proprietary products with specialised componentry will not generally be accepted as donated infrastructure due to issues with maintenance and replacement of parts. The exception is devices aimed solely at capture of gross pollutants. Wherever possible such devices should remain in private ownership, however public gross pollutant capture devices may be appropriate for subdivisions involving commercial, industrial or high density residential uses. Low and medium density residential development is typically characterised by low anthropogenic gross pollutants loads and do not require GPTs except where discharging directly to a high amenity waterway such as a constructed lake, beach/foreshore area or Intermittently Closed and Open Lakes and Lagoons (ICOLL).

(16) Media filtration devices which are proposed to remain private infrastructure will not generally be accepted due to the higher whole-of-lifecycle costs, lack of amenity and habitat benefits and lack of security of supply for replacement parts, compared to non-proprietary systems which utilise natural treatment processes. Consideration will only be given in the specific circumstances specified in the *Flooding and Stormwater Management Guidelines.*

(17) Proprietary products aimed solely at capture of gross pollutants will generally be accepted as private infrastructure as part of treatment trains for private development sites, provided the development type has need of gross pollutant capture as specified in the *Flooding and Stormwater Management Guidelines.*

(18) In-ground GPT's and gully-pit litter baskets are not to have performance counted towards the removal of the following pollutants:-

(a) pollutants/fine sediments that are less than 2mm;

(b) colloidal material;

(c) dissolved chemical pollutants;

(d) nutrients; or

(e) hydrocarbons (including oil and grease).

Note: This policy prevails despite any performance claims or verifications made through the SQIDEP.

(19) Development applications which incorporate proprietary products which are proposed to remain private infrastructure are required to be accompanied by RPEQ certification which confirms the following:-

(a) the RPEQ has confirmed the product performance has been tested using the Stormwater Quality Improvement Evaluation Protocol and validated by the Stormwater Australia Technical Review Panel;

(b) that the device, as proposed in the engineering drawings and/or stormwater management plan, will achieve the stormwater quality design objectives required by the planning scheme, under local conditions on the Sunshine Coast;

(c) that safety in design considerations have been incorporated as part of the device integration to the built environment;

(d) that the natural deterioration of the device over time will not pollute receiving waters or cause problems for community health; and

(e) that the site complies with clauses (17) and (18) of this section.

(20) Proprietary products (i.e. GPTs) or emerging technologies (e.g. floating wetlands) which are proposed to be considered for policy endorsement as suitable developer contributed public infrastructure are required to undergo a 3 stage process to demonstrate efficacy. This process is summarised below and expanded in clauses 21 to 24 of this section:-

(a) performance claims validated by the Stormwater Australia Technical Review Panel following testing using the Stormwater Quality Improvement Evaluation Protocol;

(b) field testing within the Sunshine Coast Council Local Government Area to demonstrate required water quality performance, safety in design, robustness and reliability; and

(c) independent expert peer review assessment of documented trial results.

(21) Proprietary products or emerging technologies which are proposed to be considered for policy endorsement as suitable public infrastructure are required to have the stormwater treatment and pollutant removal performance claims verified by the Stormwater Australia Technical Review Panel following testing using the Stormwater Quality Improvement Evaluation Protocol. Documentation is to be provided to Council that demonstrates:-

(a) the verified performance claims satisfy the stormwater treatment needs of the site considering Sunshine Coast climatic conditions;

(b) pollutant removal performance under dry weather flows;

(c) maintenance frequency representative of current practice (and an estimation of maintenance under future climate conditions at year 2100);

(d) pollutant removal performance over a range of flow rates including the design flow rate, below design flow rate and above design flow rate;

(e) for GPTs, details of retained pollutants;

(f) details of retained pollutants within sediments at the base of a water body when the device is proposed to be contained within a water body; and

(g) details of retained pollutants within media for media filtration systems.

(22) Where proprietary products or emerging technologies are proposed to be provided as developer contributed public infrastructure, the proponent is required to:-

(a) provide full lifecycle costings over a 80 year design life. Where lifecycle costings indicate the cost is greater than a bio-retention system (sized to provide equivalent performance and ignoring land costs) then a sinking fund is to be provided to Council, based on the differential cost over the 80 year period;

(b) have had performance claims validated as per clause 16;

(c) provide RPEQ certification that:-

(i) incorporates safety in design considerations as part of the device integration into the built environment; and
(ii) confirms robustness, reliability and stability of the device to natural deterioration over time ensuring that the material of the device itself will not pollute receiving waters or cause problems for the health of the community.

(d) undergo field trial within the Sunshine Coast Council Local Government Area for a period of three years (with a six month establishment period preceding this), with reliability and

operational lifecycle costs assessed by an independent expert engaged by Council and funded by the device proponent. Additionally:

(i) field trials are to be specific to a unique circumstance that is being evaluated (i.e. plant species, brackish water). Only one field trial shall be permitted per device from a given manufacturer, unless a prior trial has been inconclusive.

(ii) trials are permitted to form part of a stormwater treatment train for a development site, however an alternative stormwater treatment solution that satisfies the scheme performance outcomes is also to be documented.

(iii) in the event of a trial being unable to demonstrate the reasonable operational lifecycle costs or required outcomes for safety in design or reliability and stability, the cost of removing a trial and reinstating the alternative solution is to be borne by the developer.

(iv) full costings for reinstating the alternative solution are to be demonstrated to Council prior to a trial being initiated. Evidence that the developer has an appreciation of the cost of this requirement is to be demonstrated to Council. This evidence is to be in writing and signed by the developer.

(v) a performance bond equivalent to 1.5 times the cost of the alternative measure is to be lodged with Council prior to commencement of use or endorsement of the plan of survey.

(vi) a sinking fund for the lifecycle costs of the asset is to be provided to Council based on a 30 year period, prior to the asset being contributed to Council.

(vii) provide documentary evidence that the developer will grant access permission to Council, or a representative of Council, for the purpose of unsupervised inspection at any time. This evidence is to also acknowledge that this requirement is a condition of the trial and that failure to provide access may result in the immediate revocation of Council's agreement to the trial. A revocation of the trial will require the developer to remove the trial and implement the alternative solution at the developer's expense;

(e) have undergone rigorous field testing to demonstrate robustness during high flow, low flow, drought and high ambient heat conditions;

(f) provide a detailed maintenance plan that demonstrates a maintenance regime that is not reliant on the use of glyphosates or any other chemical spray; and

(g) provide a landscape plan that demonstrates the integration of the device into the natural or built environment in a manner that minimises visual disruption.

(23) Failures of any component of a device that is subject of an endorsed public infrastructure trial is to be reported to Council Officers responsible for administering the trial within 7 days. The proponent is to ensure that a receipt notification is received and recorded as part of the trial documentation. Failure to comply may result in the revocation of Council's agreement to the trial. A revocation of the trial will require the developer to remove the trial and implement the alternative solution at the developer's expense.

(24) Emerging proprietary technologies that are endorsed as acceptable developer contributed public infrastructure are to have had reliability and lifecycle cost claims validated by an independent expert review of field trial results and costing methodology. Endorsed devices will be recognised in Council's *Flooding and Stormwater Management Guidelines*. Devices that are not recognised are not be deployed as public infrastructure outside of a trial.

SC6.14.3.9 Design requirements – stormwater harvesting and reuse

(1) The following documents provide design requirements with respect to stormwater harvesting and reuse systems:-

(a) *Flooding and Stormwater Management Guidelines*, Sunshine Coast Council, 2020;

(b) *HWP Water by Design - Stormwater Harvesting Guidelines* (2011); and

(c) *Queensland Development Code* Mandatory Part 4.2 & 4.3.

(2) For systems that are to be dedicated to Council as public assets it is to be demonstrated that there is an overriding community benefit resulting from the stormwater harvesting system. A detailed operations and maintenance budget is required to be prepared for the project life and financial assurances are to be in place to operate and maintain the system for the project life.

(3) Private stormwater harvesting schemes may be implemented at the applicant's discretion as part of achieving the outcomes of the **Stormwater management code**. However, there are no specific requirements mandating use of these systems or specific stormwater capture and reuse targets.

(4) Stormwater harvesting is to ensure that any extraction rate/timings are sustainable in terms of impact on water source.

(5) Private extraction from public assets is not allowed.

SC6.14.3.10 Guidelines

For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) *Flooding and Stormwater Management Guidelines* (Sunshine Coast Council, 2020);

(b) *Queensland Urban Drainage Manual V4 (*QUDM) (IPWEAQ, 2016) – in relation to all matters other than the tests for Lawful Point of Discharge;

(c) *Road Drainage Manual* (Queensland Department of Transport and Main Roads, 2019);

(d) *Australian Rainfall and Run-off* (ARR);

(e) *ADAC – Asset Design & As Constructed*;

(f) Aus-Spec Specifications;

(g) Institute of Public Works Engineering Australia (IPWEA) Standard Drawings;

(h) Institute of Municipal Engineering Australia Queensland (IMEAQ) Standard Drawings;

(i) Brisbane City Council Guidelines:-

(i) *Natural Channel Design Guidelines*; and
(ii) *Stormwater Outlets in Parks and Waterways*;

(j) South East Queensland Healthy Waterways Partnership / Water by Design Publications, including:-

(iii) *Concept Design Guidelines for Water Sensitive Urban Design*;
(iv) *MUSIC Modeling Guidelines*;
(v) *Water Sensitive Urban Design Technical Design Guidelines for South East Queensland (excluding bioretention and wetland chapters)*;
(vi) *Bioretention Technical Design Guidelines*;
(vii) *Wetland Technical Design Guidelines*;
(viii) *Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands*;
(ix) *Maintaining Vegetated Stormwater Assets*; and
(x) *Transferring Ownership of Vegetated Assets*.

Note—relevant guideline documents in existence or available over the life time of this planning scheme policy should be referenced and used where appropriate or unless specified by Council. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally.

SC6.14.4 Site development management

SC6.14.4.1 Purpose

(1) The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance on general management practices relating to development works; and

(b) detail environmental performance standards for developments, which when applied, will achieve the protection and enhancement of the environmental values of waters and the healthy functioning of aquatic, marine, and wetland ecosystems from the impacts of land development.

SC6.14.4.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Works, services and infrastructure code**.

(2) This section is structured as follows:-

(a) **Section SC6.14.4.1** and **Section SC6.14.4.2** provide the framework;

(b) **Sections SC6.14.4.3** to **SC6.15.4.5** provides the requirements and procedures for achieving the outcomes of the **Works, services and infrastructure code** and to achieve the purpose of this section of the planning scheme policy; and

(c) **Section SC6.14.6.6** contains guidelines for achieving compliance with this section of the planning scheme policy.

SC6.14.4.3 Site management practices

General construction activities

(1) All works are to be constructed in accordance with the approved plans.

(2) Construction works are to ensure that:-

(a) no debris, waste or pollutants enter the stormwater drainage system, waterways or adjacent land;

(b) no wastes are disposed to the stormwater drainage system or sewer system;

(c) provision is made on site for the orderly collection and temporary storage of all site debris and waste. All construction waste is to be disposed of at an approved waste disposal facility;

(d) the storage area or areas for site debris and waste are kept covered and located away from drainage paths to prevent litter and debris entering the stormwater drainage system; and

(e) catch drains are installed upslope from stockpiles to divert water around stockpiles.

(3) De-watering activity is to ensure that:-

(a) all ground water overflows are treated before being discharged into the stormwater drainage system. Prior to discharge to the stormwater system or any waterway, discharges are to be tested to meet the requirements of the *ANZECC Guidelines for Fresh and Marine Water Quality*; and

(b) copies of testing and monitoring reports for all de-watering activities are to be kept on site.

(4) Concrete works are to ensure that:-

(a) all residues and wastes generated by the carrying out of concrete works are prevented from entering the stormwater system;

(b) site mixing of concrete, either by hand or mechanical means, is carried out in a designated area of the site that prevents the chance of wastewaters entering the stormwater system; and

(c) concrete mix trucks, pumps and equipment are not to be washed down on roadways, footpaths or reserves. This is to be conducted at wash-down bays, either on-site or at the applicant's depot.

(5) Exposed aggregate or coloured concrete finishes are to ensure that:-

(a) all slurry is directed to a contained area on site so that the sediments can be filtered out. At no times is slurry to be allowed to enter the stormwater system, waterways or adjacent land; and

(b) if colouring is added following the placement of concrete, appropriate methods are implemented to prevent waste blown or washed into the stormwater drainage system.

(6) Brick, paver and tile works are to ensure that:-

(a) mortar is not mixed in locations which drain directly to the stormwater drainage system or adjacent land; and

(b) all wastewater from cutting activities is prevented from entering the stormwater drainage system.

Air pollution and dust control

(7) At all times, appropriate controls and construction methods are to be employed to prevent air pollution from the construction activities.

(8) Appropriate methods for dust suppression shall include minimising disturbed areas, re-vegetation of disturbed areas immediately after works completed, and the use of dust suppression methods.

(9) At all times the requirements of the *Environmental Protection Act 1994* for air quality are to be maintained on site, including any odours, dust or air pollution.

Noise and construction hours

(10) Working hours are to be between 7am to 6pm Monday to Saturday inclusive, unless otherwise specified in the conditions of the development approval.

(11) If works are required to be undertaken outside of these hours, requests are to be made in writing to Council's Development Services Branch. Written requests are to outline the reasons why works cannot be undertaken during the times nominated, including consideration of alternate construction methods. Council will review and inform the applicant if works outside the nominated times can be undertaken.

Note—the hours of works nominated includes general works, site set-up, deliveries and any other activities that may generate noise, disruption or inconvenience to surrounding residents and amenity.

Vehicular access

(12) Engineering design plans are to indicate the location, type, size and finish of accesses.

(13) For site development on all land other than in the Low density residential zone, a heavy duty vehicular access is to be constructed. Accesses are to comply with Council's Standard Engineering Drawings.

(14) Accesses are not to cross the footpath or verge in front of adjoining properties, unless otherwise approved.

(15) A grated drain is required on the inside of the boundary alignment on ascending driveways and may be piped directly to the kerb and channel (a kerb adaptor is to be used where practical, refer Council's Standard Engineering Drawings). Grated drains are to be bolted down to diminish noise. The piping across the footpath to the kerb and channel is to be constructed of hot dip galvanised rectangular hollow sections (RHS) with a maximum height of 100mm and a minimum width of 75mm. The RHS is to be placed at 45º to the frontage kerb and shall not encroach upon the verge fronting any adjoining land.

(16) Driveway surfaces are to have a non-slip finish, while stamped concrete is not to include edges or lips that compromise pedestrian safety.

(17) Saw cuts are to be used at existing footpath, kerb and channel and road pavements when constructing a driveway.

(18) All existing vehicular crossings that will be redundant are to be closed and the footpath reinstated. Kerb and channeling is to be in accordance with Council's Standard Engineering Drawings.

Traffic management

(19) A Traffic Management Control Plan (TMCP) is to be prepared to provide for the safe and orderly passage of vehicular, pedestrian and bicycle traffic through and around the site during construction of works and for management of environmental impacts of traffic. TMCPs are to be prepared in accordance with Part 3 of the *Queensland Manual for Uniform Traffic Control Devices* (MUTCD) and are subject to Council approval.

(20) The TMCP is to be prepared by a suitably qualified person and is to:-

(a) describe traffic arrangements that provide for the construction of the work while minimising disruption to local traffic from adjacent communities, emergency vehicles, pedestrians and cyclists;

(b) provide details of all traffic management changes, including staging of construction activities where required;

(c) describe how the construction work zone is to be physically isolated from traffic and pedestrians;

(d) provide details of how local access to communities and adjacent businesses will be maintained;

(e) provide advance notification to the supervising RPEQ engineer, police and emergency services personnel of proposed significant changes to traffic arrangements on the major network roads;

(f) describe measures to effectively minimise any dust which may occur during construction activity including transport of material to and from the site that may affect the safety and general comfort of the public, employees and/or occupants of adjacent buildings;

(g) describe measures to ensure access for emergency vehicles to the construction site;

(h) describe measures to provide adequate information to ensure the community, including local businesses, are informed of changes to traffic movements as a result of construction; and

(i) describe where police officers are to be employed to assist with control of traffic, and provide evidence of approval of necessary arrangements with the Queensland Police Service.

(21) Short duration closures of an entire carriageway may be approved, but are subject to the issue of a permit from Council. For a temporary carriageway closure to be approved, it is to be demonstrated that:-

(a) partial lane closures are impractical because of:-

(i) an unacceptable hazard to motorists or workers; and/or
(ii) the extent of delays to motorists or rework occasioned by partial closures over a more extended period; and

(b) the duration of any closure is to be the minimum required to affect the critical works.

Public utility plant

(22) Provision is to be made for the relocation of any public utility plant, being any railway, viaduct, aqueduct, conduit, water channel, pipeline (water, stormwater, oil, gas, sewerage or otherwise), fixed mechanical conveyor, tower, pole, cable, electrical installation or telecommunications plant

(including cameras), whether above or below the ground, that is affected by the construction of development works.

(23) The applicant will be responsible for the management of all work associated with relocation of affected utilities and to ensure that the specific relocation and/or replacement requirements of each responsible public utility authority are met.

(24) The applicant will be responsible for any damage to any public utility plant (including any completed public utility plant relocation) caused by the execution of work. The applicant is to make arrangements directly with the relevant public utility authority for any such repair work.

(25) The applicant is to ensure that disruption in disconnecting and reconnecting public utility plant to individual land owners and/or occupiers is kept to a minimum. The applicant is to consult with the relevant public utility authority regarding special requirements involving continuity of supply of any public utility plant and take all measures necessary to satisfy such requirements.

(26) The applicant is to notify affected landowners and/or occupiers at least 24 hours prior to planned works commencing.

(27) The applicant is to provide as constructed drawings to the standard specified in **Section SC6.14.10.9 (As constructed documentation)** as soon as practicable after the responsible public utility authority has approved the completed works.

SC6.14.4.4 Stormwater management programs and erosion and sediment control plans

General

(1) Concept erosion and sediment control (ESC) plans, ESC plans, construction phase stormwater management (CPSM) programs, design certificates and inspection certificates are to be prepared by a suitably qualified and experienced professional, who has completed an advanced specialised training course in erosion and sediment control, provided under the auspices of a reputable body such as the International Erosion Control Association.

Information required in support of a development application

(2) All applications, including MCU, RAL and OPW (where not previously addressed as part of MCU/RAL application), which will result in a total area in excess of 5000m^2 of either land disturbance and/or exposure of soil included in one of the categories listed in **Table SC6.14.4A (Information required at development application stage)** are to submit the information required at development application stage. Further detail of the information required is provided under the heading of **Concept erosion and sediment control plans** in this section of the planning scheme policy.

Table SC6.14.4A Information required at development application stage

Category	Information required	Timing
Applications involving the endorsement of a staging plan	Concept ESC Plan which demonstrates that the proposed staging will facilitate provision of effective ESC during construction and effective WSUD during the operation of each stage.	With application
Applications proposing works below the 1% AEP flood level	Concept ESC Plan which demonstrates that conventional ESC infrastructure is able to be provided to treat runoff from the development site and that exposed areas and ESC infrastructure will not be inundated with flood waters for at least the flood event having a 39% AEP (Q2). Where filling below the 1% AEP is proposed, a construction phase flood study is required to be provided in conjunction with the above and is to demonstrate that the proposed construction methodology will not worsen off site flood levels at any time during construction.	With application
Applications proposing works or necessitating infrastructure works which cross waterways or are	Concept ESC Plan which demonstrates how impacts on the waterway have been minimised through appropriate route selection and type of crossing and	With application

Category	Information required	Timing
within riparian protection areas identified on relevant overlay maps in the planning scheme	how construction of the crossing will be managed in accordance with a current best practice manual such as *IECA 2008, Best Practice Erosion and Sediment Control* – Appendix I.	
Applications for which 1ha or greater external catchment area contributes stormwater runoff to the subject site	Concept ESC Plan which demonstrates that clean stormwater from upslope external catchment(s) can be diverted around or through the site without causing either an increase in turbidity of the flow, or erosion on site or off site. Alternatively, if it is not feasible to divert clean stormwater from upslope external catchment(s) around or through the site the Concept ESC Plan is to demonstrate that there is sufficient area to install a sediment basin which is sized to accommodate the stormwater runoff from the whole upslope catchment.	With application
Applications proposing works below 5 metres AHD	Concept ESC Plan which demonstrates that:- • there is sufficient area to install an appropriately sized sediment basin; • the runoff from all disturbed areas can be directed to a sediment basin; and • it is feasible to install sediment basins which will have sufficient storage volume to contain design storm event i.e. the sediment basin(s) will not be inundated with groundwater.	With application
Applications proposing works on land identified in a planning scheme overlay map as a landslide hazard area or otherwise having a slope of greater than 20%	Concept ESC Plan which demonstrates that:- • there is sufficient area to install an appropriately sized sediment basin; and • the runoff from all disturbed areas can be directed to a sediment basin. Preliminary engineering sections of proposed sediment basins showing that they may be practically implemented on the slopes proposed. Preliminary earthworks plan demonstrating proposed extent of land disturbance. Geotechnical Report which assesses the probability of landslip instability as a result of the construction phase ESC measures.	With application

Note—for development not meeting any of the trigger criteria in the Category Column, no Concept ESC Plan is required with the application

Concept erosion and sediment control plans

(3) Concept ESC plans are to be submitted with applications for developments involving issues identified in **Table SC6.14.4A (Information required at development application stage)**, to assist Council in deciding the application. The purpose of concept ESC plans is to demonstrate the feasibility of implementing the required level of protection to receiving waters from the potential impacts of the development using best practice ESC. Normally concept ESC plans do not contain engineering drawings of structures, unless specified in **Table SC6.14.4A (Information required at development application stage)**.

(4) In addition to the information required by **Table SC6.14.4A (Information required at development application stage)**, concept ESC plans are to demonstrate the following:-

(a) the design, intensity, configuration and establishment of development is compatible with the physical constraints of the site and receiving environment;

(b) the feasibility of effective erosion and sediment control measures being implemented is substantiated, including consideration of the impacts of the overall development until permanent stabilisation of the site. A drawing showing a conceptual treatment train and giving preliminary calculations for the sizing of a sediment basin or basins is to be provided; and

(c) a contoured site plan showing natural features and location of the proposed control structures, including sediment basins is to be provided with an overview strategy for the site, outlining the sequence of development and temporary and permanent management mechanisms until commissioning of permanent water sensitive urban design features is undertaken.

Information required in support of construction phase

(5) Any development involving a total area in excess of 5000m^2 of either land disturbance and/or exposure of soil, and included in one of the categories listed in **Table SC6.14.4B (Information required at construction stage)** is required to submit the information summarised at the time specified. Further details of the information required are provided under the headings of **Design certificate**, **Erosion and sediment control plans**, **Construction phase stormwater management program** and **Inspection certificate** in this section of the planning scheme policy.

Table SC6.14.4B Information required at construction stage

Category	Information required	Timing
All works subject to an OPW Development Permit	Erosion and Sediment Control Plan(s) See relevant heading for requirements.	2 business days prior to prestart meeting or the relevant works commencing
	Design Certificate See relevant heading for requirements	2 business days prior to prestart meeting or works commencing
All works subject to an OPW Development Permit and involving:- • a total disturbance area of greater than 5000m^2 and /or • an issue listed in **Table SC6.14.4A**	Construction Phase Stormwater Management Program See relevant heading for requirements	2 business days prior to prestart meeting or works commencing
	Inspection Certificates See relevant heading for requirements	As indicated in **SC6.14.4.5 Quality Assurance (Inspection Certification)**
	Schedule of Registered Business Names See relevant heading for requirements	At the prestart meeting or prior to works commencing

Note—ESC plans might be required for several different stages of the works such as clearing, civil construction, rehabilitation etc. In which case, the ESC plan relevant to the civil works stage would be required 2 business days prior to commencement of that stage.

Design certificate

(6) The Design Certificate Erosion and Sediment Control Form is to be completed and submitted to Council at least 2 business days prior to the prestart meeting. The form can be obtained on Council's website.

Schedule of registered business names

(7) The name and contact details of the land owners, supervising RPEQ engineer and principal contractor for the purposes of compliance with the conditions of the approval are to be provided to Council's delegate at the prestart meeting in writing. The details are to include the registered business name and ABN/CAN. Any changes to these parties during construction are to be notified to Council in writing within 5 business days of the change occurring.

Erosion and sediment control plans

(8) The primary purpose of an ESC plan is to inform contractors on what controls are to be implemented throughout all stages of the development from site establishment to plan approval. Typically a separate ESC plan is required for each phase of the development including site clearing, bulk earthworks, civil construction, installation of services and final stabilisation. These plans are to be considered as a measure of complying with the general environmental duty, that is doing all that is reasonable and practicable to prevent or minimise environmental harm (s319 *Environmental Protection Act 1994*).

(9) Where engineering structures (either temporary or permanent) such as inlets, outlets and spillways form part of an ESC plan, the design and inspection of such structures are to be undertaken and certified by a RPEQ engineer.

(10) ESC plans are to:-

(a) be consistent with this planning scheme policy and current best practice guidelines (such as Council's Manual for Erosion and Sediment Control or IECA Best Practice Erosion and Sediment Control). Where a guideline is not consistent with this planning scheme policy, the policy prevails;

(b) be based on an assessment of the physical constraints and opportunities of the development site, including soil, landform type and gradient and hydrology;

(c) provide a set of contour drawings showing the real property description, north point, roads, site layout, boundaries and features. Contours on and surrounding the site are to be shown so that catchment boundaries can be considered;

(d) be at a suitable scale for the size of the project (as a guide around 1:1000 at A3 for a 2 hectare development and 1:500 at A3 for a 3000m^2 development);

(e) provide background information including site boundaries, existing vegetation, location of site access and other impervious areas and existing and proposed drainage pathways including discharge points;

(f) show the location of lots;

(g) show the location of stormwater drainage systems;

(h) include details on the nature and specific location of works and controls (revegetation, cut and fill, runoff diversions, stockpile management, access protection), timing of measures to be implemented and maintenance requirements (extent and frequency);

(i) show the way that works will modify the landscape and surface and subsurface drainage patterns (adding new or modifying existing constraints);

(j) show the staging of works and scheduling of progressive and final rehabilitation as civil works progress;

(k) identify the riparian buffers and areas of vegetation which are to be protected and fenced to prevent vehicle access;

(l) indicate the location and provide engineering details with supporting design calculations for all necessary sediment basins;

(m) include the location and diagrammatic representations of all other necessary erosion and sediment control measures;

(n) identify clean and disturbed catchments and flow paths, showing:-

(i) diversion of clean runoff;
(ii) collection drains and banks, batter chutes and stream crossings;
(iii) location of discharge outlet points; and
(iv) water quality monitoring locations.

(o) show calculated flow velocities, sizing and channel lining protection, and velocity/energy checks required for all stormwater diversion and collection drains, banks, chutes and outlets to streams;

(p) show streams (perennial and non-perennial) and detail of stabilisation measures for all temporary stream crossings;

(q) locate topsoil stockpiles; and

(r) provide details of chemical flocculation proposed, including equipment, chemical, dosing rates and procedures, quantities to be stored and storage location, and method of decanting any sediment basin.

Construction phase stormwater management program

(11) A construction phase stormwater management (CPSM) program is a set of documents and plans that describes what controls are required throughout all stages of the development including the integration of post construction stormwater management. In addition to the provision of ESC plans for each phase of the development as described above, the CPSM Program shall:-

(a) be prepared by a suitably qualified and experienced professional;

(b) be consistent with this planning scheme policy and current best practice guidelines (such as the IECA Best Practice Erosion and Sediment Control). For issues where a guideline is not consistent with this planning scheme policy, the policy prevails;

(c) prescribe non-structural controls where applicable, such as minimising the extent and duration of soil exposure, staging the works, identifying areas for protection and delaying clearing until construction works are imminent;

(d) include a maintenance schedule for ensuring ESC and stormwater infrastructure is maintained in effective working order;

(e) include an adaptive management program to identify and rectify non compliances and deficiencies in environmental performance;

(f) include contingency management measures for the site, for example to ensure ESC measures are effective at all times, particularly just prior to, during and after wet weather;

(g) for each phase of the works (including clearing, earthworks, civil construction, services installation and landscaping) detail the type, location, sequence and timing of measures and actions to effectively minimise erosion, manage flows and capture sediment;

(h) be consistent with current best practice standards, taking into account all environmental constraints including erosion hazard, season, climate, soil and proximity to waterways;

(i) be prepared to a sufficient standard and level of detail such that compliance with the concept ESC plans section of this planning scheme policy is achieved if the plans are correctly implemented on site;

(j) include an effective monitoring and assessment program to identify, measure, record and report on the effectiveness of ESCs and the lawfulness of releases; and

(k) be submitted to Council at least 2 business days prior to the prestart meeting.

Inspection certificate

(12) Refer to **SC6.14.4.5 (Protecting waters from the impacts of development) -** Quality Assurance (Inspection Certification).

SC6.14.4.5 Protecting waters from the impacts of developments

Quality assurance (inspection certification)

(1) This section does not apply to developments which have a total disturbance area of less than 5000m^2.

(2) The land owner is responsible for ensuring that certification is provided at the intervals specified in (3) (c) below, verifying that matters pertaining to the environmental management of the development are either:-

(a) in compliance with **Avoiding and minimising releases, flow and discharges of prescribed water contaminants** of this section, or

(b) where not in compliance with (a) above, specific advice has been given to the land owner, which if implemented, will achieve compliance with **Avoiding and minimising releases, flow and discharges of prescribed water contaminants** of this section.

(3) Certification is to:-

(a) be on the approved form;

(b) be undertaken by a suitably qualified and experienced professional, not directly employed by the principal contractor;

(c) be undertaken at the following minimum intervals:-

(i) prior to the commencement of bulk earthworks;
(ii) prior to requesting a Council sub grade inspection;
(iii) prior to requesting a Council WSUD hold-point inspection; and
(iv) at intervals not exceeding 1 month.

(d) be provided to the land owner, supervising RPEQ engineer, the principal contractor and Council and verify that:-

(i) it is a true and accurate assessments of the findings; and
(ii) it is kept available (copies) on site together with copies of all specific directions issued in relation to the certification for inspection by Council.

(4) This requirement does not diminish the responsibility of any parties involved in the development to do all that is reasonable and practicable to ensure effective environmental management is implemented on site at all times and in accordance with the requirements of the applicable development permits and the *Environmental Protection Act 1994*.

Avoiding and minimising releases, flow and discharges of prescribed water contaminants

(5) Prescribed water contaminants (as defined in the *Environmental Protection Act 1994*) are not to be released from the site or be likely to be released should rainfall occur, unless all reasonable and practicable measures are taken to prevent or minimise the release and concentration of contamination. These measures are to include as a minimum but not limited to the following:-

(a) ensure non-essential exposure of soil is avoided by restricting the extent of clearing to that necessary for access to and safe construction of the approved works;

(b) vegetation in all other areas of the site is to be protected;

(c) the duration of soil exposure is to be minimised by:-

(i) only clearing vegetation immediately prior to an area being actively worked;
(ii) staging the works to minimise the area of soil exposed at any one time;
(iii) effectively stabilising cleared areas if works are delayed or works are not intended to occur immediately;
(iv) effectively stabilising areas at finished level without delay and prior to rainfall; and
(v) effectively stabilising steep areas, such as stockpiles, batters and embankments, which are not being actively worked and prior to rainfall.

Note—an effectively stabilised surface is one that does not have visible evidence of soil loss caused by sheet, rill or gully erosion, lead to sedimentation or lead to water contamination.

(d) ensure clean stormwater is diverted or managed around or through the site without increasing the concentration of total suspended solids or other contaminants in the flow and without causing erosion (on site or off site). If it is not feasible to divert all areas discharging clean stormwater around or through the site, manage the clean stormwater runoff as for contaminated stormwater runoff and ensure that sediment basins are sized to accommodate the additional volume of runoff;

Note—diverting clean stormwater runoff into a sediment basin is an inferior option to diverting clean stormwater around or through the site because it will cause an increase in the volume and frequency of contaminated release from the sediment basin. For this reason, diverting clean stormwater into a sediment basin is not acceptable unless the proponent demonstrates that diverting clean stormwater around or through the site is not feasible.

(e) ensure sheet flows of stormwater are managed such that sheet and rill erosion are prevented or minimised;

(f) ensure that all concentrated stormwater flows including drainage lines, diversion drains, channels and batter chutes are managed onto, through, and at release points from the site in all rain events up to and including the AEP event of:-

(i) 39% AEP if the disturbed area is open for less than 12 months; or
(ii) 18% AEP if the disturbed area is open for between 12 and 24 months; or
(iii) 10% AEP if the disturbed area is open for more than 24 months; and

(g) concentrated stormwater flows are not to cause:-

(i) water contamination; or
(ii) sheet, rill or gully erosion; or
(iii) sedimentation; or
(iv) damage to structures or property.

Sediment basins

(6) Each sediment basin shall have capacity to treat flows to current best practice standards and as a minimum to contain all the stormwater runoff from the 80th percentile 5 day rainfall depth and store 2 months sediment from the receiving catchment, as determined using the Revised Universal Soil Loss Equation.

Note—research has shown that sediment basins designed on a batch or total storm capture approach are only capable of treating a small percentage of the annual runoff volume without basin size becoming excessive. Innovation in sediment basin design to incorporate continuous flow treatment is likely to occur in the future and as this technology becomes available in best practice guidelines it is required to be adopted where a better water quality outcome will result. In the interim, the minimum basin size is as specified above.

(7) Sediment basins are to be maintained with sufficient storage capacity to capture and treat the runoff for the design rainfall depth or event. Where sediment basins are proposed to be oversized for storage of captured water for re-use, install survey markers in each such basin to indicate the level that water within the basin is to be lowered to, in order to meet the storage capacity specified in requirement (6) above.

(8) Sediment basins are to be dewatered as soon as practicable after each rainfall event and within 2 days of rainfall ceasing.

(9) Stormwater captured in sediment basins shall be treated prior to discharge to minimise the concentration of contaminants released from the site, having due regard to forecast rainfall and ensuring that releases are in accordance with the release limits as specified in this section.

Note—dewatered flows from sediment basins shall be compliant with the release limits as specified, unless it can be demonstrated that a non-compliant release occurred to facilitate a better environmental outcome. For example, higher TSS concentrations may be acceptable in circumstances where further rain is imminent and it can be substantiated that releasing partially treated basin water that has a TSS concentration exceeding the release limit would minimise the total contamination released from the site, by providing for the capture and treatment of expected runoff. However, releasing waters from sediment basins without treatment is not acceptable.

(10) Sediment basins and associated structures such as inlets, outlets and spillways are to be constructed to be structurally sound for a 10% AEP rainfall event under normal circumstances and for a 1% AEP rainfall event if failure of the basin poses a threat to downstream dwellings or public safety.

(11) Accumulated sediment from basins and other controls is to be removed and disposed of appropriately without causing water contamination.

Erosion and sediment controls (other than sediment basins)

(12) Measures are to be implemented such that the runoff from all disturbed areas flows to a sediment basin or basins. Where it is not feasible to divert runoff from small disturbed areas of the site to a sediment basin, implement compensatory erosion and sediment controls prior to rainfall to ensure that erosion of those areas does not occur, including erosion caused by either splash (raindrop impact), sheet, rill or gully erosion processes.

Note—compensatory controls are erosion controls, flow controls and sediment controls which compensate for the lack of sediment basin and are applied such that the type, timing, placement and management of controls minimise the potential for water contamination and environmental harm. This is primarily achieved by reducing the risk of erosion and subsequent sediment release, for example, by turfing or mulching and managing concentrated flows in the area.

(13) Where it is not feasible to effectively stabilise cleared areas of exposed soil, such as areas being actively worked, a full suite of erosion and sediment controls are to be implemented to maximise sediment capture in those areas and minimise erosion such that all forms of erosion, other than splash erosion (raindrop impact) and sheet erosion, does not occur.

(14) In areas of exposed soil where it is not feasible to either effectively stabilise the surface or implement a full suite of erosion and sediment controls (for example in the areas being actively worked and where the implementation of some erosion and sediment controls would impede construction activities) ensure contingency measures are available on site and are implemented,

prior to rain, to maximise sediment capture in those areas and minimise erosion such that all forms of erosion, other than splash erosion (raindrop impact) and sheet erosion does not occur.

Note—this does not apply to major erosion and sediment controls such as sediment basins. Major controls are to be installed before other works commence.

(15) All stockpiles, batters and embankments are to be effectively stabilised without delay. Where it is not feasible to effectively stabilise a stockpile, batter or embankment, such as areas being actively worked, ensure that sediment controls are installed and surface stormwater flows are managed such that erosion of stockpiles, batters or embankments is not caused by concentrated stormwater flows.

(16) Measures are to be taken to ensure sediment does not leave the site on the tyres of vehicles.

Work within waterways

(17) Waterways, including perennial and permanent waterways, are not to be altered, nor riparian (including rehabilitated) vegetation disturbed without prior written approval of the relevant administering authority.

(18) Work within waterways is to be:-

(a) only undertaken during the lower rainfall months;

(b) promptly rehabilitated conforming to the natural channel form, substrates and riparian vegetation as far as possible; and

(c) undertaken in accordance with *Best Practice Erosion and Sediment Control*, Appendix I – Instream works, Sections 14 and 16, (International Erosion Control Association, 2008).

(19) Temporary vehicular crossings of waterways are to be designed and constructed to convey flows and remain stable for all rainfall events up to the 10% AEP event of critical duration.

(20) ESCs are not to be constructed within the riparian zone, unless it is not feasible to site them elsewhere.

Effective stabilisation prior to plan approval

(21) Prior to the approval of the plan of survey for the development, all site surfaces are to be effectively stabilised using methods that will continue to achieve effective stabilisation in the medium to long term. For the purposes of this requirement, an effectively stabilised surface is one that does not, or is not likely to, result in visible evidence of soil loss caused by sheet, rill or gully erosion, lead to sedimentation or water contamination.

(22) A site is determined to be effectively stabilised if at the time of the plan approval inspection:-

(a) methods of stabilisation are:-

(i) appropriate for slopes and slope lengths; and
(ii) consistent with best practice environmental management practices such as in the *Manual for Erosion and Sediment Control* or the *IECA Manual*; and

(b) stormwater runoff from the site is not currently, and is not likely to result in visible evidence of sedimentation or erosion, or lead to water contamination in the short, medium and long term.

(23) If at the time of request for plan approval the method of stabilisation has not achieved a stability that has a high probability of enduring in the medium to long term (for example, inadequate grass cover or permanent approved landscape works are incomplete), the following will be taken into consideration in determining whether the site is capable of achieving medium to long-term stability:-

(a) evidence of soil amelioration having been adequately undertaken;

(b) evidence of an adequate seed mix of annual and perennial grass species being applied at an adequate rate; and

(c) evidence that appropriate grass strike and growth has been achieved for the type of stabilisation method selected.

Note—while hydromulch can provide an immediate and effective stabilising cover to soils, the protective cover can be relatively short-lived if vegetation fails to establish before the thin layer of mulch decomposes. If hydromulch is selected as the method of temporary stabilisation, it is important that perennial as well as annual grasses are well established at the time of plan approval to reduce the risk of instability of the site in the medium to long term.

Release limits

(24) All releases of stormwater captured in a sediment basin, unless otherwise noted in this planning scheme policy, are not to exceed the following limits:-

(a) 50 milligrams litre (mg/L) of TSS as a maximum concentration;

(b) turbidity (NTU) value less than 10% above background; and

(c) pH value is to be in the range 6.5 to 8.0 except where, and to the extent that, the natural receiving waters lie outside this range.

Note—background refers to receiving waters immediately upstream of site waters entry points at the time of release.

(25) The concentration of TSS released by dewatering may only exceed 50mg/L where it can be demonstrated and supported through documentation that:-

(a) further significant rainfall is forecast to occur before the TSS concentration is likely to be reduced to 50mg/L;

(b) releasing a higher concentration of total suspended solids will result in a better environmental outcome by providing storage for the capture and treatment of runoff from the imminent rainfall and runoff; and

(c) flocculent has been applied and the concentration of TSS in the captured water has already significantly decreased.

(26) For all other stormwater releases, flows and discharges from the site, the release limits prescribed in (24) above are not to be exceeded unless the development is in full compliance with **SC6.14.4.4 (Stormwater management programs and erosion and sediment control plans)**.

Note—it is recommended that a site specific relationship between turbidity and suspended solids is determined for each medium to large scale construction site. Once a correlation between suspended solids and turbidity has been established for a site, testing stormwater for compliance with release limits, prior to release, can be done on site with a turbidity tube. This has the advantage of providing immediate assessment rather than waiting for laboratory results to confirm concentration levels and compliance.

SC6.14.4.6 Guidelines

For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) *Queensland Urban Drainage Manual* (QUDM);

(b) *Australian Rainfall and Runoff* (AR&R);

(c) *Manual for Erosion and Sediment Control*, Sunshine Coast Council, 2008;

(d) *Erosion and Sediment Control*, IECA, 2008; and

(e) *Queensland Manual of Uniform Traffic Control Devices* (Department of Transport and Main Roads, 2019).

Note—relevant guideline documents in existence or available over the life time of this planning scheme policy are to be referenced and used where appropriate. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally

SC6.14.5 Local parks

SC6.14.5.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance on the desired standards of service for local parks;

(b) provide advice and guidance on the policy and standards required in relation to the provision of local parks for new development; and

(c) provide an option for contributions in lieu, where development is physically unable to provide a local park in accordance with the planning scheme.

SC6.14.5.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Reconfiguring a lot code**.

(2) This section is structured as follows:

(a) **Sections SC6.14.5.1** to **SC6.14.5.2** provide the framework;

(b) **Sections SC6.14.5.3** to **SC6.14.5.6** provide the requirements and procedures for achieving the outcomes of the **Reconfiguring a lot code** and to achieve the purpose of this section of the planning scheme policy; and

(c) **Section SC6.14.5.7** contains guidelines for achieving compliance with this section of the planning scheme policy.

(3) Compliance with the guidelines contained in this section will assist to deliver green spaces that define the local character, provide suitably embellished and functional local parks while also meeting Council's maintenance and life cycle cost requirements.

SC6.14.5.3 General

(1) Local parks are primarily used for recreation, social, cultural and leisure activities. They connect people to the outdoors and may provide other complementary values such as landscape enrichment, biodiversity or cultural conservation. Local parks are small parks that cater for frequent visits and are located a short walk from home for people in the surrounding local community. They also provide amenity and visual relief from the built environment.

(2) Local parks do not form part of the trunk network under **Part 4 Local Government Infrastructure Plan** of the planning scheme. In circumstances where development cannot meet the physical requirements for dedication and embellishment of local parks other contributions towards the provision of local parks will be necessary.

(3) Council requires the dedication of an area of land for use as a local park in the following circumstances:-

(a) the development is for reconfiguring a lot; and

(b) where it is in the community interest to provide land for public park or recreation space considering the:

(i) demand generated by the proposed development;
(ii) opportunity to link local parks into the existing or future open space network;
(iii) opportunity to augment existing local parks to meet the desired standards of service for local parks;
(iv) usability of proposed land dedications for active or passive recreation in terms of size, configuration, accessibility and biophysical constraints;
(v) availability of existing parks or recreation space in the vicinity, and the existing and proposed demand for these parks or recreation space; and
(vi) maintenance costs to Council.

(4) The provision of local parks set out in this policy aligns with the Desired Standards of Service outlined in the Sunshine Coast Council's *Environment and Liveability Strategy 2017* – Part C Network Plan for local recreation parks.

(5) The dedication of an area of land for use as a local park may not be required in the circumstances where an infrastructure agreement is in place.

SC6.14.5.4 Local park provision rate

(1) Development is to provide local parks at a rate that achieves the outcomes of the Sunshine Coast Council's *Environment and Liveability Strategy 2017* – Part C Network Plan.

(2) Any development exceeding 200 lots or dwellings (whichever is greater) and located greater than 500 metres from a local park is to provide a minimum 0.5ha local park embellished in accordance with the Desired Standards of Service and Embellishment Tables within Part C of the *Environment and Liveability Strategy 2017*. Council's *Open Space Landscape Infrastructure Manual* (LIM) provides further guidance on potentially appropriate embellishments for local parks.

(3) In the circumstances where a development exceeds 40 los or dwellings (whichever is greater) and cannot physically provide the required land and embellishments, a contribution in lieu will be considered through the negotiation of an infrastructure agreement.

SC6.14.5.5 Local park desired standards of service

Land suitability

(1) Land for a local park shall be suitable for its intended role and function. Suitable land includes land that:-

(a) is outside of the erosion prone area as defined by the *Coastal Management and Protection Act 2005*;

(b) lies above the 5% AEP (1 in 20) flood level;

(c) is developable under environment related restrictions such as the *Vegetation Management Act 1999*;

(d) is free of health and safety hazards and encumbrances (i.e. easements) and is unconstricted by existing infrastructure and utilities such as pump stations, electrical transformers and high voltage power lines);

(e) is relatively level with a natural slope less than 25%;

(f) is not required for:

(i) a buffer, esplanade or utility easement;
(ii) drainage purposes;
(iii) utility infrastructure or services;
(iv) storm water treatment or detention;
(v) underground infrastructure and services; and
(vi) future transport infrastructure or services.

(g) is outside land designated for road reserve and at least 50 metres from easements with conflicting purposes; and

(h) is uncontaminated.

(2) Exemptions may occur where a proposal can demonstrate the constraints are required or complement the role and function of the open space area (i.e. amenity reserves and landscape corridors may protect vegetated areas, recreation trails are often located in areas that are otherwise constrained, or where slope may facilitate a recreational activity).

(3) Redevelopment of existing open space areas shall also consider the above requirements and seek to avoid or mitigate development in areas where land may be unsuitable.

Design outcomes

(4) Land for a local park shall:-

(a) provide a balance of diverse open space settings (e.g. passive or active) within local catchments;

(b) be strategically located to create safe and comfortable community gathering spaces and strengthen the character, identity, urban separation and local amenity; and

(c) utilise landform, vegetation and other natural elements in a way that helps reduce the requirements for constructed embellishments.

(5) **Table SC6.14.5A (Local park specifications)** details Council requirements in the design and construction of local parks.

Table SC6.14.5A Local park specifications

Element	Requirements
Size, shape and frontage	• Minimum 0.5 hectare (refer to standard land requirements). • Minimum width of 50 metres. • A regular and compact shape that can accommodate the intended role and function. • Minimum road frontage to two sides or 50% of perimeter.
Topography and gradient	• Communal recreational spaces (children's play areas/playgrounds) have a gradient of no more than 3%. • Key use areas provide for equitable access.
Location and accessibility	• Within 500 metres from residences in urban areas (generally a 5-10min walk). • Within a rural township. • Within 1 kilometre from place of work in industrial areas. • On a collector road or lower. • Linked to the recreation trails or pedestrian/bicycle network.
Linkages	• May provide a trailhead for recreation trails. • Internal pathways connecting to the street provided without conflicting with the primary use.
Activities	• Recreation and social gathering, play spaces.
Functionality	• Adequate natural shade that maximises user comfort and safety. • Utility functions not servicing the local park are to be located adjacent and not impact functions or amenity values of the park.
Landscape and character	• Distinctive qualities of the landscape character (formal to natural) strengthened through material selection, built form and planting design. • Existing trees retained and new trees planted at strategic locations to contribute to amenity. • Key viewpoints identified and protected. • Public art encouraged (may also be incorporated in play spaces as interactive play).
Natural assets	• A planting style that identifies with the character of the local area. • Where integrated, WSUD elements provided in addition to minimum land requirements and do not interfere with the function of the local park.
Safety and security	• CPTED principles applied. • Play spaces located in visible, safe areas. • Landscaping, vegetation or other measures used to deter unauthorised vehicle access.
Flood immunity	• Entire local park is to be above 5% AEP • Key infrastructure and communal recreational spaces (i.e. children's play areas/playgrounds/exercise equipment/picnic, bins, pathways, fencing, etc.) above 2% AEP. • Amenity facilities (toilets) and structures above 1% AEP. • Park layout designed so that stormwater/flood flows do not compromise function or safety in the park (e.g. land required for stormwater/flood storage/conveyance does not traverse a local park)

SC6.14.5.6 Local park standard embellishments

(1) **Table SC6.14.5B (Local park embellishments)** provides a broad list of embellishments required to be provided as part of the local park as well as including optional embellishments. The table also lists embellishments that are not suitable for a local park.

Table SC6.14.5B Local park embellishments

Acceptability	Embellishments
Embellishments to be included in a local park	• Bollards or other suitable vehicle restriction devices. • Retaining walls (if required to retain surface materials, prevent erosion or provide levelled recreation surfaces). • Bin/s. • Picnic tables and benches. • Seats. • Taps – maintenance. • Taps – public access. • Handrails and balustrades (if required to comply with relevant safety legislation and/or standards). • Ramps and stairs (if required to provide safe access for all abilities). • Sealed footpath/bikeway (link to external network). • Sealed paths and trails (internal). • Garden edging. • Planting (landscape and re-vegetation). • Shade trees (both native and non-native species). • Flat well drained play area for kick and throw. • Signage – regulatory (where required). • Earthworks (e.g. grading, levelling and grassing). • Shelter/s. • Vehicle access (emergency/maintenance). • Landscape drainage • Tactiles if required to comply with relevant safety legislation and/or standards).
Optional embellishments that may be included	• Bicycle racks and rails. • Signage – information, interpretive/educational. • Multi-use space (sports and games) (if appropriate for the size, location and layout of the park). • Water access (e.g. ramp/jetty/pontoon) (if adjacent to the beach or waterway). • Exercise equipment (if appropriate for the size, location and layout of the park). • Showers (if adjacent to the beach or waterway accessed for water-based recreation activities). • Play spaces (including play equipment and natural shade or artificial shade where natural shade cannot be achieved). • Beach access (if adjacent to the beach or waterway). • Smart technology. • Electricity supply.
Embellishments that are not acceptable	• Drinking fountain. • Skate parks. • Toilets. • BBQs. • On site parking. • Public art. • Memorial plaques, structures or signs. • Entrance statements or displays.

(2) Other optional embellishments may be included to increase the useability of the local park and the subsequent contribution to the amenity and useability of the area. Due to maintenance cost implications, Council will only accept limited additional/optional embellishments dependent on the location of the park, its characteristics and in regard to other park facilities in the area.

(3) A concept plan and/or detailed design plan demonstrating the location and type of embellishments to be included in the local park are to be provided at the RAL stage. Further detail (including design specifications, performance criteria and technical drawings) can be obtained in Council's *Open Space Landscape Infrastructure Manual* (LIM).

SC6.14.5.7 Guidelines

The following publications provide additional guidance regarding local parks and open space infrastructure requirements:-

(a) Sunshine Coast Council *Environment and Liveability Strategy 2017*; and
(b) Sunshine Coast Council *Open Space Landscape Infrastructure Manual* (LIM).

SC6.14.6 Landscaping infrastructure

SC6.14.6.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance relating to landscape infrastructure, planting and street trees provided on land which is or is intended to be in the public domain; and

(b) provide advice and guidance on the policy and standards required for achieving the outcomes nominated in the development codes in relation to landscape infrastructure, open space planting, street tree planting, revegetation and habitat works, establishment of buffers, management of invasive plants, landscape design, management and maintenance, safety and security and energy and water efficiency, pathways and access.

SC6.14.6.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Biodiversity, waterways and wetlands overlay code**, **Landscape code** and the **Vegetation management code**.

(2) This section is structured as follows:-

(a) **Sections SC6.14.6.1** and **SC6.14.6.2** provide the framework;

(b) **Sections SC6.14.6.3** to **SC6.14.6.28** provide the requirements and procedures for achieving the outcomes of the **Biodiversity, waterways and wetlands overlay code**, **Landscape code** and the **Vegetation management code** and to achieve the purpose of this section of the planning scheme policy;

(c) **Section SC6.14.6.29** contains guidelines for achieving compliance with this section of the planning scheme policy; and

(d) **Appendix SC6.14B** to **Appendix SC6.14C** contain Guide to industry best practice landscape maintenance activities for road reserves and public open space areas and a Landscape Maintenance Checklist.

(3) Compliance with the guidelines contained in this section will assist to achieve coherency and maintain local distinctiveness throughout the region while also meeting Council's maintenance requirements.

SC6.14.6.3 General

(1) The Sunshine Coast contains a variety of landscape and urban settlement types, ranging from coastal urban, hinterland towns and villages, rural areas, and dramatic scenic landscapes to significant environmental reserves. The selection of appropriate landscape infrastructure elements in these guidelines seeks to:-

(a) provide functional and robust landscape infrastructure elements;

(b) reinforce the diverse character within coastal and hinterland regions; and

(c) reinforce the individual identity of the particular planning areas and suburbs/localities within those areas.

(2) These guidelines have been developed in order to assist ecological, recreational, amenity, social and economic values are protected and enhanced throughout the Sunshine Coast by promoting high quality and cohesive landscape infrastructure. The guidelines identify the preferred landscape infrastructure to be installed within the Sunshine Coast's parks, reserves, open space areas, streetscapes and urban spaces.

(3) Landscape infrastructure included in the guidelines has been selected on the basis that it is responsive to the local landscape character, robust, sensitive to the environment and vandal resistant.

(4) The core value of such infrastructure is to provide public amenity and functionality to both public and private spaces, improve visual amenity as well as improving and protecting both the community lifestyle and ecological value of the Sunshine Coast.

(5) Council's *Open Space Landscape Infrastructure Manual* (LIM) provides further guidance with regard to specifications for landscaping infrastructure in this section of the planning scheme policy.

SC6.14.6.4 Retention of vegetation and topographic features in layout and design of landscapes

(1) All existing vegetation and street trees, required to be retained within road reserves, trees located within proposed development lots and neighbouring properties are to be retained and protected in accordance with *AS4970 Protection of trees on development sites,* with the exception of *exempt vegetation clearing*, as defined in **Schedule 1** of the planning scheme or as conditioned as part of an associated Development Approval.

(2) All topographic features, including landform, watercourses, drainage paths and other attributes such as rocky outcrops, wetlands and soils are to be retained and protected as far as practicable.

(3) Where a development has the potential to impact upon mature vegetation providing ecological, character or visual amenity to the local area, an arboricultural management plan is required to be prepared to ensure no undue disturbance or loss is encountered. In the event that such vegetation is proposed for removal, the arboricultural management plan shall provide appropriate justification for such removal.

(4) The arboricultural management plan is to be prepared in accordance with *AS4970 Protection of trees on development sites*. The management plan is to be prepared by a suitably qualified and experienced arborist (minimum International Society of Arboriculture (ISA) certification or Diploma of Arboriculture with a minimum of 3 years current experience in the field of arboriculture).

(5) The arboricultural management plan is to:-

(a) provide the following information:-

(i) tree survey plan to include location, species and trunk diameter of trees located on the site. The location of these trees shall be overlaid and be easily compared with the proposed works;
(ii) clearly identify and include photographs of all trees being retained;
(iii) clearly identify and include photographs of any tree considered unsafe for retention along with the arboricultural justification; and
(iv) a comprehensive outline of the tree protection measures required (including details of root pruning, hazard reduction, tree protection zones and tree protection fencing) prior to, during and post construction.

(b) include written certification by the project arborist in accordance with *AS4970 Protection of trees on development sites* of the following:-

(i) establishment of tree protection zones and implementation of tree protection measures prior to construction works commencing;
(ii) tree removal and pruning undertaken in accordance with approvals during construction;
(iii) maintenance of tree protection zones and tree protection measures during the construction;
(iv) adherence to tree protection hold points during construction; and
(v) tree condition on completion (post construction).

(6) When development necessitates removal or modification of vegetation (including environmental weeds and invasive plants, woody and otherwise) or topographic features, appropriate measures for the protection of fauna, flora, habitat function, habitat connectivity, wildlife refuge, fire mitigation, site hydrology and landform to be retained are to be employed. To achieve the desired outcomes the following is required:-

(a) site planning and design are to include:-
(i) habitat assessment by a qualified ecologist/environmental scientist/certified fauna spotter and catcher for all affected vegetation;

(ii) ecological assessment of habitat function and connectivity impacted by the development;
(iii) identification of any environmental offset required as a result of impacts; and
(iv) retention of suitable hollows and woody debris on site to provide habitat within contributed natural areas in consultation with council.

(b) site management is to ensure:-

(i) all works are undertaken in accordance with the draft Queensland Code of Practice for the Welfare of Wild Animals Affected by Land Clearing (2009) and the **Biodiversity, waterways and wetlands overlay code** and **Planning scheme policy for the biodiversity, waterways and wetlands overlay code**;
(ii) a certified fauna spotter and catcher undertakes pre-clearing inspections and subsequent works from findings, prior to the commencement of any development construction works;
(iii) all vacant hollows and nests are rendered unusable to prohibit fauna return during clearing works;
(iv) a certified fauna spotter and catcher is present for all clearing activities, and clearing techniques are consistent with the type of habitat and fauna protection requirements;
(v) all fauna is relocated or humanely dealt with by a certified fauna spotter and catcher during the pre-clearing inspections or during clearing; and
(vi) a certified fauna spotter and catcher is present for the removal or chipping of any stockpiled cleared vegetation; and

(c) where habitat cannot be retained compensatory habitat offsets are to be provided in consultation with council, prior to the clearance of any vegetation by a suitably qualified fauna spotter and catcher.

SC6.14.6.5 Management of invasive plants

(1) Management of invasive plants is to be undertaken as part of development works to assist retention and enhancement of endemic vegetation and natural characteristics including landform, aquifer and above ground hydrology and catchment.

(2) Invasive plants are to be cleared in an ecologically sustainable manner minimising regrowth and encouraging natural recruitment so that less than 2% weed cover is present prior to handover. Removal is to be staged throughout the maintenance period to maintain existing habitat values and prevent erosion or slippage. Only Council approved herbicides shall be used.

(3) Where weed management is to be undertaken on land to be dedicated to Council, a suitably qualified bush regeneration contractor shall be used and a regeneration works plan established for management of the site and a Bushland Operational Assessment undertaken prior to handover.

(4) The removal and management of invasive plants are detailed in the following:-

(a) *Biosecurity Act 2014*;

(b) *Invasive Naturalised Plants in South East Queensland* (Queensland Herbarium);

(c) Australian Government *National Alert List for Environmental Weeds*; and

(d) Sunshine Coast Council *Local Government Area Biosecurity Plan 2017* prepared in accordance with the *Biosecurity Act 2014.*

Note—some species of locally significant invasive plants may be assessed as being suitable for use in highly urbanised areas where the risk of proliferation is minimised by the distance between the development and an ecologically important area.

SC6.14.6.6 Landscape design

General

(1) Council promotes the use of subtropical design that creatively engages with the local climate, landscape and culture to develop low-energy urban form and welcoming comfortable open spaces. Further information can be found in the *Subtropical Design in Southeast Queensland* produced by the Centre for Subtropical Design.

Good landscape design

(2) Good landscape design:-

(a) includes the required elements identified in the applicable Local plan code;

(b) involves comprehensive site analysis as the first step to inform and guide the landscape design process. The site analysis is to respond to and include the surrounding area as well as the local site attributes such as:

(i) existing uses, vegetation, views, natural and cultural features, incompatible uses and site elements and bushfire hazard;
(ii) streetscape character, aspect and orientation, privacy, security and land capability;
(iii) natural landform levels and drainage, solar access (summer shade and winter sun), soil type and conditions;
(iv) rainfall, prevailing breezes (cooling summer/ cold winter), climate and microclimate; and
(v) communal and private open spaces, pedestrian and vehicular circulation/ access, utility areas and services.

(c) looks beyond the boundaries of the site and considers external influences such as character of the surrounding neighbourhood, existing vegetation, desirable and undesirable views, outlooks from neighbouring locations, noise sources such as busy roads and connectivity within the locality;

(d) protects native vegetation and vegetation of ecological, cultural, historic and amenity value and national, regional and local landscape values;

(e) respects the natural landform and minimises earthworks;

(f) improves amenity by creating attractive functional, well used spaces, that are welcoming, legible, robust and comfortable to use, with framing of views, vistas, landmarks and places of significance and screening of undesirable or incompatible features and land uses;

(g) has generally a minimum of half the landscape and recreation area covered by soft landscape (turf and planting areas);

(h) provides effective visual and acoustic screening, solar shading and integration with storm water management features;

(i) provides safe and secure access and spaces for users of all abilities and adequate spaces for active and passive recreation activities;

(j) considers adjacent bushfire prone areas in accordance with Benchmark 7 of the *Natural hazards, risk and resilience – Bushfire State Planning Policy – state interest guidance material*;

(k) is sustainable and cost effective to maintain and utilises sustainable and effective water use for permanent irrigation; and

(l) is of an appropriate scale and type relative to the size and nature of the development and its surroundings and provides a unified theme throughout the development.

Landscape works

(3) Landscape works:-

(a) do not adversely affect existing underground or overhead infrastructure, services, buildings or overland flows;

(b) assist in integrating pedestrian circulation, car parking areas, driveways and roadways within the development by:-

(i) highlighting entry points and enhancing way-finding within the development;
(ii) distinguishing private driveways from public roads through the use of paving treatments and landscape;
(iii) incorporating street trees and planting along newly created roadways; and

(iv) ensuring landscaping is designed with appropriate consideration given to traffic visibility and safety and minimising maintenance within areas of high traffic flow.

(c) along and/or near retaining walls, long unbroken walls, blank walls, service areas, car parking areas and recreational areas comprise a combination of trees, shrubs and groundcovers.

(4) Creditable landscape areas consist of vegetation that is established in sufficient natural ground and does not include:-

(a) pavement;

(b) services and infrastructure (i.e. sewer, water, pad mount transformers, water treatment devices);

(c) built form;

(d) landscaping located over a basement;

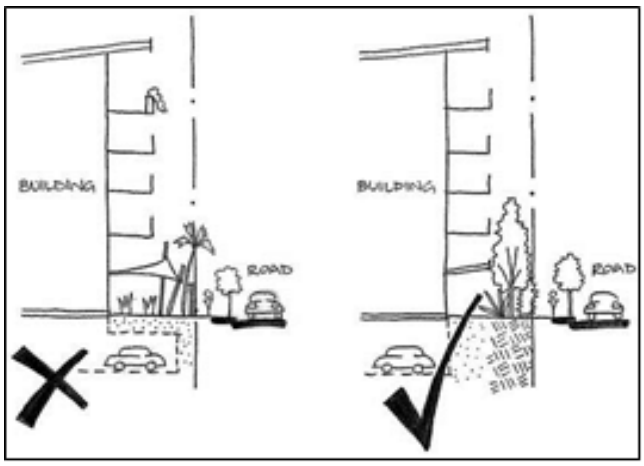
(e) landscaping located within an existing or proposed road reserve;

(f) podium landscaping; or

(g) under a built form overhang.

(5) Landscape works that do not meet these requirements do not contribute to the total site percentage of landscaping required by the relevant planning scheme code/s as shown in **Figure SC6.14.6A (Acceptable landscape area).**

Figure SC6.14.6A Acceptable landscape area



Landscape themes

(6) The Sunshine Coast is characterised by its natural beauty and Council promotes the use of landscape themes that reflect, enhance and showcase these natural characteristics. Landscape planting is to be designed around a theme or style to create a cohesive and attractive appearance. In that regard, the Council's *Open Space Landscape Infrastructure Manual* (LIM) includes a planting palette which provides performance criteria and standards for landscape planting.

(7) Designers are to use the endemic ecology to inform their landscape design. Landscape species are to be selected based on their suitability for the local conditions, with a preference for species from the regional ecosystem specific to the site. Consideration is to be given to soil type, rainfall, ground water conditions, access to sunlight and other microclimatic factors. Taking the lead from the natural environment supports biodiversity and native fauna as well as improving the likelihood of a successful landscape with lower maintenance requirements.

(8) While the use of endemic species is highly desirable they are not always suitable for urban micro-climates. When selecting plants for these situations, plant form, flower, fruit, leaf colour and maintenance requirements are to also be taken into consideration. There are a number of hybrids/varieties of native species which have been developed to have more compact and

reliable form and lower maintenance requirements. Care should be taken to select hybrids that are suitable for the local conditions. Hybrids/variegates are not to be used in environmentally sensitive areas or for the purposes of environmental rehabilitation. Fire risk and weediness potential should also be considered, particularly when planting adjacent to bushland areas.

(9) Creative use of ground covers and understorey plants is important to achieve an overall landscaped effect. The use of native grasses is encouraged particularly for developments in or adjoining natural areas. Consideration shall be given as to the most appropriate design outcomes to complement the space, amenity, user and environment. A graduated planting palette to reduce tree canopy intrusion into bushfire prone areas shall be considered.

(10) Exotic turf grass species are best confined to passive and active recreation areas.

Landscape plan

(11) Landscape documentation is to be prepared by consultants who are qualified and experienced in their specialist field to ensure all aspects of the design are addressed.

(12) Acceptable qualifications for landscape consultants include certifications in the following fields of expertise:-

(a) landscape architecture/landscape design;

(b) horticulture;

(c) arboriculture;

(d) ecology;

(e) environmental science;

(f) fauna management; and

(g) agronomy.

Bushland regeneration plan

(13) For contributed conservation, bushland and coastal reserve assets, a Bushland Regeneration Works Plan shall be prepared and implemented by a suitably qualified, locally experienced landscape architect, ecological restoration or bush regeneration consultant.

(14) Prior to handover of the site a Bushland Operational Assessment should be conducted in line with council procedures.

(15) To assist timely assessment of landscape and bushland regeneration reports and plans, it is essential that all required information is included with the application for assessment. Dependant on the development requirements, applications may require part or all of the supporting documentation outlined in **Table SC6.14.6A (Landscape documentation)** and **Table SC6.14.6B (Plan styles, sizes and types)**.

Table SC6.14.6A Landscape documentation

Type	Detail required
Cartographic conventions	• Title, date, drawing number. • Scale. • North point. • Legend. • Details of author (name, qualifications/experience).
Contextual information	• Easements and other encumbrances. • Adjoining land uses. • Street names. • Labeled contours and/or spot levels.
Existing conditions	• Soil types. • Vegetation. • Watercourses. • 1%, 2%, 5% AEP flood event. • Drainage.

Type	Detail required
	• Services (i.e. power (overhead, underground, pad mounts), water, sewer).
Extent of works	• New vegetation. • Existing vegetation protection and/or removal. • Soft and hard surface materials. • Structures, fencing, retaining walls, entry walls, fixtures and furniture. • New services (i.e. power (overhead, underground, pad mounts), water, sewer).
Planting plan and schedule	• Locations of proposed plantings. • Dimensions of planting beds. • Botanic and common names. • Quantities and densities. • Planting sizes/size index. • Canopy height and spread when mature.
Landscape specification	• A description of the overall scope of the landscape works. • A schedule of drawings to be read in conjunction with the specification. • A list of associated works detailed in other architectural or engineering documentation. • Details of standards and guidelines to be followed. • Description of site preparation measures including protection of existing vegetation, protection of existing site features, weed eradication and soil preparation and stockpiling.
As constructed plans	• Drawings are to be lodged in electronic format as PDF and AutoCAD files complying with the Asset Design and As Constructed (ADAC) standard for use and direct transfer to Council's geographic information system (GIS) and Asset Management Systems
Management plan	• Identification on a plan of all management areas and extent. • A description of all maintenance zones based on the landscape type and maintenance intent. • All maintenance activities required within each maintenance zone. • Details of maintenance monitoring, inspection and reporting. • Proforma schedules for recording maintenance activities. • Specifications of products and processes required for each activity. • Annual budget costs for each activity across the site. • Minimum and maximum maintenance levels.
Visual impact assessment	• A description of the purpose and scope of the study. • Location of the site. • Assessment methodology. • Existing visual context and conditions. • Description of existing visual setting, visual character areas, visual catchment and visual sensitivity. • Photographs and photomontages indicating the visibility of the site and the visual impact of any proposed development. • Recommended measures to mitigate visual effects of the proposed development. • A visual integration strategy.
Scenic amenity assessment	• **SC6.12 (Planning scheme policy for the scenic amenity overlay code)** provides guidance for the preparation of a visual impact assessment report.
Landscape character assessment	• Streetscape, urban centres – meaning of character, human influence over nature, indigenous, architecture, cultural plantings, pavements, furniture, historic. • A description of the purpose and scope of the study. • Location of the site. • Assessment methodology. • A description of the landscape context and any existing character designations in the region. • An assessment of the study area's physical features including topography, drainage, geology, soils, flora and fauna. • Photographs and photomontages indicating the landscape character of the site and the landscape impact of any proposed development.

Type	Detail required
	• Recommended measures to mitigate landscape effects of the proposed development. • A landscape integration strategy.
Heritage impact assessment report and conservation management plan	• **SC6.10 (Planning scheme policy for heritage and character areas overlay code)** provides guidance for the preparation of a heritage impact assessment report and/or conservation management plan.
Bushfire hazard assessment report or bushfire management plan	• Prepared by a suitably qualified person, in accordance with: o Department of Infrastructure, Local Government and Planning's *Natural Hazards, Risk and Resilience – Bushfire (December 2019) State planning Policy –state interest guidance material*; and o *Queensland Fire and Emergency Services (2019) Planning for Bushfire Resilient Communities.* • **SC6.7 (Planning scheme policy for bushfire hazard overlay code)** provides additional guidance for the preparation of a bushfire hazard assessment report or bushfire management plan. • Vegetation assessment included in bushfire management plan – final composition of mature landscape plantings needs to be incorporated into the bushfire plan.
Bushland regeneration works plan and report	• Prepared by a suitably qualified, locally experienced landscape architect, ecological restoration or bush regeneration consultant. • A detailed site assessment to determine the most appropriate approach for rehabilitation/revegetation. • List of environmental weeds and invasive plants and declared weeds present on the site, including details of weed control. • Natural regeneration and assisted regeneration. • Complete species list to be planted. Choice of species is to reflect the regional ecosystem and forest structure. • Planting strategy, such as soil preparation (soil amelioration requirements/inoculation), spacing, planting schedule, size of stock, choice of fertilisers (if any), type and depth of mulch, planting techniques. • Methods to be used to protect the areas, such as fencing, establishment of buffers. • Monitoring techniques to assess the outcomes of the proposed rehabilitation/restoration works, such as permanent photo points, survival and growth rates of planted species. • Ecological reconstruction including the installation of nest boxes on retained trees or poles, and forest floor habitat including logs, rock piles, temporary and permanent pools and ponds. • Establishment/maintenance schedule. • Cost estimate for construction and establishment phases. • Growth criteria summary.
Bushland Operational Assessment	• Bushland Operational Assessment undertaken by suitably qualified and locally experienced consultant in accordance with council guidelines prior to site handover.
Soil/agronomist report	• Location of the site. • Existing soil structure/profile. • Description of the native plant community/(i.e. pre-clearing) to be restored. This is to include a structural description, regional ecosystem or equivalent classification. • A clear statement of the key aims and objectives and the intended outcomes of the rehabilitation/restoration works. • Assessment methodology (e.g. research, consultation, site inspection). • Identification of fauna attributes of the site, such as tree hollows, habitat trees, logs, rocky outcrops, leaf litter etc.
Fauna spotter and catcher report	• Location of the site. • Findings of pre-clearing inspection. • Summary of works, including clearing times, monitoring during clearing, sequencing of clearing, fauna protection, recovery procedures and inspections. • Habitat compensation calculation. • Fauna relocation and removal strategy.

Type	Detail required
	• Provide a table / summary of spotter and catcher works.
Arboricultural management plan	• Prepared in accordance with *AS4970 Protection of trees on development sites*. • Prepared by a suitably qualified and experienced arborist (minimum ISA certification or Diploma of Arboriculture and a minimum of 3 years current experience in the field of arboriculture. • The management plan is to nominate Council as an authorised recipient and confirm that Council is entitled to rely on the management plan. • Plan of subdivision to include location and name of trees located on the site. The location of these trees shall be overlaid and be easily compared with the proposed works. • Clearly identify and include photographs of all trees being retained. • Clearly identify any tree considered unsafe for retention along with the arboricultural justification. • A comprehensive outline of the tree protection measures required (including details of root pruning, hazard reduction tree protection zones and tree protection fencing) prior to, during and post construction. • Certification of compliance form for completion of works by the project arborist at each identified stage of construction (prior to, during and post construction).

Table SC6.14.6B Plan styles, sizes and types

Plan type	Required sheet size
Landscape Intent Detailed Landscape Plans Site Analysis Minor Earth Works Construction Details	Text and information detailed on plan sets are to be at a scale that is easily readable when printed on an A3 sheet.
Plan type	**Required scale**
Landscape Site Analysis Statement of Landscape Intent	1:1000
Streetscape Plans	1:500
General/Detailed Landscape Plans	1:100 or 1:200
Construction Details	1:50 or 1:20

SC6.14.6.7 Landscape management and maintenance

(1) Landscape schemes are to be designed with simple maintenance requirements to achieve a better long-term result. Species are to be matched to the growing conditions of the specific planting site to reduce future maintenance requirements.

(2) Landscape maintenance is an integral component of landscape development and sustainable long-term maintenance outcomes are to be integrated into the landscape design. This applies to both the vegetative landscape and built structures. It is important to consider Council's maintenance capacity and programs when designing areas to be handed over to Council.

(3) Prior to a landscape asset being handed over to Council, a sustainable maintenance regime (programmed and budgeted) is to be developed and implemented. The landscape is to be complete and as described within the approved development plans, free of damage and vandalism, established, self-sustaining and in a state that requires an acceptable level of ongoing maintenance to maintain a high quality landscape.

(4) Desirable characteristics of a low maintenance landscape design are:-

(a) plant species that will retain their health, vigour and form without regular pruning;

(b) plant species that are resistant to pest, disease and fungal attack;

(c) plant species that will suit the specific conditions of the subject planting site;

(d) plant species that require minimal formative pruning or hedging;

(e) the use of canopy species that will form a long term vegetation framework;

(f) the careful preparation of garden beds, to ensure good soil health for plant growth;

(g) mass planting of garden beds with only two or three species that ensures a simpler watering program, with plants achieving a similar growth rate and an even cover of greenery;

(h) the use of weed free mulch planting areas to retain water and suppress environmental weeds and invasive plants;

(i) the provision of sufficient space and room to manoeuvre ride on mowers, with the use of smooth flowing lines to allow machinery to manoeuvre around assets;

(j) the use of appropriate garden edging to minimise the need for spraying or edging and for ease of mowing;

(k) robust furniture, that withstands heavy use and vandalism. Council's *Open Space Landscape Infrastructure Manual* (LIM) provides further guidance on the design and construction of furniture;

(l) easily replaceable furniture items and elements;

(m) use of appropriate sealants and anti-graffiti coatings to enable easy washing;

(n) accessibility and safe access for maintenance, especially along roadways;

(o) appropriate selection of plants with consideration of the appropriate size, form and density for the space, ensuring the plants are able to grow and mature without becoming overcrowded;

(p) planting that quickly creates a full canopy cover and/or groundcover to ensure effective establishment and reduce maintenance; and

(q) endemic native vegetation species should be used where appropriate, and where adjacent or connecting to natural bushland.

(5) Council officers will inspect the works as required and as requested by the developer for the purpose of on maintenance and off maintenance milestones.

(6) An inspection can be requested by writing to Council and attaching a completed landscape maintenance checklist and quoting Council's development application number.

Note—all documentation is to be sent to:-
Sunshine Coast Council
Locked Bag 72
Sunshine Coast Mail Centre QLD 4560
or email: mail@sunshinecoast.qld.gov.au

(7) Once Council has received all required documentation and certifications a minimum of five business days' notice is required for the intended date of Council inspection.

SC6.14.6.8 Safety and security

(1) Council has legislative obligations with regard to the design of accessible public buildings and amenities, accessible footpaths, open space and road networks to increase accessibility. The relevant legislation that designers are to be aware of includes:-

(a) *Disability Discrimination Act 1992;*

(b) *The Disability Services Act 2006* (Queensland);

(c) *Disability (Access to Premises-Buildings) Standards 2010;*

(d) *National Construction Code;*

(e) *AS1428.1 Design for access and mobility - General requirements for access - New building work;*

(f) *AS1428.2 Design for access and mobility - Enhanced and additional requirements - Buildings and Facilities;*

(g) *AS1428.4.1 Design for access and mobility -Means to assist the orientation of people with vision impairment - Tactile ground surface indicators;* and

(h) *Sunshine Coast Access and Inclusion Plan 2011-2016.*

(2) General safety and security considerations/design principles for landscape works include the following:-

(a) safe and secure access for users of all abilities and for maintenance vehicles and workers. Accessibility requirements include the following:-

(i) development provides universal access in accordance with *AS1428: Design for access and mobility*;
(ii) landscape design to adopt inclusive principles;
(iii) continuous accessible paths of travel provided in accordance with universal access provisions;
(iv) ramps to have gradual inclines, landings and handrails as outlined in accessibility standards;
(v) provision of tactile ground surface indicators to provide pedestrians who are blind or who have a vision impairment with warning information about features such as stairs, ramps or hazards including within the road corridor; and
(vi) pedestrian surfaces to comply with *AS4586 Slip resistance classification of new pedestrian surface materials* and *AS3661 Slip resistance of pedestrian surfaces* and be stable and trafficable in all weather conditions.

(b) other general safety considerations and requirements which include:-

(i) visibility at street corners, near pathways, entry points, throughout parking areas and driveways, with trees a minimum 1.8 metres clear trunk above the road pavement (and have adequate canopy to allow normal photosynthesis to occur) and groundcovers a maximum of 0.7 metre in height above the road pavement;
(ii) pedestrian and vehicle circulation routes separated and defined; and
(iii) retaining walls greater than 1 metre in height designed and certified by an RPEQ engineer, to include a fall barrier in accordance with **Section SC6.14.9 (Earthworks)** of this planning scheme policy, *AS/NZS 1170.1 Structural design actions – Permanent, imposed and other actions* and *AS4678 Earth retaining structures*;
(iv) consideration of fire management within landscape design for fire safety as a general principle; and

(c) safe work environment during landscape management, development is to comply with the MUTCD and the *Workplace Health and Safety Act 2011*.

(3) Crime Prevention Through Environmental Design (CPTED) is a proven crime prevention approach which has been shown to reduce opportunities for crime and incivility. Aimed at enhancing opportunities for informal surveillance, antisocial behaviour or crime related incidences might be discouraged, detected and prevented. CPTED principles are to be adopted when preparing landscape plans and designs for both the public and private realm within the region. Some principles to employ include the following:-

(a) landscape that enables passive surveillance into, and visibility within, communal recreational spaces, children's play areas/playgrounds, pathways and carparks;

(b) landscape that defines territory and ownership of public, common, semi-private and private space, and does not create ambiguous spaces adjacent to areas with security issues (such as public toilets and ATMs);

(c) the use of dense shrubby vegetation over 1.5 metre in height minimised along street frontages and adjacent to open space areas where the vegetation prevents passive surveillance;

(d) security and pathway level lighting provided to site entries, driveways, parking areas, building entries and pedestrian pathways; and

(e) protection of solid fences from graffiti by incorporating elements such as landscaping (creepers), murals or vandal resistant paint.

SC6.14.6.9 Energy efficiency

Designing to create comfortable environments is important to promote and support the outdoor lifestyle that is enjoyed on the Sunshine Coast. Careful selection and placement of tree species and landscape elements can provide shade during summer and allow for warming sunlight in winter. This not only provides for comfortable landscape environments, but landscape design can also enhance energy efficiency of buildings. Energy efficient design requirements shall include the following:-

(a) tree planting that provides shade to communal recreational spaces, children's play areas/playgrounds, seating, shelters, buildings, pathways and lawn areas to ensure that comfortable outdoor spaces are created for all to enjoy;

(b) shelters designed and oriented to block the overhead sun in summer while letting in the slanting rays of the winter sun, selection of tall trees with straight trunks and wide bushy canopies will produce the same outcome;

(c) landscape embellishments (primarily plantings) located to keep summer sunshine (particularly western sun) off walls, windows, roofs and paved external areas;

(d) landscape embellishments located to facilitate access of winter sun to living areas, north facing windows and to public spaces (including north-east winter morning sun);

(e) landscaping, fences and walls that allow exposure of living and public areas to prevailing north-east to southerly summer breezes and minimises exposure to prevailing west to south-west winter winds;

(f) landscape elements that do not shade solar collector devices during the middle 6 hours of the day; and

(g) existing street and park trees retained where solar collectors are installed.

SC6.14.6.10 Stormwater drainage and water conservation

(1) Design and implementation of the landscape area is to successfully integrate with stormwater drainage and water sensitive design elements and also with street tree infrastructure and surrounding landscapes. Landscape areas shall achieve multiple outcomes of visual amenity and water treatment. In regard to residential and commercial uses in particular, the provision of shade trees is a key factor in providing useable spaces and a comfortable living environment.

(2) Landscape design is to incorporate measures to ensure adequate drainage and utilise water wise (conservation) design strategies, through appropriate plant selection and layout and by maximising opportunities for water infiltration. Measures to maximise conservation of water include the following:-

(a) plantings and lawn areas designed to not require permanent irrigation except in high profile and high use landscape areas and sports grounds;

(b) permanent irrigation only installed in designated high profile and high use landscape areas as agreed by Council;

(c) water features created purely for aesthetic purposes avoided in low density areas, but integrally designed as part of urban spaces;

(d) naturally occurring waterways, waterbodies or WSUD devices featured within the landscape design rather than created ponds or pools;

(e) solid roof landscape structures (such as shade shelters, toilet and change rooms) designed to harvest water for re-use where appropriate;

(f) solid roof structure design to include vandal resistant gutters, downpipes, storage tanks and fittings that complement the aesthetic of the existing and proposed landscape;

(g) non-potable water collection, storage and re-use within the landscape to meet work, health and safety requirements; and

(h) watering regimes during the establishment period to be infrequent and deep, not regular and shallow.

(3) Measures to maximise infiltration of water and stormwater drainage are to include the following:-

(a) drainage lines and water courses incorporate natural features and materials to create a natural appearance and where possible rehabilitate degraded areas;

(b) areas of the site drained through the provision and/or treatment of swales, spoon drains, field gullies, subsurface drainage and stormwater connections;

(c) landscape works that do not restrict the flow of water along overland flow paths;

(d) opportunities for water infiltration on site maximised by:-

(i) draining portions of hard surfaced areas to permeable surfaces;
(ii) maximising areas of turf, garden beds and pervious paving types;
(iii) minimising the area of impervious surface finishes on the site;
(iv) providing permeable surface treatments for spill-over car parking areas; and
(v) the use of kerb inlets to direct stormwater to street trees for passive irrigation; and

(e) sediments and chemicals prevented from entering the stormwater system.

(4) Under the permanent water conservation measures established under the *South East Queensland Water Strategy 2010*, irrigation systems are required to be efficient and to be designed by accredited professionals. There are also requirements for water users to submit water efficiency management plans for approval by the local water authority. Prior to commencing irrigation design, it is recommended that a suitably qualified professional is engaged to prepare the appropriate documentation.

(5) Council is committed to minimising the use of potable water in parks and open spaces. Parks and landscape areas for future Council management are to be designed to survive without formal ongoing irrigation where possible. Certain public uses such as sports fields, high profile and high use landscape areas may require permanent irrigation systems to maintain their desired function. In areas requiring permanent irrigation, efficient irrigation systems that utilise smart irrigation control and monitoring shall be utilised where practicable, these systems are to utilise non-potable water sources.

(6) Non-potable water can include capture and storage of rainwater and storm water runoff and use of recycled water (treated effluent). Only collected and recycled water graded as suitable for human contact is to be used in public spaces.

(7) For areas for future Council management, approval for installation of an efficient irrigation system that utilises sustainable and effective water sources will be required. Where Council does not want to maintain such an irrigation system in the long term, it will need to be decommissioned to Council's satisfaction prior to hand over of the area to Council.

SC6.14.6.11 Site stability and soil quality

Site Stability

(1) In order to ensure that landscapes provide for the stability of soils and minimise potential for erosion, landscapes are to be sited and designed to respond appropriately to site specific conditions in accordance with an approved landscape plan which addresses the following:-

(a) the removal of vegetation on steep, sensitive or unstable land does not undermine the stability of the land or impact unnecessarily on downstream conditions. Where vegetation is removed outside construction or project boundary, it shall be reinstated; and

(b) stabilising of plant species and supporting establishment materials to be utilised on erosion prone areas, such as batters, slopes and waterway and drainage line edges. Planting is to be at a sufficient density to support stability of the site and where soil is imported onto the site, soils used shall be well constructed and contain adequate organic material.

Soil Quality

(2) The quality of the growing medium for plants is of the highest importance for the success and longevity of the vegetation.

(3) Local topsoil stripped from the site is favoured as it contains organic matter, beneficial microorganisms and mycorrhizal fungi which support plant life and is to be free from litter, weed propagules, contaminates and rocks larger than 25mm in diameter.

(4) Imported topsoil, where the required quantity of local topsoil is unavailable, is to be incorporated and blended with site topsoil to achieve a healthy and active growing medium. Imported topsoil is to be similar to naturally occurring local topsoil and suitable for the establishment and ongoing viability of the selected vegetation, free of weed propagules and contaminants.

(5) Imported soils (and garden mulches) are to be obtained from suppliers with Nursery Industry Accreditation Scheme Australia (NIASA), from the Nursery and Garden Industry Queensland (NGIQ), or accreditation from Landscape Queensland.

(6) All necessary measures are to be taken to prevent fire ants (or any stages of the fire ants life cycle) entering the work site. For further information, refer to the Queensland Government Department of Agriculture and Fisheries (DAF).

(7) Podium and planter box soils (e.g. roof top gardens) will be blends of mineral and organic compounds, and will generally have organic matter not greater than 30% by mass.

(8) Local and imported topsoil are to be tested and proven to comply with *AS4419 Soils for landscaping and garden use* by a Certified Practicing Soil Scientist (CPSS) and/or a soil scientist who is eligible for membership with the Australian Soil Scientist Society (ASSS) with sampling to be carried out in accordance with *AS4419 Soils for landscaping and garden use* at a NATA registered laboratory.

(9) A CPSS and/or a soil scientist who is eligible for membership with the ASSS prior to requesting on maintenance inspection is to provide:-

(a) on maintenance report providing detailed analysis of the sampled material along with recommendations of required ameliorants (refer **Table SC6.14.7C (Soil depths)**);

(b) certification that all works have been carried out in accordance with recommendations, with the soils being suitable for their specified use and for the establishment and ongoing viability of the vegetation; and

(c) certification and photographic evidence of the required soil depths for all planting areas.

(10) **Table SC6.14.6C (Soil depths)** provides guidance in relation to soil depths.

Table SC6.14.6C Soil depths

Location	Subgrade cultivation depth	Ameliorated site topsoil *or* imported topsoil combined with ameliorated site topsoil depth
Trees	N/A	Tree planting pits are to be excavated to the depth of the rootball and cultivated to a width of 2-3 times the rootball diameter
Palms	N/A	Palm planting pits are to be excavated to twice the width of the rootball and the bottom of the pit is to be cultivated to a depth of 150mm
Mass planted areas	150mm	400mm
Turf areas	100mm	Minimum topsoil depth is to be 100mm
Tubestock	150mm	Minimum friable topsoil depth is to be 200mm

Note—subsoil and topsoil shall be integrated prior to planting.

SC6.14.6.12 Planting technique, plant selection, stock size and quality

(1) A thorough landscape specification is essential in delivering sustainable and appropriate vegetation to landscape works.

Planting technique and preparation

(2) In preparation and planting, the following is to be undertaken:-

(a) all rubbish, rubble, environmental weeds and invasive plants, grass and debris shall be removed from planting areas prior to planting;

(b) all landscape gardens to turf interface areas associated with the turf verge are to be delineated with a durable hard edge able to withstand brush cutters;

(c) establish a minimum 100mm of composted forest mulch (which is a combination of leaf, timber and bark) to all garden areas immediately after planting, soil laden tub grindings will not be accepted;

(d) all necessary measures are to be taken to prevent fire ants (or any stages of the fire ants life cycle) entering the work site. For further information, refer to the Queensland Government Department of Agriculture and Fisheries (DAF);

(e) landscaping shall not obstruct overland flow paths and is to include adequate drainage to minimise ponding. Mulch or any floatable material shall not be located in swales or overland flow paths;

(f) landscaping shall not encroach onto kerb and channel, footpaths, pedestrian or vehicular circulation areas during any stage of growth. Plants are to be positioned with consideration to full height and width potential of the plant at maturity, with no requirement for constant pruning to prevent such encroachments;

(g) landscaping shall not restrict access to services. Refer to appropriate utility service provider for any specific requirements and further guidance;

(h) do not plant during adverse weather conditions. Suspend excavation when the soil is wet and during frost periods;

(i) appropriate plant spacings are to be provided to avoid establishment problems and plant failure due to over embellishment. Plant size at maturity is to be considered to ensure minimal or partial overlap of other plantings. Considerations are to be taken into account in regards to the species' spread and habit, to minimise undesirable issues. An over embellishment of plants in a small area forces plants to compete for nutrients, whereby they can struggle to establish;

(j) nursery stakes, ties and labels are to be removed after planting. Where appropriate and safe, nursery stakes may be required to remain for a longer period to provide ongoing support. These supports are to be removed by the end of the maintenance period; and

(k) plantings are to be setback from paths of travel so at to not interfere with pedestrians.

Turf supply and quality

(3) Turf supplied shall have the following characteristics:-

(a) cultivated lawn turf (A and B grade) is to be supplied by an accredited Turf Accreditation Program (TAP) producer;

(b) turf is to be of good quality, free from oxalis (Oxalis spp.), nut grass (Cyperus rotundus), paspalum (Paspalum spp.) (unless specified for salt tolerance), and other environmental weed and/or invasive plant species; and

(c) turf is to be delivered within 24 hours of cutting.

Plant selection

(4) Planting design within urbanised areas positively contributes to the amenity of the development and to the diverse subtropical character and ecology of the Sunshine Coast. Planting palettes are required to:-

(a) suit the conditions and landscape character of the area and minimise use of potable water for irrigation;

(b) avoid plants which have high maintenance and irrigation requirements, are short lived or require regular replacement;

(c) provide shade and shelter to increase user comfort in public and semi-public spaces and provide suitable solar access;

(d) favour local and "cultivar" native plants with moderate use of suitable non-invasive exotic species (refer to Council's *Open Space Landscape Infrastructure Manual* (LIM) – Palettes – Planting Index, for guidance). The hierarchy of plant species (in preferred order) is as follows;

(i) Sunshine Coast natives;
(ii) Australian natives;
(iii) non-invasive exotic species; and
(iv) plants not included in the planting index that meet criteria set out in this section.

(e) be devoid of plants with large thorns or spines, that are poisonous or present a severe allergy risk to the public;

(f) avoid invasive plants;

(g) use exotic palms as an emergent rather than dominant landscape feature and use species appropriate for the location, consistent with their natural character and occurrence;

(h) provide visual interest through form, texture and variations in seasonal colour; and

(i) provide compatibility with buildings, hard paved areas, overhead and underground services and scale relative to the size and nature of the development and its setting.

Plant stock size and quality

(5) All tree stock used within the landscape works is to generally conform with the stock selection criteria outlined in *AS2303 Tree stock for landscape use*, with an understorey of shrubs and ground covers within edged and mulched garden beds. Stock shall be healthy, vigorous and not pot bound.

(6) The supervising landscape consultant is to submit a Tree Inspection Form (example available from *AS2303 Tree stock for landscape use*) to Council prior to request for on maintenance.

SC6.14.6.13 Revegetation and habitat restoration works

(1) The desired outcome of rehabilitation works is to return degraded natural areas to a representative and largely self-sustaining condition. At all stages works are to be undertaken in a manner that conserves and retains all endemic vegetation. Works to restore habitat are to be of a high quality, replicating topography and structure of the natural environment/ regional ecosystems and ecological linkages and be undertaken by suitably qualified, locally experienced bush regeneration contractors. Landform, habitat and plant species of local native origin are established where available, by appropriate methods to maximise environmental outcomes and minimise ongoing maintenance requirements.

(2) Self-sustaining ecosystems are created through successional planting and regeneration methods that include pioneer species to stabilise the site, whilst allowing longer term species to establish. Understorey shrubs and vines native to the regional ecosystem are to be used in high density edge plantings to effectively seal rehabilitation areas (including waterway/body edges) against degradation and weed infestation.

(3) Rehabilitation design and species selection are to address:-

(a) landform, topography (in relation to context), slowing of waterways;

(b) habitat, natural (logs, rocks, leaf litter) and non natural (nest boxes);

(c) fauna crossings (under and over) and traffic calming devices as required;

(d) fauna fencing, and fencing to exclude damage from vehicles, but allow for appropriate maintenance;

(e) specific species palette information;

(f) matrix/grids, densities, vegetation structure and closing mechanisms (i.e. vines and also Lomandra to waterway banks);

(g) reference to standards (regional ecosystems, ratios of pioneers);

(h) soil type/amelioration/inoculation;

(i) weed management/control;

(j) fire management buffers and use of less flammable species along buffers;

(k) regeneration works; and

(l) performance criteria (height, canopies and understorey) and maintenance periods.

(4) Restoration and revegetation of the site is to be carried out to generally replicate the surrounds and original regional ecosystem, as per the regeneration works plan.

SC6.14.6.14 Landscape design for wildlife

(1) Design for wildlife habitat protection retains and enhances habitats and corridors for native wildlife by integrating environmental design and construction with development.

(2) Wildlife habitat protection requirements include:-

(a) replicating adjacent remnant vegetation (regional ecosystem), including understorey vegetation and ground surface habitat logs, rock piles and melon holes;

(b) minimising adverse effects to wildlife such as koalas by planting and retaining appropriate fodder tree species and facilitating koala movement in koala habitat areas;

(c) siting landscaped areas to complement and enhance existing vegetation on the site and in the surrounding area;

(d) retaining/recreating landform, ephemeral pools, rocks and logs (ground habitat);

(e) retaining old trees (including dead trees) with hollows for local native fauna habitat where trees will not provide a public safety risk;

(f) providing artificial nesting sites and boxes;

(g) retaining/replacing natural leaf litter (forest floor habitat) where appropriate for local native fauna;

(h) creating or enhancing vegetation linkages between existing habitats and along waterways;

(i) providing exclusion fencing to protect fauna from vehicles;

(j) considering road strike issues from grazing fauna adjacent to roads;

(k) selecting species that provide an all season range of foliage, fruit and flower suitable for local native fauna;

(l) considering the planting design to avoid establishment of flying fox food trees in conflict areas;

(m) design in accordance with the *State Planning Policy 2017*; and

(n) providing connectivity across roads via provision of fauna bridges, ropeways, arboreal road crossings, fauna underpasses, traffic calming and associated signage.

Koala food trees

(3) Koalas predominantly feed on eucalypt tree species, but will also utilise other closely related species such as *Melaleuca* (paperbarks), *Lophostemon* (boxes) and *Corymbia* (bloodwoods) as a secondary source for supplementary food, shelter and resting. Landscape design and revegetation works within mapped koala habitat areas, wildlife corridors and urban areas known to support koalas is to include local koala food and habitat trees (refer **Table SC6.14.6D (Koala food trees)**).

Table SC6.14.6D Koala food trees

Botanical name	Common name
Primary koala food trees	
Eucalyptus tereticornis	Queensland Blue Gum (Forest Red Gum)
Eucalyptus microcorys	Tallow Wood
Eucalyptus propinqua	Grey Gum
Secondary koala food trees	
Eucalyptus acmenioides	White Mahogany
Eucalyptus bancroftii	Tumbledown Gum
Eucalyptus cloeziana	Gympie Messmate
Eucalyptus crebra	Narrow-leaved ironbark
Eucalyptus grandis	Flooded Gum
Eucalyptus pilularis	Blackbutt
Eucalyptus racemosa	Scribbly Gum
Eucalyptus resinifera	Red Mahogany (Red Stringybark)
Eucalyptus robusta	Swamp Mahogany
Eucalyptus seeana	Narrow Leaved Red Gum
Eucalyptus siderophloia	Grey Ironbark
Eucalyptus tindaliae	Queensland White Stringybark
Corymbia citriodora subsp. variegata	Spotted Gum
Corymbia maculata	Spotted Gum
Corymbia gummifera	Red Bloodwood
Corymbia intermedia	Pink Bloodwood
Lophostemon confertus	Brush Box
Lophostemon suaveolens	Swamp Box
Melaleuca quinquenervia	Swamp Paperbark

Note—suitability of each species for a subject site will be dependent on the location, topography, soil type and existing or pre-existing vegetation communities.

(4) Landscape design and selection of koala food and habitat trees shall:-

(a) give preference to primary species over secondary species;

(b) select tree species native to the immediate local area;

(c) select tree species suitable for the sites soil type and topography;

(d) locate trees to form corridors or connect to adjacent vegetation;

(e) locate trees to provide accessibility and refuge points for koalas moving between areas;

(f) not locate individual food trees in isolation from other trees;

(g) only use taller species of eucalypts in large open areas;

(h) not locate koala food or habitat trees in close proximity to major roads; and

(i) not locate koala food trees under power lines or over underground infrastructure.

(5) For further information on koala ecology, habitat, food trees, threats, mapping, planning issues, policies and legislation refer to the Queensland Department of Environment and Science website.

SC6.14.6.15 Landscape buffers

(1) Landscape buffers are required in certain development situations to mitigate impacts to and from adjoining uses. The following types of buffers may be required by an applicable use code, local plan code or overlay code in the following circumstances:-

(a) agricultural buffers, where required by an applicable code in the planning scheme, are to be provided in accordance with the *State Planning Policy - state interest guidance material Agriculture*;

(b) industrial/business and commercial buffers, where not otherwise specified by another applicable code in the planning scheme, are to be 10 metres wide and landscaped, except where alternative measures, including high quality screen fences and acoustic barriers, allow the setback to be reduced;

(c) transport buffers are required under the planning scheme in accordance with the DTMR *Road Landscape Manual* for developments adjacent to heavily trafficked roads, the North Coast Railway or other transport routes as required. Where not otherwise specified by another applicable code in the planning scheme, a site adjoining heavily trafficked roads or the North Coast Railway provides a 60 metre wide buffer unless particular site circumstances (such as topography) mean that a lesser width would achieve the same level of acoustic and visual buffering;

(d) environmental buffers, where development adjoins an area of significant vegetation and/or adjoins land located within the Open space zone or the Environmental management and conservation zone, shall comprise plant species native to adjacent habitat and demonstrate compliance with ecological planting outcomes;

(e) waterway and wetland buffers, where the site contains or adjoins land subject to the **Biodiversity, waterways and wetlands overlay code** (as identified on a **Biodiversity Waterways and Wetlands Overlay Map**), are to comply with buffer widths specified in the abovementioned code and include retention of existing native plant species and planting of additional local native plant species;

(f) scenic route buffers, where the site adjoins or is within 100 metres of a scenic route (as identified on the Scenic Amenity Overlay Map), are required to contribute to the integrity of the scenic route by sensitively buffering new development, framing significant views and ensuring continuity of the existing streetscape and the character of the locality as specified in the **Scenic amenity overlay code** and landscaped in accordance with the DTMR *Road Landscape Manual*; and

(g) earth mounding where incorporated as buffers, is to be planted with local native species except where ambient pollution levels warrant the use of higher pollution tolerant species. Mounding and landscaping is to be located entirely within the subject site and maintained by the property owner and provide no adverse flooding or stormwater drainage implications either on the site or on adjoining sites. Mounds are to have a gradient of a ratio less than 1:4.

(2) Buffers may consist of:-

(a) landscaped earth mounding;

(b) dense screen planting which has foliage extending to the ground;

(c) high quality fences/barriers combined with landscape screening to minimise acoustic and visual impact; and

(d) multiple tiers of low dense plants and high branching taller trees used to screen larger objects.

(3) The required density of screening vegetation within the landscape buffer is detailed in **Table SC6.14.6E (Vegetative buffer densities)**.

Table SC6.14.6E Vegetative buffer densities

Vegetation type	Vegetation density
Large Trees	6 metre centres
Small Trees	2 metre centres
Shrubs	1 metre centres
Groundcovers	0.5-1 metre centres

(4) The required height of screening vegetation relative to the width of the landscape buffer is detailed in **Table SC6.14.6F (Vegetative buffer heights)**.

Table SC6.14.6F Vegetative buffer heights

Height of vegetation	Width of buffer
> 8 metres	> 8 meters
8 metres	5-8 metres
5 metres	3-5 metres
Maximum 2.5 metres	2-3 metres
Maximum 1.2 metres	1-2 metre

SC6.14.6.16 Landscape screening

(1) Landscape screening differs from a landscape buffer due to its function of providing solely for visual screening purposes rather than for noise, odour, visual, and other impact mitigation.

(2) Vegetative landscape works or appropriate fabricated screening are to provide complete or filtered screening to buildings, car parks, driveways, fences, utility/storage areas and incompatible uses in accordance with the requirements of the applicable planning scheme code.

(3) In regard to the selection of suitable plants for landscape screening, Benchmark 7 of the *Natural hazards, risk and resilience – Bushfire State Planning Policy – state interest guidance material and Bushfire Resilient Communities Technical Reference Guide for the State Planning Policy State Interest 'Natural Hazards, Risk and Resilience – Bushfire provides guidance.*

SC6.14.6.17 Engineered planting

(1) Engineered planting generally consists of podium planting, green walls and roofs. Engineered planting assists in softening and maximising the visual amenity of built form and promoting a more attractive façade for multi-level buildings. It also serves to increase privacy between upper level balconies and units. Engineered planting is not to be considered as a substitute for the required landscape areas in accordance with Council codes (i.e. inground planting at ground level). Engineered planting is building works and not guaranteed, being subject to building management modification. Where utilised, Engineered planting is to:-

(a) be suited to the difficult conditions of exposure;

(b) be able to be easily maintained, with adequate growing media, drainage and irrigation to ensure vigorous and sustainable plant growth without structural or drainage conflicts;

(c) be given adequate space with respect to podium planting. Frontages require deep natural ground to allow establishment and sustained healthy growth of larger trees;

(d) be able to assist with further softening and privacy. Podium planting may be incorporated to private or public open space areas; and

(e) have appropriate structural support, irrigation, drainage and water proofing of planting containers.

SC6.14.6.18 Streetscape landscapes

(1) Continuity of the streetscape and frontage works provides for consistent character of existing and proposed streetscapes. Streetscape treatments are to be consistent with the applicable local plan area code or any relevant urban design or streetscape master plan.

Street Trees

(2) Street trees are to be consistent with and complement the existing or proposed streetscape and/or natural landscape character and/or any environmental values. The *Sunshine Coast Street Tree Master Plan* provides guidance in relation to species selection and layout in the applicable local plan area.

(3) Street trees shall generally provide continuous shade to active frontages, pathways and parking. Where practicable shade trees are to be provided at 8 metre centres and where coordinated with pathways, provided at 6 metre centres. The provision of shade and amenity to the streetscape is to take priority when locating services, footpaths, driveways, carparking and buildings.

(4) Street trees of a suitable height and dense canopy, shading form and stature are required to contribute to the existing tree line, skyline or backdrop effect created by existing vegetation in the locality.

(5) Street trees and frontage planting are to be of an appropriate scale relative to both street reserve width, proposed adjacent building bulk (refer **Figure SC6.14.6B (Landscape solutions to lessen impact of building bulk)**), location of services and other structures.

Figure SC6.14.6B Landscape solutions to lessen impact of building bulk

(6) Landscape design and street tree planting contribute to reinforcing desired traffic speeds and driver behavior (refer **Planning scheme policy for the transport and parking code)**.

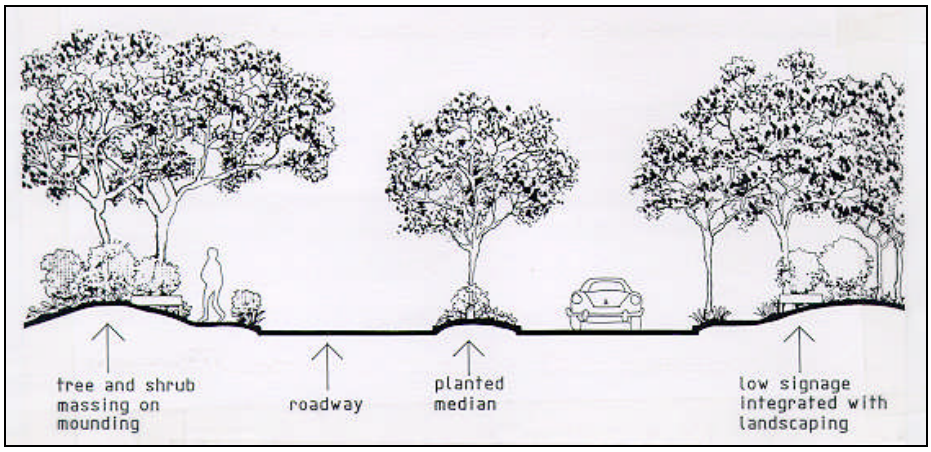
Fences and Walls

(7) Fences, walls and landscaped frontages are to complement existing boundary treatments in the street in terms of scale and design.

Entrance Statements

(8) Entrance statements (refer **Figure SC6.14.6C (Typical estate entrance)**) reflect a local character that features vegetation rather than built form and integrates with the overall landscape theme for the estate. Entrance statements are to be located wholly on private land and integrated as part of boundary fencing.

Figure SC6.14.6C Typical estate entrance



(9) The entrance statement is to contribute to legibility of the estate/local plan area and reflect Sunshine Coast vernacular in the use of planting, materials and form. This can be achieved through signage, artistic statements and interpretive elements. Entry statements with electrical elements such as lighting and water features are to be considered at time of application as to whether the installation meets industry and council standards and if it will remain in place post on maintenance inspection and if it has a continued community benefit.

SC6.14.6.19 Provision of natural and built shade

(1) The Sunshine Coast's climate is conducive to an active outdoor lifestyle. Responsible design should provide opportunities for people to sit, play and interact in a shady environment during the highest risk hours of the day, to lessen exposure to harmful UV radiation. Shade can be provided by fixed built structures, shade sails/awnings and appropriate tree planting.

(2) The quantities and type of built or natural shade are to be provided in accordance with the *Creating Shade at Public Facilities: Policy and Guidelines for Local Government (edition 2)* prepared by the Australian Institute of Environmental Health, Queensland Health Promotion Council, Queensland University of Technology and Local Government Association of Queensland.

(3) All fabric shade structures are to comply with current and relevant Australian Standards (i.e. *AS/NZS1170.2 Structural design actions-Wind actions and AS4174 Knitted and woven shade fabrics*) as well as the current *National Construction Code* requirements. All shade structures are to be built to a minimum wind rating of N3 (W50) or greater depending on the characteristics of the site and any recommendations specified within the development approval.

(4) All pathways are to be designed to allow for maximum shade opportunities, through the provision of shade trees at 6 metre centres and/or awnings to achieve a shade level consistent with the subtropical climate. The aim is to provide continuous shade (target of 80% shade at tree maturity), which is defined by the trees achieving their mature height/spread with sufficient overlap of canopies.

(5) All carparking areas are to be shaded by either shade trees at a maximum spacing of 1 shade tree per 4 parking bays or a constructed shade structure where set back from the street and where consistent with the character of the area. The **Landscape code** provides further acceptable outcomes in relation to shade tree planting requirements.

(6) All picnic table areas, children's play areas/playgrounds are to be shaded by a constructed shade structure and supplemented with trees, with the long term vision to remove the structure when the trees provide sufficient shade. Shade created by trees is preferred in local parks. However, BBQs are to be shaded by a constructed shade structure.

(7) Shade tree planting to the north and west of playgrounds, picnic areas, seats and other elements that attract high use is encouraged. Selection of fast growing, dense canopy trees with wide spreading foliage and a lifespan in excess of 15 years and minimal limb, leaf and fruit drop are desirable to provide maximum shade. Selection of species should also be suitable to the location, soil and drainage conditions. Trees are to be lift pruned as required to ensure clear surveillance sightlines as per CPTED guidelines.

(8) Children's play areas/playgrounds should receive a minimum of 50% shade cover between 9am and 3pm (EST) in summer and shade sails are to be set a minimum of 3.0 metres above the highest point of any playground equipment. A diagram (shade modelling) is to be generated to illustrate the above. This will ensure the shade sail is appropriately oriented. Where appropriate, multiple shade sails are to be used to reduce wind loads and maintenance costs.

(9) The shade sail material shall block out a minimum of 91% UV radiation and have a minimum structural warranty of 10 years. Shade and sun protection are to comply with *AS4685 Playground equipment and surfacing.*

(10) Shade structures and sails are to be designed and located to be non-climbable where possible. Anti-climb vandal barriers are to be installed on shade sail posts.

(11) Council's *Open Space Landscape Infrastructure Manual* (LIM) provides further guidance in relation to the requirements for frame and rigging, membrane, heights and clearances, and footings, fixings and finishes.

(12) The developer is to provide Council with written certification that the finished shade structure installations are safe, suitable and fit for purpose and complies with all current and relevant Australian Standards, Acts, WHS requirements, National Construction Code etc. relevant to Works under Contract and indemnifies the Principal in this regard. Unless otherwise specified, all materials, methods and workmanship shall be in accordance with the relevant Australian Standard or best practice industry standard where no Australian Standard exists.

Note—the provider shall supply installation manuals of the shade structures specified.

SC6.14.6.20 Pathways and access points

(1) Public and communal pathways and access points are to be fit for purpose in terms of intended design, location, width and extent. As well as environmental, engineering, structural and stability requirements, pathways and access points shall be constructed to ensure minimal ongoing maintenance and minimal disturbance to existing vegetation.

SC6.14.6.21 Recreational equipment

Children's play areas/playground equipment

(1) Playground design is to respond to the local landscape character, demographics, demands and identity, through the choice of infrastructure and colour schemes. Playgrounds are to be safe, fun, interesting and inclusive to all users.

(2) The following requirements apply to playground design and construction:-

(a) playground equipment and under-surfacing are to comply with *Workplace Health and Safety Act 2011* and regulations, *Australian Standards AS4685 Playground equipment and surfacing* and all other relevant statutory requirements, guidelines and standards (including *AS4422 Playground surfacing – Specification*, requirements and test method, *AS/NZS 1547 On site domestic wastewater management*, the *Electrical Safety Act 2002* and regulations, *National Construction Code* and the Council's *Open Space Landscape Infrastructure Manual* (LIM));

(b) a minimum of 2 seats adjoining the playground is to be provided under shade for supervision of play. One rubbish bin is also to be provided adjacent to the playground;

(c) the playground is to contain adequate subsurface and surface drainage to avoid water ponding/nuisance. A drainage plan is to be submitted;

(d) markers are to be fitted to each side of the edging to indicate the position of all underground services (e.g. a brass marker "D" shall be fitted to each side of edging to indicate position of drainage pipes);

(e) the assembly of all playground equipment using nuts and bolts is to have thread lock compound applied so that bolts do not work their way loose and cause maintenance issues and damage to equipment;

(f) playground surfacing is to comply with the following:-

(i) surfacing depth in accordance with *AS4422 Playground surfacing – Specifications, requirements and test method* (Council specifies a minimum 400mm depth of loose fill surfacing material to allow for compaction and depletion);
(ii) consideration to be given regarding fall zone loose fill surfacing displacement under swings, fire poles and exit run-out for slides, rotating elements, carousels or spinning discs etc; and
(iii) the playground is to have unitary surfacing (rubberised or synthetic surfacing) under play equipment where displacement of surfacing mulches is likely to occur.

(g) the playground is to be surrounded with an edge treatment and have a minimum fall zone in compliance with *AS4685 Playground equipment and surfacing* and *AS4422 Playground surfacing – Specifications, requirements and test method* as a minimum or manufacturers recommendation if these exceed minimum requirements in Australian Standards. In cases where timber sleepers are used as footprint edging then a treatment of acrylic topcoat non-slip/splinter containment paint is to be applied to manufacturer's instructions, with a minimum of 2 coats. Concrete edging shall be 200mm deep and 150mm wide with reinforced rolled edge;

(h) any planting shall;

(i) comply with *AS4685 Playground equipment and surfacing relating to plant selection*;
(ii) comply with CPTED guidelines to maximise child safety and parent/carer supervision;
(iii) where shade trees are in close proximity at mature size, the developer is to ensure that the trees are adequately protected in accordance with *AS4970 Protection of trees on development sites* and ensure that three roots do not compromise the surfacing or create trip hazards in the fall zone or playground footprint; and
(iv) consult the services of a qualified arborist where required.

(i) slides are to be installed facing south to reduce the effect of direct sunlight onto the slide surface unless otherwise shaded;

(j) swings are to be installed facing north/south unless otherwise shaded;

(k) the developer is to inspect and maintain playground equipment during the on maintenance period to ensure they comply with Australian Standards. Maintenance operations including inspections are to be carried out or be directly supervised by personnel with demonstrated qualifications, competency and experience. *AS/NZS4486 Playgrounds and playground equipment – Development, installation, inspection, maintenance and operation* refers to the following inspections that are required to be carried out on all playgrounds and playground equipment:-

(i) comprehensive post-installation inspections verifying that the playground conforms with the requirements of the relevant parts of *AS4685 Playground equipment and surfacing* series and the impact-attenuating surfacing test in *AS4422 Playground surfacing – Specifications, requirements and test method.* This is to be carried out prior to public use;
(ii) routine visual inspections weekly for equipment subject to heavy use or vandalism, otherwise as per manufacturer's instructions or at least monthly;
(iii) operational inspections to be carried out regularly, on a monthly or quarterly basis for detailed inspection of the operation and stability of the equipment, especially for any wear on bearings and moving joints; and
(iv) comprehensive inspections immediately prior to off maintenance or minimum annually to establish the overall safety of the equipment, foundations and surfaces. This includes the structural integrity of items subject to effects of weather, corrosion and rotting.

(l) the developer is to provide maintenance instructions, parts and service manuals and manufacturers' guarantees for the playground equipment or any other documents or items to be handed over to Council (prior to acceptance on maintenance);

(m) the developer is to provide to Council any construction or maintenance tools supplied with the purchase of the playground equipment prior to acceptance of the works off maintenance, including any non-standard tools used;

(n) the developer is to install a park activity entry sign adjacent to the playground prior to the acceptance of the works on-maintenance as per *AS4685 Playground equipment and surfacing.* The developer is to provide a sticker with developer contact details (over

Council's details), during the on maintenance period. This sticker will be removed at off maintenance;

(o) the developer is to submit to Council certification from a certified playground safety audit or prior to the acceptance of the works on maintenance that:-

(i) the playground safety surface impact attenuation test for surfacing complies with *AS4422 Playground surfacing – Specifications, requirements and test method*; and
(ii) the design, construction and installation of the play equipment are constructed and erected to the manufactures specifications and comply with *AS4685 Playground equipment and surfacing.*

(p) the developer is to provide Council with records of incidents and accidents that occur in the playground prior to off maintenance handover along with particulars of any remedial actions, repairs or modifications to any playground equipment;

(q) fencing shall not have any entrapment points that may present with a partially bound opening on the top rail. An example of a suitable top rail would be flat or cylindrical. Examples of suitable fencing are commercial grade heavy duty aluminium, posts timber look (preferred) or black powder coated, and black powder coated panels (balustrade). Gates are to be self-closing, child safe without footholds or any finger entrapments; and

(r) the developer is to ensure the manufacturer has installed on the equipment (as per *AS4685 Playground equipment and surfacing*, the following:-

(i) equipment identification (i.e. compliance plate); and
(ii) basic level mark (for surfacing).

Public exercise equipment

(3) The provision of public exercise stations along pedestrian networks and in parks provide opportunities for people to exercise and interact socially in an outdoor setting. Public exercise stations can contain static/fixed equipment as well as dynamic equipment activated by body weight. Care needs to be taken in selecting and locating equipment to ensure that it is safe for all members of the community and robust enough to withstand climatic conditions (including avoidance of land subject to flooding) and wear of everyday use.

(4) Installation and on-going maintenance of public exercise equipment are to include the following:-

(a) static designed exercise stations installed to manufacturer's specifications. Mechanical fitness equipment may be installed if an approvable risk assessment is submitted to Council. All equipment is to meet safety standards and fall zone requirements of *AS4685 Playground equipment and surfacing, AS4422 Playground surfacing - Specifications, requirements and test method* and *AS16630:2021 Permanently installed outdoor fitness equipment – safety requirements and test methods*;

(b) trowel finished rubberised surfacing to meet *AS4422 Playground surfacing - Specifications, requirements and test method and AS4685 Playground equipment and surfacing* and FHOF (fall heights) over a compacted base with adequate drainage installed under exercise stations;

(c) erection of a park activity entry sign adjacent to the exercise equipment prior to the acceptance of the works on maintenance as per *AS4685 Playground equipment and surfacing* and *AS16630:2021 Permanently installed outdoor fitness equipment – safety requirements and test method*. The developer is to provide a sticker with developer contact details (over Councils details), during the on maintenance period. This sticker will be removed at off maintenance;

(d) vandal proof signage for exercise station use instructions; and

(e) certification from the exercise station manufacturer that all equipment has been installed to their specifications and in accordance with *AS4685 Playground equipment and surfacing* and *AS4422 Playground surfacing – Specifications, requirements and test method.*

Natural Activity Areas

(5) Natural Activity Areas are to include the following:-

(a) compliance with *AS4685 Playground equipment and surfacing*;

(b) dry creek beds to be located away from formal play space and safety surfacing areas as rocks can contaminate these areas. Where dry creek beds are in close proximity to formal play areas, rocks are to be secured in a concrete bed;

(c) logs secured to prevent rolling, have rounded edges, no splits, be certified stress graded and have a compliance certificate by an independent play space compliance engineer; and

(d) in addition to a playground installation certification a risk assessment regarding the general play area may be required (i.e. fencing, rock seating, logs, metal items (that may heat in the sun)). Signage may be required.

(6) Council's *Open Space Landscape Infrastructure Manual* (LIM) provides guidance for materials to be used in all coastal locations (east of the Bruce Highway) and all hinterland locations (west of the Bruce Highway).

SC6.14.6.22 Landscape structures

(1) Landscape structures are to be an integral part of the open space landscape providing local identity and unique space for community and visitor gatherings.

(2) Built structures, including shelters are required to be:-

(a) consistent with the relevant local plan code and relevant building, engineering and electrical standards;

(b) appropriately located within the landscape, being complementary to the immediate landscape and urban design;

(c) constructed with impervious roofs that maximise rain and sun protection, where intended to provide shelter and for harvesting of rainwater where appropriate;

(d) orientated to maximise shelter from sun, rain and wind;

(e) of construction that requires minimal maintenance and be fit for purpose, durable and safe; and

(f) if of steel construction be constructed with materials suitable for a coastal environment complying with *AS 4312 Atmospheric Corrosion Zones* and *AS 2312 Guide to the protection of steel against atmospheric corrosion by the use of protective coatings.*

SC6.14.6.23 Furniture and fixtures

(1) Landscape furniture (including, but not limited to, seats, benches, picnic tables, tree guards, bins and bin enclosures, lighting and signage, bicycle racks and rails, hand rails and balustrades, bollards, fences and gates, BBQs, taps, drinking fountains and beach showers) shall be selected or designed so that they are:

(a) fit for purpose, appropriately positioned (installed on paved concrete or other hard surfaces) and accessible to uses of all abilities;

(b) made from materials that are durable and can be suitably protected from exterior elements, such as salt spray and UV exposure. Fixings are to be Grade 316 stainless steel unless otherwise stated. Furniture items are to come with a minimum 5 year warranty on materials and workmanship;

(c) robust and sturdy to withstand constant public use and be resistant to vandalism. Anti-tamper fittings shall be used and graffiti protection coatings applied;

(d) easy to maintain (with appropriate warranty and workmanship); and

(e) compliant with all relevant building, engineering, plumbing and electrical standards and development approvals.

(2) Non-standard furniture where approved by Council for master planned areas or where Council desires a more unique character or style, is to be designed and selected to comply with the above guidelines.

(3) Public artwork and community acknowledgements are not assessable development works. Where public artwork and community acknowledgements are proposed, refer to the *Sunshine Coast Council Public Art Policy* and the *Memorials and Plaques Policy* and the *Memorials and Plaques Guidelines*.

SC6.14.6.24 Hard surface areas

(1) All hard surfacing areas are to comply with current Australian Standards for surface treatments. Hard surface areas that are subject to wetting are to comply with relevant Australian Standards for slip resistance.

(2) All hard surfacing and areas external to building envelopes are to be designed to provide appropriate stormwater management including a minimum cross fall of 1:50 away from built structures to a suitable collection point.

(3) The selection and design of new hard surfacing shall consider the following:-

(a) hard surfacing capable of supporting the volume and weight of expected traffic;

(b) durability, such as the rate of wear and tear and susceptibility to discolouration;

(c) maintenance costs and long term maintenance requirements;

(d) resistance to heaving by tree roots, requiring additional reinforcing, deformable cushioning, rat walls, bridge beaming or flexible paving surfaces such as rubber epoxy compounds;

(e) porous pavements to be mandatory when hard surfacing is required around existing trees to be retained. In high intensity urban areas, where trees are installed in hard surface areas, the use of porous pavement over gap-graded sub-grades is mandatory;

(f) for pedestrians, wheelchair users and people with mobility constraints, a surface that is comfortable and functional;

(g) paved areas for units restrained by a hard edge, preferably concrete and laid on a structural concrete subbase; and

(h) where pavements are required adjacent to existing trees include tree protection measures reduce potential impacts. (Refer to *AS4970 Protection of trees on development sites*).

SC6.14.6.25 Fencing, walls and screening

(1) Fencing, walls or screens are to be constructed to a quality and life expectancy commensurate with the quality of the new building structures (i.e. be durable and vandal and graffiti resistant), and appropriately located and integrated into the landscape, to blend with the character of the local area. **Table SC6.14.6G (Fence and screening type)** describes the minimum requirements of fences in various development applications.

Table SC6.14.6G Fence and screening type

Type	Use	Characteristics
Frontage fence	Dual occupancy	Solid fencing to street frontages shall not exceed 6 metres in length without articulation, with a minimum 50% of the fence setback 1 metre from boundary.
	Business activities	Fencing to street frontages is a minimum of 75% visually and climatically permeable.
	Child care centre	Fencing to street frontages is a minimum of 75% visually and climatically permeable and conforms to *Queensland Development Code 2010*.
	Community activities	Fencing to street frontages is a minimum of 75% visually and climatically permeable.
	Industrial activities	Fencing to street frontages is a minimum of 75% visually and climatically permeable, a maximum of 2

Type	Use	Characteristics
		metres in height and coloured black or a toning complimentary to the local environment.
	Multiple dwelling and Rooming accommodation buildings	Fencing to street frontages shall not exceed 6 metres in length without articulation, with a minimum 50% of the fence setback 1 metre from boundary.
	Relocatable home park and Tourist park	Fencing to street frontages is a minimum of 75% visually and climatically permeable.
	Residential care and Retirement facilities	Fencing to street frontages are not to exceed 6 metres in length without articulation, with a minimum 50% of the fence setback 1 metre from boundary.
	Rural uses	Fencing to street frontages is a minimum of 90% visually and climatically permeable and is to be complimentary to the local environment.
	Service station	Fencing to street frontages is a minimum of 75% visually and climatically permeable, a maximum of 2 metres in height and coloured black or in a toning complementary to the local environment.
	Sport and recreation activities	Fencing to street frontages is a minimum of 75% visually and climatically permeable, a maximum of 2 metres in height and coloured black or in a toning complementary to the local environment. Note—This characteristic does not address pool fence requirements should the pool be located adjoining a boundary.
Frontage fence	Telecommunications facility	Fencing to street frontages is a minimum of 75% visually and climatically permeable, a maximum of 2 metres in height and coloured black or in a toning complementary to the local environment.
	Utility installation	Fencing to street frontages is a minimum of 75% visually and climatically permeable, a maximum of 2 metres in height and coloured black or in a toning complimentary to the local environment.
Boundary fence	Development adjoining parks and reserves	Fencing adjoining parks and reserves is to be designed to restrict domestic animals with a minimum of 75% visually and climatically permeable and a minimum height of 1.2 metres.
Coastal fence	Development adjoining public use coastal areas	Fences and screens bordering public use areas are dog proof, a minimum of 1.2 metres and maximum of 1.8 metres in height, allow for casual surveillance opportunities and are designed to be complementary to the local environment.
	Development adjoining coastal protection areas	Fences and screens bordering coastal protection areas are highly durable, a minimum of 1.5 metres and maximum of 1.8 metres in height and coloured to blend with adjacent landscape features.
Acoustic attenuation fences	Development assessed as requiring noise attenuation barriers	Acoustic fences are to be incorporated where buildings are unable to achieve appropriate noise attenuation. Acoustic fences are constructed in accordance with the requirements detailed in an approved acoustic report as part of the development conditions and incorporate vegetative screening and anti-graffiti measures. Fence heights shall not exceed 3 metres unless essential for attenuation and where a combination of landscaping and fencing does not meet noise attenuation requirements.
Security fence	Developments requiring security fences	Fencing to street frontages is a minimum of 75% visually and climatically permeable, a maximum of 2.4 metres in height and coloured black or a toning complementary to the local environment.
Fauna fences	Development including roads which adjoin:- • national park • nature refuge • environment reserve • conservation reserve • conservation covenant	An appropriate, fire resistant fence to provide access or exclusion of fauna in accordance with approved fauna management plan. Type 4 or 5 access trails to be established on both sides of fauna fences for fire management and vegetation maintenance purposes.

Type	Use	Characteristics
	• bushland reserve • drainage reserve • natural open space	
Fire exclusion fence	Development adjoining bushfire prone land as identified on the respective overlay	Fence to provide fire relief in accordance with approved bushfire management plan.
Utility and storage area screens	Development contains:- • bin storage • wash down bay	Areas are to be screened from street frontages with use of 1.8 metres high solid fence.
Retaining walls	Development requires land to be retained to create private lot/s	Retaining walls are to be wholly built within the subject lot including all elements of the retaining wall, footings and construction access. Retaining walls within the subject site are to be wholly built within the lot it retains, including all elements of the retaining wall, footings and construction access.
Pool fences	Development contains a pool, pond or water feature	Pool fences are in accordance with the requirements of the *Queensland Development Code 2012, AS1926 Swimming pool safety* and all subordinate regulations, legislation and all other standards at the time of construction.
Playground fence	Recreation equipment	Fencing surrounding playgrounds shall be heavy duty aluminium 19mm tube 40mm x 40mm top and bottom rail with 3mm wall powder coated black with a self-latching gate with pool safety type lock.

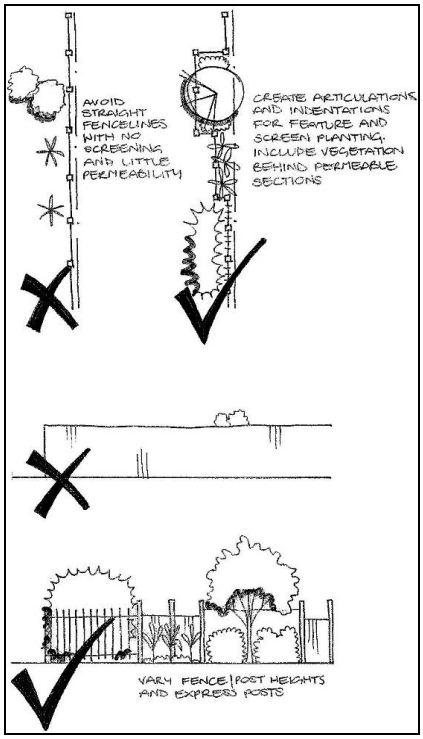
Note—for fixings for fencing, walls and built screens refer to Council's *Open Space Landscape Infrastructure Manual* (LIM).

(2) Timber and fixings are to be of high quality and durable with Grade 316stainless steel fixings for sites east of the Bruce Highway and hot dipped galvanised fixings for sites west of the Bruce Highway.

(3) Fencing and screening are to avoid straight lines and instead create articulations and indentations for feature and screen planting (refer **Figure SC6.14.6E (Screen articulation)**).

(4) In designated bushfire prone areas pine timber fences and timber retaining walls should be avoided within 5 metres of a building envelope. In such circumstance fencing constructed from non-combustible materials should be used.

Figure SC6.14.6E Screen articulation



SC6.14.6.26 Lighting

(1) Lighting of landscapes is important for areas that are to be used at night for both functionality, way finding and public safety reasons. Places that are lit at night will attract usage and activity so it is important to only light places where public activity at night time is expected and encouraged. Lighting of areas not intended for night time use and that are poorly supervised or in quiet neighbourhoods may attract vandalism and other unsociable behaviour.

(2) Lighting of areas that are adjacent to foreshores where turtle nesting sites occur should consider the principles contained within the *National Light Pollution Guidelines for Wildlife including Marine Turtles, Seabirds and Migratory Shorebirds* and Council's Lighting Conditions for developments within 100m, 1.5km or 18km of Turtle Nesting Habitat.

(3) The relevant standards for lighting pedestrian areas are:-

(a) *AS/NZS1158.3.1 Lighting for roads and public spaces*; and

(b) *AS/NZS4282 Control of the obtrusive effects of outdoor lighting*.

(4) Lighting P categories (from AS/NZS 1158.3.1) are based on the level of activity, fear of crime and need to enhance amenity as well as the type of expected use. Council is to be consulted on the level of lighting they require for public pathways or public open spaces. An RPEQ electrical engineer or lighting consultant is able to design and certify a lighting arrangement to meet these requirements in consultation with the SCC Urban Lighting Master Plan.

(5) The maintenance of light fittings, poles and lighting elements is an ongoing cost to Council. Therefore a level of standardisation is required to reduce ongoing costs and simplify maintenance through the use of robust and effective lighting elements. Standardisation also assists in providing a uniform appearance.

(6) High profile public areas allow for greater flexibility in lighting design and the use of creative lighting treatments enhances the aesthetics and provides visual interest to these areas. Lighting effects can also enhance, or of their own right be public art elements that add to the richness of a place. Lighting is to complement and enhance the elements within a space and be incorporated into the overall design, rather than an add-on.

(7) Council and private consultants are encouraged to keep up to date with the latest advances to ensure that sustainable lighting options are considered. However, care should be taken to ensure that new fittings have the same or improved durability and service life expectancy.

(8) Light fittings need to be appropriate for use in public spaces. Features to consider are shatter proof and cool to touch glass, durable materials such as stainless steel and brass, suitability for in-ground or exterior locations and impact resistance. In-ground fittings shall be non-slip and impact resistant. Where possible light fittings are to be located to minimise the risk of damage, either on a pole, fixed into the ground or wall, fitted into a recess or placed on the underside of furniture.

(9) Materials and works are to achieve a 20 year installation design life.

(10) Prior to commencement of construction, an Operational Works development approval is to be obtained for all electrical works.

(11) Following construction, all electrical works are to be certified in accordance with the requirements of the *Sunshine Coast Council Electrical*, *Lighting and Telecommunication Design and Construction Standards*.

(12) Council's *Open Space Landscape Infrastructure Manual* (LIM) provides guidance with regard to electrical installation and certification in open space areas. The LIM contains further information on palettes and appropriate light fittings and decorative and architectural lighting standards.

SC6.14.6.27 Signage

(1) Landscape signage, where required and approved as part of a park or streetscape, is to be located in accordance with Council's planning scheme codes. Signs shall be located in garden beds where possible.

(2) The use of interpretive signage is intended to reflect the cultural or natural values of the individual localities.

(3) Signs and sign poles, stands or bases are constructed from high quality materials that require minimal ongoing maintenance. Where multiple signs are required in the same location, the signs are to be colocated on one structure where possible. Permanent signage of these types in the public estate is not to be utilised for advertising purposes.

(4) Landscape signage may include:-

(a) park naming signs;

(b) estate entry signage;

(c) way finding signs/symbols;

(d) educational and interpretive boards;

(e) warning/safety signs and information;

(f) fauna crossing signs; and

(g) playground usage signage.

SC6.14.6.28 Roads, services and utilities

(1) All landscape works are to maintain adequate safe distance from services and utilities both above ground and below ground to allow maintenance to be undertaken.

(2) Services that constrain landscape areas are required to be identified on landscape plans. These include:-

(a) electrical substations;

(b) overhead powerlines;

(c) power poles and transformers;

(d) street and park lights;

(e) stormwater catchment pits;

(f) stormwater water quality devices;

(g) underground power;

(h) water;

(i) sewer; and

(j) telecommunication and fibre optic cables.

(3) For tree selection under overhead wires, refer to Appendix D of the *Energex Tree Clearing profiles.* Trees are to be selected that:-

(a) are small to medium sized on maturity and normally crown below the clearance zone height of low voltage wires;

(b) are slow growing so that mature dimensions are not reached for many years and/or the specimen reaches its useful life prior to conflict with overhead wires;

(c) have a limited life span and could potentially be removed and replaced before their height reaches specified clearance distances;

(d) are decurrent (without a clear leading stem) or multi-branched in nature which are more tolerant of directional pruning techniques or can be effectively shaped while developing to minimise future conflict with overhead services;

(e) exhibit a framework of fine branching and are therefore tolerant of hedge type pruning undertaken at a higher frequency; and

(f) are responsive to formative pruning to provide acceptable line of site to satisfy engineering and CPTED requirements.

(4) Do not select trees that:-

(a) are well documented as being undesirable for planting beneath wires due to their large size on maturity, spreading horizontal canopy, rapid growth rates, efficient epicormic response or vigorous regrowth following pruning, poor compartmentalisation and/or pruning response;

(b) have poor collar or target pruning point development (for example palm trees, Pandanus, Poinciana); and

(c) cannot be pruned without destroying its character, amenity or utility.

(5) In some situations, the planting of trees that normally may be considered undesirable for planting beneath wires may be necessary to:-

(a) retain the character of an area;

(b) buffer the built landscape;

(c) create entry and focal points;

(d) provide vertical interest and a sense of scale; and

(e) meet community expectations.

SC6.14.6.29 Guidelines

(1) For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) *AS/NZS1158 Lighting for roads and public spaces*;

(b) *AS/NZS1170 Structural design actions – Permanent, imposed and other actions*;

(c) *AS4282 Control of obtrusive effects of outdoor lighting*;

(d) *AS4373 Pruning of amenity trees*;

(e) *AS4970 Protection of trees on development sites*;

(f) *AS/NZS1428 Design for access and mobility*;

(g) *AS4419 Soils for landscaping and garden use*;

(h) *AS4454 Composts, soil conditioners and mulches*;

(i) *AS/NZS4586 Slip resistance classification of new pedestrian surface materials*;

(j) *AS1926 Swimming pool safety*;

(k) *AS4685 Playground Equipment Safety Set*;

(l) *AS/NZS4422 Playground Surfacing – Specifications, requirements and test method*;

(m) *AS/NZS4486 Playgrounds and playground equipment - development, installation, inspection, maintenance and operation*;

(n) *AS4678 Earth retaining structures*;

(o) *Work Health and Safety Act 2011* and *Guide for Building and Construction Industry* (Queensland Government Department of Industrial Relations Workplace Health and Safety);

(p) *Environmental Protection Act 1994*;

(q) *Soil Erosion and Sediment Control Guidelines* (Institution of Engineers Australian (Queensland Division));

(r) *Road Planning and Design Manual* (Department of Main Roads);

(s) *Subtropical design in South East Queensland – a handbook for Planners, Developers and Decision makers*;

(t) *Energex Tree Clearing profiles (Appendix D)*;

(u) *AS/NZS 3000 Wiring Rules*;

(v) *AS/ACIF S009:2006 – Installation requirements for customer cabling (Wiring rules)*;

(w) *Department of Infrastructure, Local Government and Planning's Natural Hazards, Risk and Resilience – Bushfire (December 2019) State planning Policy – state interest guidance material*;

(x) *Queensland Fire and Emergency Services (2019) Planning for Bushfire Resilient Communities*;

(y) *AS 4312 Atmospheric Corrosion Zones*; *and*

(z) *AS 2312 Guide to the protection of steel against atmospheric corrosion by the use of protective coatings.*

(2) The following publications provide additional guidance regarding open space and landscaping infrastructure requirements:-

(a) Sunshine Coast Council *Open Space Landscape Infrastructure Manual* (LIM);

(b) Sunshine Coast Council *Electrical, Lighting and Telecommunications Design and Construction Standards*;

(c) *Sunshine Coast Recreational Trails Construction Guidelines*;

(d) Sunshine Coast Council Access and Equity Policy;

(e) Sunshine Coast Council *Amenities Guidelines*;

(f) *Sunshine Coast Art Works – Sunshine Coast Public Strategy and Procedures Manua*l;

(g) *Sunshine Coast Open Space Strategy*; and

(h) *Sunshine Coast Street Tree Master Plan.*

Appendix SC6.14B Guide to industry best practice landscape maintenance activities for road reserves and public open space areas

(1) Establishment and maintenance requirements where:-

(a) to assist success of the landscape works, a regular maintenance schedule is to be specified for the on maintenance period to include although not limited to:-

(i) watering as required to establish planting and turf;
(ii) regular mowing and edging of turf areas;
(iii) control of environmental weeds and invasive plants in turf areas;
(iv) topdressing turf areas to ensure even surface;
(v) control of environmental weed and invasive plant growth in garden areas;
(vi) control of insect or disease in plant materials;
(vii) pruning of trees in accordance with *AS4373 Pruning of amenity trees*;
(viii) pruning of shrubs and ground covers to maintain amenity and intent;
(ix) checking and adjustment of tree stakes and ties;
(x) replacement of dead, damaged, missing or poorly performing planting;
(xi) removal of trees or limbs that may become hazardous;
(xii) top up of mulch materials to specified depths;
(xiii) removal of rubbish, litter or debris from the landscape;
(xiv) removal of graffiti if affected;
(xv) replacement of any vandalised or damaged items including all landscape infrastructure; and
(xvi) reapplication of timber preservatives and finishing oils.

(b) Due to public health and safety the servicing of waste bins; cleaning of BBQ's; cleaning and provisioning of toilets (i.e. hand wash, toilet paper) is to be performed by Council following on maintenance acceptance. The developer is still responsible for all defects that may occur during the maintenance period.

(c) for on maintenance works in accordance with the development approval and the **Planning scheme policy for development works**:-

(i) the developer is required to request an on maintenance inspection with Council's delegate after all bonds, as constructed, ADAC and required certifications have been lodged, giving seven (7) working days advanced notice prior to the meeting being conducted;
(ii) once the landscape works within the road reserves and open space areas are accepted on maintenance by Council it is the developer's responsibility to maintain the works generally for 12 months (or as conditioned in the development approval); and
(iii) during the on maintenance period the developer is to maintain the landscape in accordance with the development approval, with best industry maintenance practices and replace all damaged or vandalised items.

(d) for off maintenance in accordance with the development approval and the **Planning scheme policy for development works**:-

(i) the developer is required to request an off maintenance inspection with Council's delegate after all required certifications have been supplied, giving seven (7) working days advanced notice prior to the meeting being conducted;
(ii) if the works are satisfactory they shall be accepted off maintenance and any bond monies returned; and
(iii) if works are unsatisfactory the maintenance period will be extended in 3 month increments until acceptable.

(e) prior to acceptance of works off maintenance Council reserves the right to instruct the developer to remove/replant landscape works that are:-

(i) not in accordance with conditions of approval;
(ii) damaged or vandalised and not healthy, vigorous or performing their desired function;
(iii) causing sightline or visibility concern;
(iv) in conflict with service infrastructure or residential driveways; and

(v) in the event that the maintenance period is extended beyond the 12 months it is the developers responsibility to meet the capital and maintenance costs of any items that require refurbishment.

(2) Rehabilitation and revegetation areas:-

(a) are to be established and maintained until achievement of growth criteria and invasive plant control conditioned in the development approval is achieved. To assist success of the regeneration/revegetation works a regular maintenance and monitoring schedule is to be specified to include although not limit to:-

(i) protection of regenerating seedlings;
(ii) initial watering of young stock to aid development;
(iii) replacement of dead or poorly performing stock every 3 months. Where plants, trees or palms fail during the on maintenance period, it is the responsibility of the contractor to replace those plants as soon as practicable;
(iv) regular weed control to minimise competition to desired species and reduce influx of weed species;
(v) removal of trees that may become hazardous;
(vi) top up of mulch to specified depths; and
(vii) removal of rubbish, litter or debris from the landscape.

(b) are to be for on maintenance in accordance with the development approval and the **Planning scheme policy for development works** with the developer required to request an on maintenance inspection with Council's delegate after all bonds and required certifications have been lodged, giving 5 working days advanced notice prior to the meeting being conducted;

(c) once the rehabilitation/revegetation works are accepted on maintenance by Council, it is the developers responsibility to maintain the works for a minimum of 36 months (or as conditioned in the development approval); and

(d) during the on maintenance period, it is the developers responsibility to maintain the landscape in accordance with the development approval and with best industry maintenance practices using a suitably qualified contractor with local experience in ecological restoration works.

(3) Rehabilitation and revegetation works are to comply with the following:-

(a) the applicant is to implement the rehabilitation and revegetation works as approved prior to the release of the plan of survey or bonded in accordance with Council policy;

(b) the applicant is to maintain sediment control treatment trains to prevent runoff and sediment from future residential blocks and revegetation areas;

(c) Council may reduce the 36 month establishment period once all off maintenance criteria is achieved;

(d) in accordance with the development approval, the applicant is to regularly maintain the rehabilitation and revegetation works to achieve the following performance criteria:-

(i) performance criteria for Year One: 12 months after the acceptance of the works on maintenance;
(A) adherence to maintenance regime for rehabilitation and revegetation areas;
(B) no evidence of re-shooting from stumps or poisoned trees or the regrowth of cut stumps;
(C) no evidence of over-weeding or impact on non-target species;
(D) signs of indigenous recruitment in rehabilitation areas;
(E) weed infestation less than 10% of the rehabilitation areas;
(F) a minimum of 95% of planted stock has survived with all displaying vigorous growth. Any plants that have died within the previous twelve-month period have been replaced and established;
(G) planted trees have achieved an average height of 1 metre;
(H) planted shrubs have achieved an average height of 0.4 metre;
(I) mulch layer or approved weed control method is effective in weed suppression; and
(J) a report to Council is submitted, mapping the condition of the regeneration area, noting where works had been undertaken in the previous year and the percentage cover of indigenous recruitment.

(ii) performance criteria for Year Two: 24 months after the acceptance of the works on maintenance:
  (A) adherence to maintenance regime for rehabilitation and revegetation areas;
  (B) no evidence of re-shooting from stumps or poisoned trees or the regrowth of cut stumps;
  (C) no evidence of over-weeding or impact on non-target species;
  (D) signs of indigenous recruitment in rehabilitation areas;
  (E) weed infestation less than 5% of the rehabilitation areas;
  (F) a minimum of 95% of planted stock has survived with all displaying vigorous growth. Any plants that have died within the previous twelve month period have been replaced and established;
  (G) planted trees have achieved an average height of 2 metres;
  (H) planted shrubs have achieved an average height of 1 metre;
  (I) mulch layer or approved weed control method is effective in weed suppression;
  (J) a report to Council is submitted, mapping the condition of the regeneration area, noting where works had been undertaken in the previous year and the percentage cover of indigenous recruitment; and

(iii) performance criteria for off maintenance: 36 months after the acceptance of the works on maintenance or once all establishment criteria has been satisfied:
  (A) adherence to amended maintenance regime for rehabilitation and revegetation areas;
  (B) no evidence of re-shooting from stumps or poisoned trees or the regrowth of cut stumps;
  (C) weed infestations less than 2% of the rehabilitation areas;
  (D) planted trees have achieved an average height of 3 metres;
  (E) planted shrubs have achieved an average height of 1.2 metres;
  (F) the ground surface shall not display any area devoid of vegetation greater than 1 m^2 within any 10 m^2 sample;
  (G) mulch layer around trees and shrubs is a minimum of 100mm deep; and
  (H) a report to Council is submitted, mapping the condition of the regeneration area, noting where works had been undertaken in the previous year and the percentage cover of endemic plants.

Appendix SC6.14C Landscape Maintenance Checklist On and Off Maintenance

OPW ____/_____

Assessment undertaken by: (Name & Company)	**Assessor Signature:**		**On date:**
On behalf of developer: (Name & Company)	**YES**	**NO**	**COMMENTS (or N/A)**
APPROVALS:			
Works comply with all approval conditions			
AMENITY TREES:			
Are of good health and form in accordance with *AS2303* and are structurally stable			
Have been pruned in accordance with *AS4373*			
That have not performed have been replaced with a council approved species			
Have had all nursery stakes and ties removed			
All trees damaged beyond rectification (as assessed by Project Arborist) are to be replaced at a minimum of 1:1			
GARDENS:			
Are weed free			
Missing, damaged or poorly performing plants have been replaced			
Plants do not overhang private property, or impede road or footpath access			
TREE AND GARDEN EDGING:			
Is in good order or has been replaced			
MULCH:			
To trees and gardens has been reinstalled to the minimum depth after settlement. Quality “Forest Blend” mulch or similar has been used			
To playground areas meets all Aust. Standards for safety			
TURF:			
Is 90% weed free (broad scale spray if necessary)			
Has achieved 100% cover			
Has been top dressed with washed river sand, so that there are no ruts and turf is flush with adjacent surfaces			
STRUCTURES, FURNITURE & FIXTURES:			
Structures are sound and free of damage			
Street furniture, fixtures and play / exercise equipment are in good order and complete. Any vandalised or missing components have been replaced			
Switchboards, lighting and BBQs are in accordance with Council’s requirements and in working order			
Water fountains and taps are in accordance with Council’s requirements and in working order			
Play / exercise equipment comply with all relevant Australian Standards for safety			

Schedule 6

CLEANING:	**YES**	**NO**	**COMMENTS (or N/A)**
Structures, shelters, furniture, BBQs, bins, play / exercise equipment, fences, pathways etc. are to be free of debris, mould, cooking residue, insect and bird nests etc.			
SERVICES:			
Shall not be obstructed by landscape works			
Any broken pit lids are to be repaired by the relevant authority			
WATER SENSITIVE URBAN DESIGN:			
Landscape works meet the requirements of approval and *SEQ Technical Design Guidelines for Water Sensitive Urban Design*			
Landscape works co-ordinate with engineering and hydraulic requirements			
REVEGETATION / REHABILITATION:			
Works meet the requirements of First/Second/Third Year Performance Criteria: ***INSERT PERFORMANCE CRITERIA***			
OTHER:			
READY TO REQUEST ON/OFF MAINTENANCE INSPECTION			

Schedule 6

SC6.14.7 Coastal and waterfront structures

SC6.14.7.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance on the design and construction standards applicable to waterfront structures (including revetment walls, jetties, pontoons, decks and boat ramps with a private use), which will ensure such structures are structurally sound and safe for their intended use;

(b) provide advice and guidance on the design and construction works of waterfront structures to not cause significant adverse impacts on waterways or public use of waterways; and

(c) provide advice and guidance on the standards applicable to design and construction of non-tidal but navigable waterways.

SC6.14.7.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **applicable development codes**.

(2) This section is structured as follows:-

(a) **Sections SC6.14.7.1** and **Section SC14.7.2** provide the framework;

(b) **Sections SC6.14.7.3** to **SC6.14.7.6** provides the requirements and procedures relating to design and construction of waterfront structures and associated works to achieve the purpose of this section of the planning scheme policy; and

(c) **Section SC6.14.7.7** contains guidelines for achieving compliance with this section of the planning scheme policy.

(3) In this section it is expected that a RPEQ engineer would be experienced in the design of waterfront structures and may also be a specialist geotechnical engineer experienced in waterfront development.

SC6.14.7.3 Climate change impacts

The design of coastal and waterfront structures is to take into account the predicted effects of climate change (including sea level rise) in accordance with the *State Planning Policy – state interest guidance material - Coastal environment* and the relevant provisions of the planning scheme.

SC6.14.7.4 Coastal and waterfront structures which are prescribed tidal work

(1) Works which are prescribed tidal work are to comply with all provisions of the Code for assessable development that is prescribed tidal works (contained in Schedule 3 of the *Coastal Protection and Management Regulation 2017*) and the requirements of this planning scheme policy.

(2) All prescribed tidal works (e.g. pontoons) are to be located within the approved quay line, including all required setbacks, ensuring equitable access for neighbouring properties and public open space.

(3) Any coastal structure that is private infrastructure shall be located wherever practical on private property, with associated liability and ongoing maintenance and operation being the responsibility of the property owner to which it serves.

(4) The owner of the property associated with any approved coastal or waterfront structure is required to maintain the structure in a sound state of repair in accordance with the approved plans and conditions of the development approval and any other approvals as required.

(5) Decks are to have a minimum clearance of 50mm between the top of the revetment wall and any part of the deck. The finished surface of any deck is to be no higher than:-

(a) 500mm above the top of the revetment wall, or

(b) an alternative height where written consent has been obtained from the owners of the immediately adjoining properties stating that the alternative height will not adversely impact on the amenity of their lot.

SC6.14.7.5 Waterfront structures which are not prescribed tidal work

(1) The standards and guidelines detailed below apply to the design and construction of jetties and piers, pontoons, decks and boat ramps within non-tidal waterways (i.e. waterfront structures which do not constitute prescribed tidal work).

(2) The standards and guidelines in this section of the planning scheme policy incorporate a number of key design considerations to ensure that waterfront structures:-

(a) remain structurally sound throughout their design life;

(b) do not interfere with the structural stability of the waterway;

(c) do not restrict the maintenance, hydraulic and flood carrying capacity of the waterway;

(d) do not interfere with public access or usage of the waterway; and

(e) allow for navigation where necessary along the waterway.

(3) The owner of the property associated with any approved waterfront structure is required to maintain the structure (including bed profile) in a sound state of repair in accordance with the approved plans and the conditions of the development approval and any other approvals as required.

General requirements applicable to all structures

(4) The following general requirements apply to the design and construction of any waterfront structure:-

(a) any lighting installed, other than lighting which is specifically to aid navigation, shall not cause significant adverse amenity effects to nearby residents or properties;

(b) the works are to be designed and constructed:-

(i) to avoid significant adverse impacts on the availability of public access to the foreshore of the waterway;

(ii) to avoid adversely impacting on the safety of members of the public using the waterway or accessing the foreshore of the waterway;

(iii) to ensure they are structurally sound, having regard to relevant Australian Standards and having regard to the impacts of flooding and hydrodynamic changes;

(iv) to ensure that access will be available for future remedial, repair or maintenance works on revetment walls and foreshore areas; and

(v) to ensure the safety of users. Surfaces are not to be slippery or present trip hazards, and barriers or railings shall be provided in appropriate locations.

(c) the proposed waterfront structure is not to place any additional load on existing revetment walls (a wall erected against an earth bank or rock face to protect it against erosion, or a structural retaining wall at the waterfront edge) and is not to adversely affect the stability of the bed and banks of the waterway. Works constructed within private property behind an existing revetment wall (such as swimming pools, retaining walls, decks, etc.) are to be designed and constructed so that there will be no adverse impact on the structural stability of the revetment wall;

(d) materials which will have a long life in an aquatic environment are to be used in all structures;

(e) the works are to be located clear of any existing stormwater outlet; and

(f) setbacks are to be (the shortest distance) measured horizontally from the outermost projection of the structure concerned to the vertical projection of the boundary of the allotment. The setback from a revetment wall is from the landside of the revetment wall.

Jetties and piers

(5) Jetties and piers and their associated mooring systems are to be designed and constructed to sustain all relevant loadings including hydraulic pressure, berthing impact, wind, flood flows (including debris), live loads, and other loadings relevant to the structure as assessed by a RPEQ engineer. However, the design loads are in no case to be less than those applicable to a jetty or pier which is prescribed tidal work (as detailed in Schedule 3 of the *Coastal Protection and Management Regulation 2017*).

(6) Jetties and piers and their associated shore abutments are to be designed and constructed so as not to impact adversely on the structural stability of the waterway and to be structurally independent of the revetment wall. RPEQ engineer certification is required that the works will not impose additional loads on existing revetment walls.

(7) The deck level of the jetty or pier is not to be less than 300mm above the predicted peak water level in the waterway, for a 1% AEP event.

(8) Low level landings below the predicted peak water level may be incorporated into the structure design but fender piles (a vertical structural member that protects part of a structure from impact, damage or abrasion) or other markers are to indicate their presence when under water.

(9) The width of the deck of a jetty or pier is to be not less than 900mm and not more than 3 metres. Handrails are to be provided along both sides of the jetty stem.

(10) Jetties and piers are to be designed not to interfere with navigation or the public usage of the waterway, and adjacent public open space, taking into account any vessel moored to the jetty or pier.

(11) Where piling for jetties or piers is required to be installed through any rock revetment or rock protection, the rocks are to be removed and a neat cut/penetration made to the geotextile fabric under the rocks prior to installation of driven or screw piling, and the geotextile fabric and rock protection reinstated around the piles. The geotextile fabric is to be fastened around the pile with a stainless steel strap.

(12) Jetties and piers are not to have roofed structures.

Pontoons

(13) Pontoons are to be designed and constructed to sustain all relevant loadings including earth and hydraulic pressure, berthing impact, wind, flood flows (including debris), live loads, and other loadings relevant to the structure as assessed by a RPEQ engineer. However, the design loads are in no case to be less than those applicable to a pontoon which is prescribed tidal work (as detailed in the *IDAS Code for development applications for prescribed tidal work*).

(14) Abutments for access walkways are to be structurally independent of the revetment wall (so as not to impose any additional loading on the revetment wall).

(15) Pontoons are to be designed such that they can accommodate the rise in water level associated with a 1% AEP flood event, and still safely moor the “design” vessel.

(16) In waterways which will convey flood flows, the flotation unit of the pontoon is to be moored by piles.

(17) Access walkways are to extend a minimum distance of 500mm onto the pontoon’s flotation unit.

(18) Access walkways are to be constructed with a permanent non-slip surface and handrails along both sides.

(19) Where piling for pontoons is required to be installed through any rock revetment or rock protection, the rocks are to be removed and a neat cut/penetration made to the geotextile fabric under the rock revetment prior to installation of driven or screw piling, and the geotextile fabric and rock protection reinstated around the piles. The geotextile fabric is to be fastened around the pile with a stainless steel strap.

(20) Pontoons are not to have roofed structures.

Decks

(21) Decks are to be designed and constructed to sustain all relevant loadings as assessed by a RPEQ engineer. However, the design loads shall in no case be less than those applicable to a deck which is prescribed tidal work (as detailed in the *IDAS Code for development applications for prescribed tidal work*). Decks are to be able to withstand periodic total inundation.

(22) The design and construction of the deck is to be such that it does not unreasonably restrict access for maintenance to the bank, foreshore, revetment wall, retaining wall or other infrastructure associated with the waterway.

(23) Decks are not to extend more than 3 metres into the waterway, measured from the waterfront boundary of the lot connected to the deck.

(24) Decks are not to extend any closer than 3 metres to the side boundary, or extended side boundary of the lot connected to the deck.

(25) Access hatches of minimum size 200mm x 200mm are to be installed in a deck 300mm forward of the face of the revetment wall and located approximately every 4 metres and/or 2 metres from either side of the deck. These access hatches will be used for sand replenishment of the foreshore.

(26) The finished deck surface is to be no higher than 500mm above the top of the revetment wall and is to have a minimum clearance of 50mm between the top of the revetment wall and any part of the deck.

(27) All footings, piers, piles and the like associated with the deck are to be located no closer than 1.5 metres from the landside of the revetment wall and not be connected to or supported by the revetment wall.

(28) Where piling for decks is required to be installed through any rock revetment or rock protection, the rocks are to be removed and a neat cut/penetration made to the geotextile fabric under the rock revetment, prior to installation of driven or screw piling and the geotextile fabric and rock protection reinstated around the piles. The geotextile fabric is to be fastened around the pile with a stainless steel strap.

(29) Decks are not to have roofed structures.

(30) Safety barriers are to be implemented where hazards exist. The barrier type is to be assessed and designed by a RPEQ engineer as being appropriate for each location and the anticipated risks during construction, establishment, maintenance and end use. The pedestrian barrier selection is to be based on a suitable risk assessment method e.g. AS 2156.2 Walking Tracks.

Boat Ramps

(31) Boat ramps are to be designed and constructed to sustain all relevant loadings and scour as assessed by a RPEQ engineer.

(32) Boat ramps in fully tidal locations are to account for local surface levels and associated surface level movements (e.g. localised sand migration).

(33) The top of each wall at the edge of the boat ramp is to be level with the surface of the land on which the boat ramp is located.

(34) Side and edge walls of the ramp are to penetrate at least 600mm below natural surface level to prevent damage from scour.

(35) The surface of the ramp across the foreshore of the waterway is to be no more than 200mm above the design surface of the foreshore.

(36) Boat ramps are to have a minimum width of 3.6m for vehicular access.

(37) Boat ramps are to be designed and constructed with a gradient generally not steeper than 1(V):8(H). Ramps with slopes as steep as 1:6 may be acceptable provided the surface is appropriate. Steeper slopes will require operation by a winch. Proposals to construct ramps steeper than 1:8 are to be supported by a detailed assessment study that demonstrates the sustainability of the proposal.

(38) To facilitate safe movement of vehicles and persons, the surface of a boat ramp is to be treated to prevent it from becoming slippery either by forming grooves 40mm wide and 20mm deep at a spacing of 150mm and at an angle of 70 degrees to the centre line of the boat ramp, or by an alternative surface treatment which will provide a similar non-slip surface.

(39) Boat ramps are to be located a minimum of 1.5 metres clear of the side boundary and extended side boundary of the property.

SC6.14.7.6 Non-tidal waterways and associated works

General

(1) Guidance on the standards applicable to the major engineering components of non-tidal waterways (e.g. lake developments and associated facilities) is provided below.

Revetment walls

(2) Revetment walls are to be wholly built within the subject lot including all elements of the revetment wall such as footings.

(3) Revetment walls are to be designed and constructed to ensure they are able to support all intended loads, but in any case shall be designed to support a distributed live load of at least 3 kPa in addition to applicable soil loads, with factor of safety of no less than 1.5.

(4) The level and design of the bottom edge of the revetment wall shall be such that it is likely to prevent any adverse effects from erosion for at least 50 years.

(5) The design and construction of the revetment wall shall provide for the relief of hydrostatic pressure.

(6) Certification of the revetment wall design/construction by a RPEQ engineer is to be provided.

(7) Maintenance of revetment walls is the responsibility of the owner and a minimum of 1 metre wide setback area behind the wall is to be provided to allow maintenance to be performed. Within this area no structure is to be built that would restrict maintenance activities. This area is to be preferably grassed, gravelled or loose-paved to allow monitoring of problems as they develop. If other surfacing is installed then it is to be easily removable should any maintenance be necessary.

(8) Any structure built within the setback area is not to impose further loading on the revetment wall, and RPEQ engineer structural certification will be required that specifically states that the revetment wall will continue to remain structurally sound with the additional loading for its design life.

Foreshores

(9) The foreshore profile is to be constructed for long term stability with due consideration to flood flows, boat wash, wind induced waves and stormwater discharges.

(10) Suitable access is to be provided to the waterway to enable maintenance activities to be undertaken. A typical access way would consist of a maintenance boat ramp constructed within a waterfront parkland area and appropriate access to an adjacent road.

Weirs

(11) Structural design of weirs (a structure which separates a tidal waterway from a non-tidal waterway, e.g. man-made lake) is to take account the impact loading from debris and watercraft, as well as applicable hydrostatic and hydrodynamic loads. Certification is to be provided by a suitably qualified RPEQ engineer. The required design life will be 100 years.

(12) Downstream scour protection shall be designed using appropriate hydraulic modelling techniques. Rock used for scour protection is to have characteristics and qualities which are appropriate for the application.

(13) Maintenance and operations manuals are to be supplied by the developer upon handover along with as constructed drawings.

Geotextile Fabrics

(14) Geotextiles shall be non-woven, needle punched fabrics consisting of polyester or polypropylene polymers, having a strength and other characteristics suitable to the particular application.

(15) Geotextile fabric shall be lapped 500mm minimum and keyed into all edges and ensure no horizontal joins.

Navigation Locks

(16) Navigation locks, devices that allow boats to pass between bodies of water having different water levels, are to have a minimum design life of 50 years.

(17) Navigation locks are to be designed to an 80 year design life and constructed to sustain all relevant loadings, berthing impact, wind, tidal and flood flows (including debris) and other loadings relevant to the structure as assessed by a RPEQ engineer.

(18) Penstock gates to be Waterman 1300 x 1300 SS211 or equivalent, manufactured in quality 1 mild steel hot dip galvanized.

(19) Actuators to be Auma SA14.5 – B3/180 or equivalent, gearboxes to be Auma 6K 10.2 – 2/A Level or equivalent.

(20) Cathodic protection shall be designed as a sacrificial zinc anode system.

(21) Painted, galvanised coating to fabricated handrails and miscellaneous steelwork including light poles is to be in accordance with **Table SC6.14.7A (Coating to handrails and steelwork)**.

Table SC6.14.7A Coating to handrails and steelwork

Description	Reference	Dry film thickness microns	Volume solids %	Min. coverage rates l/sqm
Galvanizing	*AS/NZS4680*	NA	NA	NA
Clean, degrease wash and dry	NA	NA	NA	NA
Two pack epoxy primer	Ref 6 Table C1 *AS2312*	50	57	11.4
High build epoxy	Ref 13 Table C1 *AS2312*	200	87	4.4
Two pack acrylic gloss	Ref 33 Table C1 *AS2312*	50	45	9

(22) Operation of the lock is to be by an access card system to be set up through telemetry or phone line (depending on location) to allow administration of cardholder utilisation, with appropriate software to manage the operation.

(23) While a remote access option can be included it must be supported by a manual swipe card access system.

(24) Maintenance and operations manuals are to be supplied by the developer upon handover along with as constructed drawings.

(25) Concrete grades for the following are not to be less than:-

(a) footings and base slabs - Grade N40;

(b) vertical walls - Grade N50 or S40 as specified; and

(c) suspended slabs - Grade N40.

(26) Required cover to reinforcing steel for the following is not to be less than:-

(a) faces of vertical walls and other surfaces exposed to tidal or splash action - 65mm;

(b) sides and upper surfaces of footings and base slabs - 50mm;

(c) undersides of footings and base slabs - 60mm; and

(d) elsewhere - 45mm.

(27) Ladders and brackets shall be fabricated from aluminium alloy 6061 to Temper T6 with:-

(a) all welds 6mm continuous fillet using filter alloy 5356;

(b) welding be in accordance with *AS1665 Welding of aluminium structures*;

(c) bolts, nuts and washers Grade 316 stainless steel;

(d) washers used under all bolt heads and nuts; and

(e) slip resistant coating to be applied to all ladder rungs.

(28) Inlet and outlet port screen and bulkhead details are:-

(a) screen and port frame constructed from Grade 316 stainless steel;

(b) all welds butt with faces ground flush or fillet, all welds continuous unless shown otherwise; and

(c) bulkhead gate to be hot dip galvanized after fabrication.

Tidal exchange systems

(29) Tidal exchange systems, a system for maintaining a degree of salinity for suppressing growth of aquatic vegetation and providing continuing water exchange and/or maintaining constant water levels, may be approved by Council where it is demonstrated that is the most efficient means of maintaining appropriate water quality conditions in the proposed waterway (e.g. maintaining a salinity level which will inhibit aquatic plant growth in the waterway, etc.).

(30) Tidal exchange units are to have a minimum design life of 50 years. Whole of life cycle costing will be considered by Council prior to approving any design and will be taken into account in determining an appropriate sinking fund contribution by the developer.

(31) Detailed hydraulic modelling to demonstrate turnover rates is to be provided.

(32) Where the exchange system involves an intake structure and pipe, the following applies:-

(a) any jetty associated with the inlet facility is to be constructed on reinforced concrete or double treated hardwood piles. All fasteners (bolts, nuts, etc.) are to be Grade 316 stainless steel, and all steelwork, brackets, etc. are to be hot dip galvanized with a minimum coating of 600gm/sqm; and

(b) the intake structure is to be submerged and only accessible by divers, and the safety grill is to be designed for easy removal for maintenance and is to be fabricated from Grade 316 stainless steel.

(33) A backup pump is to be provided as part of any tidal exchange system. The standby pump is to be collocated on a site in a suitable weather proof structure with good access for a suitable crane.

(34) Any submersible pumps are to have the following features:-

(a) high alloy stainless steel impellers and shafts;

(b) marine grade epoxy paint system;

(c) sacrificial zinc anode cathodic protection system;

(d) anti-foul paint protection system; and

(e) high density polyethylene pipe (fusion butt welded) for rising mains.

(35) Maintenance and operations manuals are to be supplied by the developer upon handover along with as constructed drawings.

Navigational Aids

(36) Where required, navigational lights, buoys, markers and signs are to comply with Maritime Safety Queensland's requirements.

SC6.14.7.7 Guidelines

For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) *AS1141 Methods for sampling and testing aggregates*;

(b) *AS1428 Design for access and mobility*;

(c) *AS1604 Specification for preservative treatment*;

(d) *AS1664.1 Aluminium structures*;

(e) *AS1665 Welding of aluminium structures*;

(f) *AS1170.1 Minimum design loads on structures (known as the SAA Loading Code) – Dead and live loads and 1170.2 Minimum design loads on structures (known as the SAA Loading Code) – Wind loads*;

(g) *–AS/NZS4680 Hot-dip galvanized (zinc) coatings on fabricated ferrous articles*;

(h) *AS1720 Timber structures*;

(i) *AS2159 Piling – Design and installation*;

(j) *AS2239 Galvanic (sacrificial) anodes for cathodic protection*;

(k) *AS2312 Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings*;

(l) *AS2832.3 Cathodic protection of metals - Fixed immersed structures*;

(m) *AS3500.3.2 National plumbing and drainage - Stormwater drainage - acceptable solutions*;

(n) *AS3600 Concrete structures*;

(o) *AS3700 Masonry structures*;

(p) *AS3706 Geotextiles - Methods of test*;

(q) *ANZECC Australian and New Zealand Guidelines for Fresh and Marine Water Quality*;

(r) *AS4110 Steel structures*;

(s) *AS4133 Methods of testing rocks for engineering purposes*;

(t) AS *4312 Atmospheric Corrosion Zones*; and

(u) *AS 2312 Guide to the protection of steel against atmospheric corrosion by the use of protective coatings.*

Note—Relevant guideline documents in existence or available over the life time of this planning scheme policy are to be referenced and used where appropriate. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally.

SC6.14.8 Constructed waterbodies

SC6.14.8.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) detail what will be considered when determining whether a constructed water body (CWB) proposal successfully demonstrates an appropriate function and need;

(b) outline what will be considered when determining whether the proposed CWB can be reasonably decommissioned; and

(c) outline minimum design and reporting standards.

SC6.14.8.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Stormwater management code**.

(2) This section is structured as follows:-

(a) **Sections SC6.14.8.1** to **SC6.14.8.3** provide the framework;

(b) **Sections SC6.14.8.4** to **SC6.14.8.10** provides the requirements and procedures for achieving the outcomes of the **Stormwater management code** and to achieve the purpose of this section of the planning scheme policy; and

(c) **Section SC6.14.8.11** contains guidelines for achieving compliance with this section of the planning scheme policy.

(3) This section of the planning scheme policy does not provide a comprehensive treatment of acceptable or critical limits for CWB design, construction or maintenance but serves to identify what considerations are applicable to proposals and assessments. Reference is made to external guidelines where appropriate.

(4) In this section it is expected that a RPEQ engineer would be experienced in the design of CWBs. Waterfront structures (including revetment walls, jetties, pontoons, decks and boat ramps with a private use) may also require a specialist geotechnical engineer experienced in waterfront development.

SC6.14.8.3 Process

(1) CWBs may be:-

(a) required under a code; or

(b) required as a condition of development approval; or

(c) proposed by the applicant and demonstrated as satisfying all relevant planning scheme requirements, including the test of overriding public need contained within this policy.

(2) The process for the design and implementation of a CWB is described as follows:-

(a) submission and approval of an EMP;

(b) CWBs designed in accordance with the standards and guidelines in **SC6.14.8.11 (Guidelines)**;

(c) construction of CWBs in accordance with approval conditions; and

(d) submission of a CWB Asset Management Plan includes as constructed and maintenance plans and approved CWB on maintenance period submitted as conditioned in the development approval.

SC6.14.8.4 General advice

(1) CWBs are artificial waterways, such as:-

(a) artificial channels, lakes or other bodies of water (this CWB definition specifically exclude sedimentation basins, stormwater treatment wetlands, natural channel design solutions, water supply infrastructure and agricultural waterbodies); and

(b) canals connected or intended to be connected to tidal water and from which boating access to the tidal water is not hindered by a lock, weir or similar structure.

(2) CWBs are not considered as water treatment devices and as such inflows shall meet WQOs.

(3) This section is to be read in conjunction with the guidelines contained in **Section SC6.14.8.11 (Guidelines)**.

(4) Most CWBs require approval from State agencies, in accordance with standards that may be higher than those given in this section of the planning scheme policy. It is advisable to check with the relevant State agencies in addition to Council, to ascertain requirements for loadings, dimensions, construction materials, navigation effects, aquatic vegetation protection, operational requirements and environmental performance in any particular case.

(5) An EMP is required for all CWB proposals.

SC6.14.8.5 Origins and purpose of CWBs

(1) CWBs are typically proposed and constructed under the following circumstances:-

(a) Type 1 – where on site fill extraction voids are rehabilitated as CWBs (pit lake and saltwater canal and canal-like CWBs), and are associated with urban development of constrained, reclaimed or other land that is contiguous with the CWB. The rehabilitation of these voids as CWBs normally includes consideration of landscape and recreation values. Type 1 also includes CWBs that are not primarily associated with fill or resource extraction and are not able to be reasonably decommissioned;

(b) Type 2 – where resource extraction voids are rehabilitated as CWBs (pit lake fresh or saltwater CWBs), and are associated with extractive industry where the extracted resource is utilised offsite. The rehabilitation of these voids as CWBs normally includes consideration of landscape and recreation values;

(c) Type 3 – where a CWB's origins are not associated with the rehabilitation of significant voids and the CWB is able to be reasonably decommissioned and its hydraulic efficiency, dimensions and size relative to its catchment are such that mechanical recirculation or destratification is not required to manage water quality. These CWBs are predominantly associated with delivery of landscape and recreation values or other policy objectives associated with the development of water sensitive communities as identified in a Regional TWCM Plan; and

(d) Type 4 – where a CWB's origins are predominantly associated with stormwater harvesting, being storage infrastructure and which may also be intended to provide landscape and recreation values. Type 4 waterbodies may be considered as water supply infrastructure.

SC6.14.8.6 Key guiding principles

(1) The primary objective of this section is to ensure that decisions on CWB proposals are based on consideration of comprehensive quantitative information regarding the need for the CWB and associated cost, benefit, risk (including climate change contingencies), responsibility, function, sustainability and alternative measures.

(2) Type 1 and Type 2 CWBs are to be directly integral to development that demonstrates an overriding need in the public interest (ONPI). The ONPI as referred to in this section of the planning scheme policy is to be established on quantitative information and also address specific site locational requirements for the proposed development.

(3) Where a Type 1 or Type 2 CWB is proposed in association with a fill or resource extraction activity and the associated development has not demonstrated an ONPI, the CWB proposal itself

is to establish the ONPI for the development of the CWB and take into consideration the significance of the associated (or main) development.

(4) The efficient protection of WQOs, environmental and public health and the efficient management of drainage reserves and open space are the core policy objectives associated with CWBs and underpin this section of the planning scheme policy.

(5) The amount of funding and revenue able to be raised to manage an asset in perpetuity, or until the specific time at which it shall be decommissioned sets the critical design point for financial sustainability assessment. Assets are to be designed and funded accordingly. Economic viability is the test that determines whether a CWB may be considered able to be reasonably decommissioned.

(6) A CWB proposal is to address/demonstrate key design considerations, including:-

(a) efficient delivery of a needed function that is identified under the Council endorsed TWCM plan;

(b) its physical dimensions, hydraulic efficiency and size relative to the catchment (100 to 200 m^3/ha with a maximum depth of 3 metres) such that no mechanical recirculation or destratification is required to manage water quality;

(c) that the CWB is able to be reasonably decommissioned; or

(d) an overriding need in the public interest for the development of each new CWB;

(e) the CWB is demonstrated as being suitable for its intended use; and

(f) the CWB is demonstrated as not contributing to a decline in water quality based on reasonable maintenance levels.

SC6.14.8.7 Overriding need in the public interest (ONPI)

(1) The ONPI for the development of a CWB is to be demonstrated by the proponent and determined by Council.

(2) The proponent/applicant is to quantify and establish to Council's satisfaction the social, economic and environmental benefits of the CWB to the Sunshine Coast, taking into consideration:-

(a) adverse impacts upon the natural values of the site and the associated downstream, upstream, groundwater and other environments;

(b) the full lifecycle risk, cost and benefit attributable;

(c) alternatives to deliver the same or similar benefits including alternative sites and opportunity costs; and

(d) not undertaking the proposed development.

(3) Council may determine that an ONPI has been demonstrated when:-

(a) the proposal and associated development is compliant with all other provisions of the planning scheme and the need for the CWB is demonstrated as being of regional or State significance; and

(b) full cost-benefit analysis quantifies the benefits, adverse impacts, risks and lifecycle costs of the proposal and alternatives where:-

(i) significant adverse impacts are able to be mitigated and costs reconciled by significant benefits;
(ii) the level of cost and risk (i.e., responsibility) carried by Council and other parties are commensurate with the significance of their respective benefits;
(iii) the integrity of the claimed functions and the extent to which the CWB is able to sustainably deliver such functions are demonstrated as being achievable under reasonable levels of maintenance in line with Council's asset management framework and policy with respect to service levels, risk and function;

(iv) lifecycle costs are assessed over the life of the associated development and sources of reasonably attainable revenue commensurate with these costs are identified; and
(v) cost benefit analysis is in line with the *Commonwealth Handbook of Cost-Benefit Analysis*, 2006.

(4) Example of a project that might demonstrate an ONPI is a proposed use where an ONPI satisfies Council's land use planning requirements, and the development of the CWB demonstrates consistency with **Section SC6.14.8.6 (Key guiding principles)**.

(5) Examples of projects that might be considered exempt from demonstrating an ONPI are:-

(a) non-assessable development and stormwater harvesting schemes (Type 4 CWBs) that are demonstrated as needed under a significant program or master plan endorsed by Council; and

(b) other small CWBs (Type 3 CWBs) (ponds 100 to 200 m^3/ha catchment with a maximum depth of 3 metres) that are:-

(i) able to be cost-effectively maintained for a functional purpose and practicably decommissioned; and
(ii) identified in Council's TWCM Plan and *Open Space and Recreation Strategy* and other planning provisions.

SC6.14.8.8 Consideration of beneficial uses and values/ functions in demonstrating ONPI

(1) The efficient protection of WQO and environmental/public health and the efficient management of drainage reserves and open space are the core policy objectives associated with CWB operations, although not necessarily justification for the creation of CWBs.

(2) Most CWBs do not primarily exist to advance these policy objectives. Instead, once constructed, ongoing management interventions are required for their preservation.

(3) Aside from the advancement of the core policy objectives there are other values or functions commonly associated with constructed water bodies, such as:-

(a) economic functions (construction/operational phase);

(b) resource extraction (e.g. sand/gravel extractive industry, fill for flood immunity and stormwater conveyance);

(c) improved marketability of waterfront property;

(d) navigation;

(e) stormwater harvesting;

(f) social functions (rehabilitated/water body phase):-

(i) landscape; and
(ii) recreation.

(g) environmental functions (rehabilitated/water body phase):-

(i) limited habitat of low ecological value; and
(ii) limited, inefficient water treatment functions due to disproportionate maintenance requirements.

(4) Evaluation of the CWB need and management service (end use) is essential as resources are to be used to maintain the service, which has obvious implications for maximising resource efficiency and minimising life cycle costs and risks.

(5) The integrity of a value is relative to predevelopment conditions and the CWB delivery performance (i.e. net benefit) in light of alternative means to deliver the particular value. A claim to a particular value may not necessarily prove the importance or integrity of that value over other values, but is to be seen in the context of the full range of existing and potential future values. Further investigation may be required under cost-benefit analysis to determine the need and

significance of net benefits for each CWB and the extent to which managing a CWB for these specific end purposes represents good value.

(6) For a function or value to be considered applicable or beneficial, its effectiveness, efficiency (both resource/energy use and cost), reliability, and resilience shall be demonstrated, preferably having a strong economic, social or environmental dimension and minimal adverse impacts.

SC6.14.8.9 Commentary on specific CWB related values

Stormwater conveyance/flood mitigation

(1) Stormwater conveyance and the achievement of flood immunity are essentially an economic function. This is predominantly attributable to the channel, banks and control structures above the standing water level, or dry ground where no CWB exists. In many cases the fill that constitutes the elevated platforms and channels may have been sourced on site, creating a void that is rehabilitated into a CWB. However, the underlying reason for the conveyance of stormwater in this way is to allow for greater development through the use of fill. This is the economic function of the stormwater conveyance. The void created to produce the fill material for stormwater conveyance may be of comparatively negligible economic value.

(2) Flood mitigation is predominantly provided by the capacity of a channel or basin above normal water level. It follows that a CWB is not absolutely necessary for flood mitigation; filling of land and creation of capacity in a channel or basin to a design event delivers a flood mitigation function. The cost benefit associated with the importation of fill is to be quantified when considering alternatives to on site activities that result in the creation of CWB.

Fill/resource extraction

(3) Some water bodies are created as a by-product of resource extraction activities, typically on alluvial floodplains, where resources such as sand and gravel are extracted for use off site. As with extraction of fill for on site use in channels and platforms, the primary economic value is delivered during the extraction phase, with on going costs during the rehabilitated phase not being linked to a commensurate ongoing economic benefit.

(4) The ability to reasonably decommission a CWB declines with increased volumes of extracted material. The main driver for large constructed water bodies is often the provision of fill or other resources. In such cases, the economic function does not continue into the rehabilitated phase where ongoing management costs are associated with the protection of core social and environmental policy objectives or values and not the continued economic activity, i.e. extraction of a resource.

Stormwater treatment

(5) CWBs typically perform an inefficient stormwater treatment function, demanding higher relative maintenance and renewal costs than systems designed specifically for stormwater treatment (e.g. best practice sedimentation ponds, bioretention basins, and constructed wetlands).

(6) CWBs typically exhibit volumes and depths that are not informed by the efficient removal of the critical particle size or other contaminant as required under the WQO. Removal of particles smaller than that required under the WQO may result in net downstream erosion and create unreasonable CWB health and maintenance issues.

(7) Desilting of a CWB is a major undertaking and carries environmental risk. Additionally, the need for mechanical destratification and recirculation to avoid an increased risk of undesirable events (e.g. odour, algal blooms, release of poor quality water) poses additional environmental risk and economic costs that further undermine treatment efficiency claims.

Landscape and recreation

(8) CWBs and associated infrastructure can provide a range of social values including recreational opportunities (e.g. canoeing, model boating, walking, viewing wildlife) and landscape or scenic values (e.g. waterfront living). Local communities tend to value these local water bodies highly and expect service levels that support these values.

Habitat and ecology

(9) All CWB's shall be designed and maintained to ensure general biosecurity obligations are achieved over the longer term.

(10) Any proposed CWBs shall ensure a healthy habitat and a good diversity of plants and animals for the long term.

(11) Costs and benefits associated with management of CWBs as habitats are to consider the relative priority and opportunity costs associated with other, competing biodiversity projects that seek to maintain or improve priority habitats of high ecological value.

Stormwater harvesting

(12) Open water storages (lakes and ponds) can be a component of stormwater harvesting initiatives that assist in meeting urban water requirements. However, such initiatives shall, among other requirements, be considered within the context of regional integrated water planning, be identified in a Council endorsed integrated water cycle management plan and demonstrate good value and sustainable service delivery.

Asset management considerations

(13) Council recognises CWBs as assets that are subject to principles of asset management planning. CWB proposals are to identify and address the associated asset management implications, including:-

(a) the preparation of an asset management and maintenance plan to professionally acceptable standards;

(b) establishment of a service need linked to Council's responsibilities;

(c) establishing that the proposed asset delivers or significantly contributes to satisfying the service need; and

(d) identification of maintenance requirements tailored to service delivery.

Funding considerations

(14) Full lifecycle costs of proposed CWB assets are to include all immediately associated stormwater infrastructure on which the CWB is dependent. Costs are to include management (general and risk – including climate change contingencies), maintenance, renewals and identification of decommissioning requirements. Analysis is to cover the effective life of the development that the asset is integral to or services (about 80 years for urban development). This can equate to 2 to 5 CWB renewals.

(15) The funding model is to apply to all CWB associated lake infrastructure e.g. tidal exchange systems, lock & weirs, boat ramps etc.

(16) The amount of funding, including contributions and revenue, able to be raised to manage the CWB in perpetuity, or until it is decommissioned at a certain time, determines what assets are financially sustainable.

(17) Funding and revenue raising mechanisms may include a benefited area levy, general fund, sinking fund, or more innovative forms of generating income such as stormwater harvesting with fit for purpose potable source substitution.

SC6.14.8.10 CWB design – minimum requirements

General requirements

(1) All CWBs require approval, where applicable, in accordance with the *Planning Act 2016*, *Coastal Protection* and *Management Act 1995*, *Water Act 2000*, and the *Fisheries Act 1994*, and are to be evaluated and designed in accordance with the requirements of this section of the planning scheme policy and relevant codes of the planning scheme.

(2) Design, construction and operation of CWBs are to be based on protection of ecosystem health, water quality objectives and the intended beneficial uses associated with the design intent.

(3) CWBs are to be designed and managed to maximise resource efficiency and minimise life cycle costs and risks. Natural design concepts shall be a primary consideration.

(4) A monitoring program is required to demonstrate the impact and performance of the CWB with respect to the WQO and other requirements.

Minimum design requirements for fresh and brackish/saltwater CWBs

(5) The design and orientation of the proposed CWB are to promote mixing and avoid stratification via passive means such as wind and adequate inflow. The following basic considerations shall be fundamental to the design:-

(a) CWBs are to be designed to ensure adequate flushing (every 20 to 30 days);

(b) CWB depth (both maximum and average) and batters are to be designed to avoid stratification and deter the growth of environmental weeds and invasive plants;

(c) the length to width ratio is to be at least of 3:1;

(d) CWBs shall be designed to avoid or reduce reliance on pumping or other mechanical intervention to protect ecosystem health, water quality objectives and the intended beneficial uses associated with the design intent; and

(e) All CWB assets are to be restricted to secondary contact only and signage is to be installed accordingly. Signage to include warnings in relation to hazardous marine creatures.

(6) Appropriate software is to be used to model the dynamics of each specific CWB, including hydrology and hydraulics, nutrient and other contaminant cycles, thermal and salinity stratification and other project specific considerations.

(7) Adequate access provisions are to be made to facilitate maintenance activities;

(8) Landscape design is to integrate open space requirements of Council or the development's endorsed master plans.

(9) CWB design is to minimise public health risks associated with mosquitoes, midges, nuisance populations of birds and general risks to public safety.

(10) Creation of islands is to be avoided.

(11) Engineering design and construction components are to be certified by a RPEQ engineer and other design elements crucial to the sustainability of a CWB is to be certified by an appropriately qualified person.

(12) CWBs are to be designed so as to not require topping up by external water sources.

(13) There is to be no net loss of public access to foreshores as a result of the proposal.

Special consideration for brackish/saltwater CWBs

(14) CWBs are not to be connected to coastal waterways that are intermittently or permanently closed to the sea.

(15) Tidal interchange systems are required to achieve a tidal range greater than 300mm.

(16) The design is to demonstrate that there is no risk of saltwater intrusion into freshwater environments.

(17) CWBs are not to contribute to increased tidal prisms that result in erosion due to increased tidal flow, such that river bank protection works are required.

CWB design and management reporting requirements

(18) Where a CWB containing a permanent or semi-permanent body of water is proposed, detailed design documentation is required to support the application, which shall include a CWB design report as part of an integrated water management plan for each separate proposal for a CWB. The report is to incorporate the following information:-

(a) a summary of the rationale for and the objectives of the design, including whether the CWB is associated with fill, reclamation or resource extraction activity, stating volumes;

(b) a summary of any site-specific constraints relevant to the site, or the design, which may affect ongoing maintenance as detailed in the EMP;

(c) a summary of the design data and assumptions used for the hydrological study;

(d) a summary of the design flows, tidal exchange and predicted operating water levels and variations;

(e) a summary of hydraulic calculations for the design of all inlet and outlet structures;

(f) a summary of predicted water balance for each key stage of the development contributing to the CWB;

(g) details of water augmentation requirements and source (if required) during extended periods of drought;

(h) a summary of the design pollutant loadings and modelling assumptions used to derive the design pollutant loadings;

(i) a summary of the design performance criteria;

(j) a summary of the predicted water quality outcomes;

(k) a brief description and summary of the monitoring program, including sampling site locations, frequency, etc.;

(l) a summary of the planting details including areas, planting rates, establishment water levels and normal operating water level requirements;

(m) a summary of control strategies for environmental and invasive flora and fauna. Identify species by common name and scientific name and if possible include photographic evidence of the infestation;

(n) a summary of operating requirements for the variable water level controls available to the operator;

(o) details of any proposed sludge and sediment disposal sites;

(p) details of any special requirements for the handling and disposal of materials to be removed from the CWB during routine maintenance and corrective intervention; and

(q) a summary of how work, health and safety aspects have been managed with respect to the construction and maintenance of the proposed CWB. These shall include:-

(i) physical issues such as selection of batter slopes, depth and duration of ponding, and access to structures;
(ii) public health issues such as possible exposure to chemical and biological contaminants and vectors; and
(iii) work, health and safety issues related to the ongoing management and maintenance of the system.

<u>CWB asset management plan report requirements</u>

(19) A CWB asset management plan is required for all CWBs. The applicant will need to provide a CWB asset management plan report prior to acceptance of the water body on maintenance. The CWB asset management plan report shall be self-contained and succinct. The document is to be presented in a form which allows ready and unambiguous interpretation and understanding by a wide range of users.

(20) The operation and maintenance of the water level control structures and how they affect the weed management strategy needs to be taken into account.

(21) The report is to contain the following:-

(a) a complete copy of the CWB design report revised to include changes made to the wetland during construction and operation;

(b) as constructed plans showing relevant details and levels for all components of the CWB;

(c) a summary of water quality test results obtained prior to hand over to Council;

(d) a brief comparison and discussion of the possible reasons for any difference between predicted and actual results of the water quality monitoring along with management recommendations to mitigate unacceptable results;

(e) briefing notes suitable for maintenance personnel sufficient to satisfy any known work, health and safety issues related to the ongoing management of the site;

(f) a summary checklist, including a timetable, for the routine inspection and maintenance of both the hard-scape and soft-scape elements of the water body; and

(g) a summary of staff, plant, minor and special equipment and costing information associated with the previous operation and maintenance of the CWB to allow budget preparation for future management and maintenance to be tailored to levels of service delivery.

SC6.14.8.11 Guidelines

(1) For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) Department of Environment and Resource Management Coastal Development Guidelines:-

(i) *Development involving an artificial waterway*;
(ii) *Activities in a watercourse, lake or spring carried out by an entity*;
(iii) *Reclaiming land under tidal water*; and
(iv) *Constructing tidal works*.

(b) National Construction Code:-

(i) *NCC Vol 2 Part 3.1.2.0 – Drainage (AS 3500.3.2 National plumbing and drainage – Stormwater drainage – Acceptable solutions)*;
(ii) *NCC Vol 2 Part 3.1.2.2 (d) – Excavation for drains adjacent to existing footings*; and
(iii) *NCC Vol 2 Part 3.1.1 – Earthworks*.

(c) State legislation:-

(i) *Coastal Protection and Management Act 1995*;
(ii) *Coastal Protection and Management Regulation 2003*;
(iii) *Environmental Protection Act 1994*;
(iv) *Environmental Protection Regulation 2008*;
(v) *Environmental Protection (Water) Policy 2009*;
(vi) *Fisheries Act 1994*;
(vii) *Local Government Act 2009*;
(viii) *Soil Conservation Act 1986*;
(ix) State Planning Policy - state interest guidance material Water quality July 2017;
(x) *Planning Act 2016*;
(xi) *Vegetation Management Act 1999*;
(xii) *Water Act 2000*;
(xiii) State Policy Coastal Management;
(xiv) *State Planning Policy - state interest guidance material Coastal environment July 2017*; and
(xv) *State Planning Policy - state interest guidance material Biodiversity July 2017.*

(d) *Coastal and Engineering Manual* (National Committee on Coastal and Ocean Engineering, Eng Aust. 2004);

(e) *ANZECC Australian Water Quality Guideline for Fresh and Marine Waters 2000*;

(f) *AS3962 Guidelines for design of marinas*;

(g) *Design flow and RPS, 2010. Townsville Constructed Lakes Design Guideline*; prepared for Townsville City Council;

(h) *Engineering Design Guidelines: Constructed Lakes* (Mackay City Council, 2008);

(i) *Melbourne Water Constructed Shallow Lake Systems, Design Guidelines for Developers, Version 2, November 2005*;

(j) *Dam Safety Management Guidelines* (Queensland Department of Natural Resources and Mines, 2002);

(k) *SEQ Healthy Waterways WSUD Technical Design Guidelines for South East Queensland* (2006);

(l) Soil Management Guidelines in *Queensland Acid Sulfate Soil Technical Manual 2002*;

(m) *Draft Policy No. DC 1.8 – Canal estates and other artificial waterway developments* (Western Australia Planning Commission, 1999);

(n) *Guidelines for Managing Risk in Recreational Waters* (NHMRC); and

(o) *Handbook of Cost Benefit Analysis* (Commonwealth Government, 2006).

(2) The following publications may provide additional guidance regarding CWB design and management:-

(a) *Manual for Erosion and Sediment Control version 1.2* (Sunshine Coast Regional Council, 2009).

Note—relevant guideline documents in existence or available over the life time of this planning scheme policy are to be referenced and used where appropriate. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally.

SC6.14.9 Earthworks

SC6.14.9.1 Purpose

The purpose of this section of the **Planning scheme policy for development works** is to:-

(a) provide advice and guidance on policy and standards applicable to earthworks operations associated with development approvals; and

(b) ensure that earthworks are undertaken in accordance with sound engineering practice and do not adversely or unreasonably impact on the environment nor the community, having regard to:-

(i) land stability;
(ii) contamination of land, roads or waterways;
(iii) flooding or drainage;
(iv) environmental values including water quality (surface and ground), water flows and/or significant vegetation;
(v) utility services;
(vi) visual amenity or privacy;
(vii) traffic impact; and
(viii) air, noise and pollution emissions.

SC6.14.9.2 Application

(1) This section of the planning scheme policy applies to assessable development which requires assessment against the **Landslide hazard and steep land overlay code** and **applicable development codes**.

(2) This section is structured as follows:-

(a) **Section SC6.14.9.1** and **Section SC6.14.9.2** provide the framework;

(b) **Sections SC6.14.9.3** to **SC6.14.9.13** provides the requirements and procedures relating to the various phases of earthworks operations and to achieve the purpose of this section of the planning scheme policy; and

(c) **Section SC6.14.9.14** contains guidelines for achieving compliance with this section of the planning scheme policy.

SC6.14.9.3 Clearing

(1) Clearing of vegetation occurs only on those areas permitted either by the development approval or approval of Council and/or State legislation.

(2) Vegetation protection zones are to be marked and protected in accordance with *AS4970 Protection of trees on development sites* prior to clearing operations commencing.

(3) Spotters and catchers are to inspect the area prior to clearing to sight, capture, and relocate wildlife, using appropriately qualified personnel (as licensed by the relevant State department). Spotter and catcher activities shall be in accordance with the *Queensland Code of Practice for the Welfare of Wild Animals Affected by Land Clearing* (2009).

(4) Clearing prior to filling includes grubbing to 300mm below the existing surface level to ensure removal of stumps and roots and include removal of all foreign material and vegetation.

(5) All clearing of vegetation is confined to the limits of the approved clearing area and comply with the following guidelines:-

(a) clearing within roadways is confined to the limits of approved extent of works area plus a sufficient lateral clearance to ensure that trees or other vegetation are not interfered with by the works. All vegetation to be retained is to be protected in accordance with *AS4970 The protection of trees on development sites*;

(b) allotment clearing is confined to the minimum areas required to safely construct services such as sewers and catchment drains, and the limits of approved extent of works area to allotments plus a sufficient lateral clearance to ensure that trees or vegetation are not interfered with by the works. Vegetation shall only be removed where approved. All

vegetation to be retained is to be protected in accordance with *AS4970 The protection of trees on development sites*;

(c) no trees are to be damaged or removed from areas to be dedicated under the control of Council without prior written approval of Council;

(d) dead, dying or dangerous trees or trees likely to be dangerous are to be removed as directed by Council;

(e) trees in existing road reserves are not to be damaged or removed without the approval of Council. All trees on existing roads affected by the works are to be shown and details given of proposed protection, relocation methods or removal in accordance with *AS4970 The protection of trees on development sites*;

(f) the removal of any trees and vegetation from crown land, trust land, reserves, road reserves and freehold land is to require approval under relevant state legislation;

(g) where vegetation is cleared, vegetation waste is to be disposed of in the following order of preference:-

(i) milling;
(ii) chipping and mulching on site;
(iii) removed from site to an approved landfill site that accepts green wastes in suitable covered vehicles; or
(iv) another method approved of by Council;

Note—disposal of vegetative waste by burning is not an acceptable method of disposal.

(h) identified hollow-bearing trees that provide a habitat for fauna that require a hollow for shelter or nesting are to be protected from development activities wherever possible;

(i) all tree pruning works shall be in accordance with *AS4373 Pruning of amenity trees*;

(j) no disturbance to the beds or banks of any waterway or to the riparian vegetation thereof is to be undertaken; and

(k) where filling is proposed, topsoil (surface soil high in organic matter) may be removed and stockpiled for future spreading over the filled area. Removal of the topsoil from the site for use or sale elsewhere shall require separate approval.

SC6.14.9.4 Earthworks generally

Earthworks are not to:-

(a) cause land instability, land contamination, or adverse effects on the environment or human health;

(b) exacerbate flooding or compromise existing drainage regimes;

(c) cause adverse impacts on utility services;

(d) reduce the visual amenity or privacy of surrounding residents; and

(e) adversely impact on any area of nature conservation significance.

SC6.14.9.5 Excavation

(1) Excavation within or adjacent to areas of potential slope instability is to be undertaken under the guidance of a suitably qualified geotechnical engineer.

(2) The **Planning scheme policy for the acid sulfate soils overlay code** provides guidance on issues to be addressed where excavation works are proposed in areas containing acid sulfate soils.

(3) The disposal of surplus or unsuitable materials shall require:-

(a) details of the materials, as defined in *AS3798 Guidelines on earthworks for commercial and residential developments*, to be included in the relevant development application submitted to Council; and

(b) where disposal is proposed on road reserves or parkland, or where the volume of material exceeds 2500 m³ (loose), and transported over Council roads, determination of Council's requirements prior to lodgement of the relevant development application.

SC6.14.9.6 Filling

(1) Filling is not permitted on land subject to flooding unless approved by a development permit.

(2) Filling within or adjacent to areas of potential slope instability shall be undertaken under the guidance of a suitably qualified geotechnical engineer.

(3) The use of geotextiles and other proprietary products proposed to be installed as a separation layer is to be considered individually on their merit and may not be acceptable in all circumstances.

(4) All materials proposed for use in filling and embankments, whether allotment, parkland or road, are to be suitable for the purpose. The fill material is to be solid clean earth free of putrescibles or refuse material, vegetation, acid sulfate soils, building material, waste or other material or contaminants. Approval of the fill material is required from Council prior to any filling work commencing.

(5) No person is permitted to fill any land where in the opinion of Council, such filling will detrimentally affect the area available in any natural or artificial watercourse for either present or estimated future flood flows or storage, or will detrimentally reduce the volume within a flood plain available for the storage of flood waters.

(6) Filling of allotments is not permitted until a full assessment has been carried out by the applicant's engineering consultants to determine the effect of the work and the mitigation measures required having regard to the following:-

(a) local drainage patterns;

(b) existing drainage systems;

(c) effect on adjacent properties;

(d) retaining wall requirements;

(e) existing soil/land stability;

(f) effect on existing vegetation; and

(g) changes to existing groundwater levels and patterns.

SC6.14.9.7 Haulage activity and amenity

(1) Haulage of material to and from a site is to ensure minimal disturbance to neighbouring properties and properties along the haulage route and not adversely affect the integrity of the road pavement or the amenity of the roads by dust or debris contamination.

(2) Where the volume of material to be imported to a site exceeds 1000 m³ (loose), the proposed source, volume, transport route, and truck frequency details are to be submitted to Council for approval prior to any works commencing.

(3) Council may impose a monetary bond of a sufficient amount to ensure that the intent of this clause is upheld, and may call upon the bond to rectify any damage, or carry out works to rectify any adverse impacts caused as a result of the haulage activities.

SC6.14.9.8 Cut and fill batters

(1) Cut and fill batter slopes for heights below 1 metre are to be generally 1 on 6 to enable ease of maintenance by conventional machinery.

(2) Cut and fill batter slopes for heights above 1 metre are to be considered for their impact on the width of the road reserve/allotments.

(3) In roadway situations where cut height exceeds 1 metre, cut batters may be provided up to 1 on 1 and fill batters 1 on 2, subject to maintenance considerations and stability assessment.

(4) In roadway situations where the visual amenity of the area will not be affected, cut batters in solid rock may be increased to 4 on 1 subject to geotechnical advice.

(5) In roadway situations batters are to be provided with scour protection measures, topsoiled and revegetated except for cut batters in non-erodible rock.

(6) All cut batters are to be benched to allow for the placement of topsoil and for revegetation.

(7) Cut batters steeper than 1 on 1, fill batters steeper than 1 on 2 or batters higher than 4 metres will only be accepted with a geotechnical report prepared by a consulting geotechnical engineer.

(8) The top of cut batters is to be at least 3 metres from the property boundary.

(9) The bottom of fill batters are:-

(a) on roadways, at least 3 metres from the property boundary to allow effective maintenance operations and provide adequate width for service authorities; and

(b) on development sites, located to enable maintenance of the fill batter to avoid amenity issues for adjacent property.

(10) All batters are to be effectively stabilised immediately following earthworks.

SC6.14.9.9 Allotment earthworks

(1) All allotment earthworks will be subject to Level 1 Inspection and Testing in accordance with *AS3798 Guidelines on earthworks for commercial and residential developments*.

(2) Minimum allotment levels may be specified in a development approval and will be determined having regard to:-

(a) relevant master drainage plans;

(b) storm tide impacts;

(c) river and stream flooding;

(d) local area flooding; and

(e) planning scheme requirements.

(3) The slope of allotments is consistent with the following:-

(a) allotments shall preferably drain to the road;

(b) where allotments or an area of an allotment drain to the rear or to an adjoining allotment, a rear allotment drainage system is to be provided; and

(c) minimum falls in allotments are to be:-
(i) residential – 1:100; and
(ii) commercial, industrial – 1:300.

SC6.14.9.10 Access

(1) In new subdivisional developments, construction of accesses and driveways to building sites may be required on lots with steep slopes, on lot frontages with visibility constraints, on lots with less than 8 metres frontages and on access strips or access easements serving allotments.

(2) Steepness of driveway grades is to be limited for safety and amenity (refer *AS2890 Parking facilities*).

(3) If required in the development approval, accesses are to be provided to all rural residential lots. The access is to be provided to the boundary and be located to provide the required sight distance. Accesses with gradients greater than 1:10 are to be paved and sealed or concreted.

(4) Driveways are to be constructed in accordance with the IPWEAQ Standard Drawings RS-050 and/or RS-056.

SC6.14.9.11 Topsoiling and stabilising

(1) Immediately following completion of each section of earthworks, topsoil is to be spread on all cut, filled, exposed and disturbed areas to a minimum depth of 100mm. The areas to be topsoiled include all allotments, road reserves and development sites.

(2) Following completion of topsoil works for each section, all cut, filled, exposed and disturbed areas outlined in (1) above are to be immediately established by grass seeding, turfing, mulching, etc. **Section SC6.14.4 (Site development management)** of this planning scheme policy details standards for stabilisation works.

(3) Topsoil excavated from and stored on the site during the earthworks process is permitted to be used for topsoil on the site subject to the approval of Council.

(4) Imported topsoil is to be clean and certified free of environmental weeds and invasive plants and meet Australian Standards.

SC6.14.9.12 Retaining walls

(1) Retaining walls are to be:-

(a) designed and certified fit for purpose by a RPEQ engineer; or

(b) acceptable generic designs published by a recognised propriety manufacturer.

(2) Retaining walls are to be fully located within the development site and not on road reserve or park unless otherwise specifically approved by Council.

(3) Walls which are retaining road or parkland are to be located within the road or parkland reserve.

(4) Where walls are approved for construction on road reserves, the adjacent development site is to provide additional width of road reserve to ensure a verge width suitable for pedestrians, infrastructure, maintenance requirements, services and/or clearances.

(5) Safety barriers to *AS/NZS1170.1 Structural design actions – Permanent, imposed and other actions* are to be provided for retaining walls located on public land.

(6) The maximum height of a retaining wall between adjacent allotments is to be 1 metre unless otherwise approved by Council.

(7) Retaining walls are to be designed to enhance and maintain local identity. Natural rock gravity walls (e.g. sandstone boulder walls) or rock (e.g. grouted rock and rock tiled) walls are preferred.

(8) All retaining walls shall have a demonstrated service life in excess of 50 years. A durability classification is to be provided for rock proposed for any retaining walls.

(9) Natural rock gravity walls (e.g. sandstone boulder walls) or rock walls (e.g. grouted rock and rock tiled) walls are to be used for retaining walls interfacing public property (e.g. road reserve or park) or where exceeding 1 metre in height.

(10) Retaining walls exceeding 2 metres in height are to be of a tiered design.

(11) Sandstone boulder walls are to be constructed with a minimum B grade sandstone and sedimentary layers are to be placed horizontally.

(12) Prior approval is to be sought for the use of concrete sleeper retaining walls. Where approval is granted, concrete sleepers are to have a wood look texture, coloured brown using CCS concrete colours and wood look posts.

SC6.14.9.13 Footpath/verge crossfalls

All footpath/verges shall fall from the frontage property boundary to the adjacent kerb and channel with crossfalls in accordance with the details on Council's Standard Engineering Drawings.

SC6.14.9.14 Guidelines

(1) For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) *AS3798 Guidelines on earthworks for commercial and residential developments*;

(b) *Transport and Main Roads Specifications MRTS04 General Earthworks*;

(c) *AUSPEC Development Construction Specification C213 – Earthworks*;

(d) *AS2890 Parking facilities*;

(e) *AS4970 Protection of trees on development sites*; and

(f) *AS/NZS 1170.1 Structural design actions – Permanent, imposed and other actions.*

(2) Refer also to **Section SC6.14.4 (Site development management)** of this planning scheme policy in relation to erosion and sediment control provisions.

Note—relevant guideline documents in existence or available over the life time of this planning scheme policy are to be referenced and used where appropriate. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally.

SC6.14.10 Specifications and construction

SC6.14.10.1 Purpose

The purpose of this section of the **Planning policy for development works** is to:-

(a) provide advice and guidance on the policy and standards required in relation to the construction of works and plan of subdivision approval to satisfy Council requirements;

(b) ensure compliance with conditions of the relevant development approval; and

(c) accept on and off maintenance of works.

SC6.14.10.2 Application

(1) This section is structured as follows:-

(a) **Sections SC6.14.10.1** to **SC6.14.10.3** provide the framework;

(b) **Section SC6.14.10.4** details Council's requirements for a prestart meeting prior to works commencing;

(c) **Section SC6.14.10.5** outlines the inspection and testing standards which apply during construction and up to the completion of works;

(d) **Section SC6.14.10.6** details Council's requirements for a civil works inspection and testing plan;

(e) **Section SC6.14.10.7** outlines Council's bonding requirements;

(f) **Section SC6.14.10.8** outlines Council's plan approval requirements;

(g) **Section SC6.14.10.9** outlines the requirements to be met for as constructed documentation;

(h) **Section SC6.14.10.10** details Council's requirements for acceptance of works on and off maintenance; and

(i) **Section SC6.14.10.11** contains guidelines for achieving compliance with this section of this planning scheme policy.

(2) A typical development construction process is shown in **Appendix SC6.14D.**

SC6.14.10.3 General

(1) The aim of adopting standard specifications is to:-

(a) detail all acceptable materials for the construction of works;

(b) detail the quality compliance requirements for all acceptable materials to assure the standard and quality of the infrastructure being transferred to Council;

(c) detail the requirements for construction activities; and

(d) ensure that the standards for construction of works comply with Australian Standards, statutory authority standards and sound engineering practice.

(2) The standard specifications are written to form part of contract documents for construction. The specifications are also intended for works carried out by Council's own workforce.

(3) The Council's role is detailed in this section and the Civil Works Inspection and Testing Plan (CWITP).

(4) The supervising RPEQ engineer is to follow the CWITP, unless variations are approved and submit certification that the plan has been followed in accordance with the as constructed submission documentation

(5) Developers and their supervising RPEQ engineer or agents remain at all times responsible to ensure that all works are executed in accordance with principles of sound engineering design and construction and are in accordance with this planning scheme policy and relevant standards.

(6) It is the responsibility of the developer or supervising RPEQ engineer to arrange for all testing, inspections and certifications.

(7) Council will not deal directly with the contractor and all correspondence will be directed to the supervising RPEQ engineer.

SC6.14.10.4 Prestart meeting

(1) A minimum 5 working days' notice is to be provided for a prestart meeting with Council.

(2) A prestart meeting shall only be granted if the OPW approval has been issued and all relevant amendments have been approved and the appeal period has lapsed or has been waived by the applicant.

(3) A joint prestart meeting is to be conducted between Council and key development project staff including the supervising RPEQ engineer and the principle contractor for the works.

(4) Prior to holding a prestart meeting with Council, a prestart meeting is to be held between key development project staff and representatives of Unitywater. A joint prestart meeting may be held with Council and Unitywater by prior arrangement.

(5) The following documentation is to be provided prior to the prestart meeting:-

(a) certificate of insurances;

(b) after hours contact list;

(c) traffic management plan/site management plan;

(d) program of works;

(e) copy of the bill of quantities;

(f) copy of ABNs for principle, supervising RPEQ engineer and principle contractor;

(g) vegetation clearing report, including spotter and catcher details; and

(h) SCC Design Certification – Erosion and Sediment Control.

SC6.14.10.5 Inspection and testing standards

General

(1) Council will carry out the following mandatory holdpoint inspections which are required to be attended by the supervising RPEQ engineer, other qualified persons and principal contractor:-

(a) stormwater drainage inspections;

(b) subgrade inspections;

(c) pavement inspections;

(d) pre-seal inspections; and

(e) WSUD inspections.

(2) The on maintenance and off maintenance inspections are to be undertaken in accordance with the provisions outlined in **Section SC6.14.10.10 (On and off maintenance)**.

(3) The inspections will be undertaken in accordance with the details outlined below and in accordance with the requirements of the CWITP as outlined in **Section SC6.14.10.6 (Civil works inspection and testing plan)**:-

(a) a minimum 24 hours' notice is to be given for all inspections;

(b) prior to all inspections the supervising RPEQ engineer is required to ensure that each element is ready for inspection by Council;

(c) the contractor is to ensure that suitably qualified staff and equipment are available at the allotted inspection time to assist with the inspection process; and

(d) random audit inspections will also be undertaken by Council from time to time as required.

(4) All testing to be undertaken in accordance with the requirements of the CWITP.

(5) Council may require as part of landscaping works, a hold points (i.e. for planting set out, ground preparation, finished levels).

Stormwater drainage inspections

(6) All stormwater pipes and components are to be verified on-site for correct size and class prior to installation.

(7) All stormwater drainage is to be inspected in accordance with the requirements of the CWITP.

(8) All pits are to be inspected by Council prior to installation of the stormwater covers/lids.

(9) All pipes are required to be cleaned prior to inspection by CCTV. Any lines showing sediment on the CCTV will be required to be cleaned and CCTV revised.

Subgrade inspections

(10) Pavement thickness and design shall include the following:-

(a) after acceptance of the engineering drawings by Council, the supervising RPEQ engineer is to arrange for soil testing and submit a proposed pavement design to the Council for approval, in accordance with the pavement guidelines;

(b) subgrade CBR tests are required to be submitted to enable assessment to be made of the pavement design;

(c) Council shall advise in writing of the acceptance or otherwise of pavement designs and subgrade tests;

(d) approval of pavement designs is based on the tests being representative of the subgrade over the various lengths of road at the pavement depth and is subject to confirmation by load testing upon inspection;

(e) the supervising RPEQ engineer is to verify on site that the subgrade tests are representative of that on which the pavement approval is based prior to requesting a pavement inspection by Council; and

(f) the subgrade inspection is to be limited to a visual and load test using machinery/plant and personnel provided by the developer's contractor.

(11) The visual test is used to:-

(a) confirm that the pavement excavation depth is in accordance with the approved depth;

(b) ensure that the base of the box is even with correct crown and crossfall, and that the sides are vertical;

(c) check that the subgrade material is consistent in type and colours with the tested material and nominated soil boundaries on which the design was based and that the subgrade material is uniform throughout the exposed section; and

(d) ensure that the base is free from wet spots or any other visually defective areas, e.g. tree stumps and other organic/inorganic matter.

Note—string lines and tape with necessary personnel are to be provided by the principal contractor.

(12) The load test is used to:-

(a) Check for any area of the subgrade which might show signs of deflection (the material is to be as near as practicable to the optimum moisture content); and

(b) Detect deflections in the subgrade indicating a weakness that will require remedial treatment under the supervising RPEQ engineer's direction.

Note—for the load test a truck loaded to the legal limit (e.g. full water cart, pipe-laden truck, or other acceptable rolling load) is to pass along the subgrade at a speed equivalent to a slow walk, i.e. about 2km/h, minimum load on the rear single axle truck is to be eight tonne.

(13) Subgrade compaction testing (field density testing) is to be carried out at the frequency nominated in CWITP with:-

(a) all test results to be available at the time of the inspection; and

(b) advice of remedial treatment included with any failed test results.

(14) Remedial treatments are required where subgrades are deemed to have failed any of the aforementioned tests. These remedial treatments may include, but are not limited to, the following:-

(a) additional excavation to reach a sound subgrade stratum;

(b) placing free draining crushed rock (e.g. spalls, 75/100mm clean rock, with or without geofabric);

(c) stabilising the subgrade with cement or lime; or

(d) stabilising the pavement material with cement or lime.

Note—the supervising RPEQ engineer is to provide details of the remedial treatment, and confirmation of its success with all other pavement test results prior to the pre-seal inspection.

Pavement inspections

(15) A pre-kerb pour inspection may be called by Council in some instances, generally after the placement of the sub-base.

(16) This may occur where a load test may not be able to be undertaken at subgrade due to the sandy nature of the subgrade material.

(17) Other instances specific to any given project may also facilitate inspection at this level; such inspection will be called at Council's discretion.

Pre-seal inspections

(18) Pre-seal inspections are to ensure that the pavement material has been placed and compacted in accordance with the pavement design, that sufficient depth has been allowed for the placement of the required seal thickness and to a profile enabling the correct crossfall to be achieved.

(19) The pre-seal inspection with Council is limited to a visual and load test, with the load test using machinery/plant and personnel provided by the developer's contractor.

(20) The supervising RPEQ engineer is to arrange for the appropriate compliance testing of the compacted pavement material in accordance with the requirements of CWITP.

(21) Compaction and pavement material property test results are to be provided prior to the pre-seal inspection.

(22) It is important that the pavement moisture content is satisfactory prior to carrying out bitumen priming. The Degree of Saturation (DOS) method may be used:-

(a) the following maximum degree of saturation characteristics values are to be used:-
  (i) sub-base – 70% maximum;
  (ii) base – 60% maximum.
(b) dry back period:-

(i) a minimum period of four days to be allowed from the final trimming of the pavement to the application of the seal to meet the requirements of DOS; and
(ii) advice of any remedial treatment directed by the supervising RPEQ engineer is to be included with any failed test results for any pavement layers or pavement materials.

(c) material quality compliance tests:-
(i) one complete set of pavement material quality compliance tests is to be made for each project, unless there is a change in source of supply or additional testing is required by Council and provided prior to the pre-seal inspection;
(ii) quality compliance testing is to be carried out by an authorised registered laboratory;
(iii) testing for quality compliance is to be carried out in accordance with the applicable standard test procedures of DTMR and requirements of the CWITP; and
(iv) a certificate is to be prepared showing results of all material quality compliance tests.

(23) The date and time of the quality assurance testing is to be recorded with material testing to be carried out as required by the CWITP.

(24) Additional testing of fines quality and tests of dry density and of moisture content from material in place in the pavement may be requested by Council at any time.

(25) Grading analysis is to be submitted in graphical or tabulated form.

(26) The responsibility for maintenance of acceptable material standards rests with the supervising RPEQ engineer and the nominated contractor.

(27) Compliance of the pavement materials is to be covered by the supervising RPEQ engineer certification for the works.

(28) Materials submitted for approval but not complying in full with the relevant specification requirements may be accepted or rejected at the discretion of Council.

(29) Pavement depth verification is to be carried out by means of stringline and tape taken from kerb pegs generally at nominal 20 metre intervals. Should doubt exist by the inspecting Council officer, the contractor is to arrange for their surveyor to provide survey data at 10 metre intervals to verify pavement depth.

(30) The visual test requires that:-

(a) the pavement surface be even and have an acceptable crossfall (nominally 3%);

(b) sufficient depth is available to place the required thickness of seal;

(c) the surface is to be clean, coarse, tight, and stony;

(d) the surface is to be power broomed prior to the application of the seal; and

(e) the surface shall not be excessively wet.

Note—stringlines, tape and necessary personnel are to be arranged by the principle contractor.

(31) Load test (proof loading) is normally required to check for any areas of the pavement which might show signs of excessive deflection and uses the same procedure as for subgrade inspections.

(32) Deflections detected in this test may indicate a weakness in the underlying pavement materials or a weak sub-base and the supervising RPEQ engineer is to ensure appropriate remedial works are undertaken.

(33) Pavement compaction testing (field density testing) is to be carried out at the frequency nominated in CWITP.

(34) Remedial works will be required for pavements that are deemed to have failed any of the tests as outlined. These remedial treatments may include, but are not limited to, the following:-

(a) excavation of pavement (and subgrade) to remove soft material and replace with suitable material;

(b) the tyne up and recompacting of materials; or

(c) adjusting the moisture content.

(35) The supervising RPEQ engineer is to provide details of remedial treatment and confirmation of its success, together with any outstanding pavement test results prior to the on maintenance inspection.

WSUD inspections

(36) Inspection of any bioretention water treatment device is to be undertaken prior to the installation of the transitional and media layers. The inspection looks at any earthworks, high flow bypass arrangement, installed subsoil pipe network and drainage, transitional and filter materials prior to their installation. This is not a detailed inspection and is to coincide with the installation of the subsoil pipe network. All media materials will need to be onsite for inspection at this time. The supervising RPEQ engineer is to be present for this inspection and fulfil the requirements as nominated by the Construction and Establishment Guidelines for Swales, Bioretention Systems and Wetlands.

(37) The on maintenance inspection is to be undertaken in accordance with the provision as outlined in **SC6.14.10.10 (On and off maintenance)**.

(38) The off maintenance inspection is to be undertaken in accordance with requirements as outlined in **SC6.14.10.10 (On and off maintenance)**.

SC6.14.10.6 Civil works inspection and testing plan (CWITP)

(1) The major inspections as outlined in **Section SC6.14.10.5 (Inspection and testing standards)** are listed in the CWITP. The listings are not intended to be exhaustive and Council may require inspection and testing of other items. During construction and up to the completion of works Council may conduct random audits and inspections, if considered necessary, with or without prior notification. The supervising RPEQ is to follow the CWITP, unless variations are approved and submit certification that the plan has been followed in accordance with the as- constructed submission documentation.

(2) The following tables **(Table SC6.14.10A** to **Table SC6.14.10C)** provide guidance on the obligations of the supervising RPEQ engineer and procedures for the construction, checking and hand over of works in accordance with the requirements of the CWITP.

Table SC6.14.10A General obligations of supervising RPEQ engineer

Elements of works	Supervising RPEQ responsibility	Council's role
Prestart meeting	Supervising RPEQ engineer is to:- • Invite relevant staff incorporated with all facets of development to prestart from SCC. • Ensure contractor holds copy of approved design and specification. • Outline Performance and standard required. • Highlight critical aspects of the approved design. • Provide electronic copy of all final approved design plans accompanied by a "Document Transmittal Form". • Design Plans to include plan showing boundaries of future development stages. • All electronic plans to be in CAD format. Refer "Specification for the Supply of Digital Geo-referenced Data".	Council is to:- • Outline performance and standard required. • Highlight critical aspects of the approved Design. • Complete project details on the Prestart meeting form. • Undertake minutes of prestart meeting to record any specific issues addressed during the meeting. DA representative shall be chairperson for the meeting. Details to be distributed to all key representatives from each unit within Council.
Work, health and safety	Supervising RPEQ engineer and contractor are to ensure that compliance with the *Work Health and Safety Act 2011* and other relevant safety legislation, the MUTCD Part 3 and Council's Safety Policy and Manual is maintained throughout construction including specifically:- • Correct signing on existing roads. • Approved safety clothing. • Adequate protection of the works. • Correct use of traffic controllers and other traffic control devices. • Approved construction plant and equipment.	Council is to periodically check the construction site for compliance with health and safety requirements and refer any non-compliance to the supervising RPEQ engineer and where necessary the contractor directly.
General control of the works during operation	Supervising RPEQ engineer and contractor are to ensure that updated copies of the approved design and all subsequent approved amendments are on site and available for use at all times during construction. Supervising RPEQ engineer shall be responsible for progressively checking the works for compliance with the approved design and for checking test results for compliance with the CWITP.	Council is to check the works for compliance with the approved design and approved amendments and refer any non-compliance to the Supervising RPEQ engineer for attention.

Table SC6.14.10B Specific obligations of supervising RPEQ engineer

Elements of works	Testing requirements Test	Standard	Frequency	Supervising RPEQ responsibility	Council's responsibility
1. Roadworks, stormwater drainage, and allotments works					
a. Allotment filling and road embankments					
Quality of material	Visual/grading as required		Refer Table 8.1 *AS 3798*	Make sufficient job visits to confirm quality of material and compaction procedures and to examine and endorse test results. Level 1 supervision – Compliance with table 8.1 and clause 8.2 of AS3798 provided by the supervising RPEQ engineer.	Visit site for random audit inspections if considered warranted. Check results are submitted at on maintenance inspection.
Allotment filling	Visual/grading as required	*AS3798* Min Level 1 responsibility	Refer Table 8.1 *AS3798*		
Other filling	Visual/grading as required	*AS3798* Min Level 2 responsibility	Refer Table 8.1 *AS3798*	Ensure final levelling of allotments for drainage purposes by licensed surveyor and fill quality and compaction testing by geotechnical engineer. Lodge test results with Council.	
b. Roads and retaining walls					
Location level	Survey/measurement check	SCC Table of Construction Standards and Tolerances	Each end and other locations as necessary	Inspect foundations and certify base materials and depth. Make sufficient job visits and checks to confirm profile, thickness, rock, backfill, seepage, drains, grouting, and that location and level comply with approved design.	Visit site for random inspection including checking of works for compliance with approved design and referral to supervising RPEQ engineer where necessary.
Design detail	Survey/measurement check	SCC Standard Engineering Drawing or other subject to Council approval	Critical locations and others as necessary		
Backfill	Visual	Granular	Each wall and minimum 1 check per 50m^2	Holdpoint: Inspection report to be provided to Council prior to backfilling.	RPEQ Report to be sited prior to backfilling.
c. Stormwater drainage					
Location structures	Survey/measurement check	SCC Table of Construction	Each	Inspect before backfilling and check to ensure compliance with approved design and specification and to examine and endorse all test results including survey. Lodge test results with Council.	Visit site for random inspection and testing if considered warranted including checking of works for compliance with approved design and concrete strength requirements and referral to supervising RPEQ engineer where necessary.
SL & IL at structures	Survey	Standards and Tolerances	Each		
Bedding material	Visual/grading as required	SCC Standard Engineering Drawing	Each line or 1/200m^3		
Manholes/pits	Visual		Each		
Pipes	Visual CCTV	Confirmation of standard and performance	Each line		

Elements of works	Testing requirements			Supervising RPEQ responsibility	Council's responsibility
	Test	Standard	Frequency		
Backfilling - quality	Visual/grading as required	Graded (max 75mm) or other subject to Council approval	Each line		
- Compaction	*AS1289*	95% standard - residential 98% standard - commercial	1 test per 40 linear metres per 600mm depth		
d. Allotment stormwater drainage					
Location of structures	Survey/ measurement check	SCC Table of Construction	Each	Make sufficient job visits and check to confirm that all structures and pipelines are constructed to approved design and to Council requirements. Lodge test results with Council.	Visit site for random inspection and testing if considered warranted including checking of works for compliance with approved design and referral to supervising RPEQ engineer where necessary.
IL at structures	Survey	Standards and Tolerances	Each		
Bedding material	Visual	SCC Standard Engineering Drawing	Each line		
Manholes/pits	Visual		Each		
Pipes	Visual	Straight and on line and grade	Each line		
Pipes	CCTV	Confirmation of standard and performance	Each line		
Backfilling	Visual	Granular or other subject to Council approval	Each line		
e. Road crossings					
Conduits	Visual	Service authority requirements	Each	Inspect before backfilling and check to ensure conduits are in locations and to depths in accordance with approved decision.	Visit site for random audit inspections if considered warranted including checking of works for compliance with approved design.
Markers	Visual	SCC Table of Construction Standards / Tolerances	Each		
Backfilling	Visual	SCC Standard Engineering Drawings	Each		

Elements of works	Testing requirements Test	Standard	Frequency	Supervising RPEQ responsibility	Council's responsibility
f. Kerb and channel					
Horizontal and vertical alignments	Survey / measurement check	SCC Table of Construction Standards/Tolerances	Each drainage structure, intersection and road low point shall have 1 cross section per 20m, and at other critical locations 1 cross section per 50m for general control	Inspect pegging and stringing before placement and check to ensure that kerb and channel is installed to dimensions as per approved design and in particular at drainage structures and connections to existing kerb and channel. Lodge test results with Council where applicable.	Visit site for random audit inspections and testing if considered warranted including checking of works for approved design and concrete strength requirements.
Concrete	Cylinder strength/ impact strength (Schmidt Hammer)	*AS1012*	1 test per 50m		
g. Concrete works					
General	Consistency comp strength	*AS1012* Method 3 *AS1012* Methods 8 and 9	1/50m^3 1 set of 3/50m^3	Lodge test with Council	Visit site random audit inspections
h. Subsoil drains					
Pipe	AS2439 Part 1	SCC Table of Construction Standards and Tolerances	Batch	Check compliance with approved design. Inspect and approve pipe and filter. Confirm bedding and surround, and general grade of the pipe. Ensure pipe is flowing prior to final inspection.	Visit site for random audit inspections and testing if considered warranted including checking of works for compliance with approved design
Filter material	Visual grading as required	Max 10mm screenings or other subject to Council approval	1 test each project or 100m^3 max		
Cleaning joints and markers	Visual	SCC Standard Engineering Drawing	Each	Supervising RPEQ engineer	
i. Roofwater					
Location of MHs & YJs	Survey	Inter-allotment drainage	Each	Engineer to make sufficient job visits to confirm generally that all structure and pipelines are constructed to Council tolerances.	Joint on maintenance inspection with supervising RPEQ engineer and any notify requirements.
IL and OL at MHs & YJs	Survey	Inter-allotment	Each		

Elements of works	Testing requirements Test	Standard	Frequency	Supervising RPEQ responsibility	Council's responsibility
		drainage			
Bedding materials	Grading	Stormwater drainage	1 test per 200m^2		
Manholes	Appearance	Stormwater drainage	Each		
Pipelines	Survey	Line and grade	100m		
Backfilling	AS1289				
j. Subgrade					
Compaction Below – 300 mm 300mm to subgrade level	*AS1289*	95% Standard residential 100% Standard commercial	1 test per 100m carriageway or part thereof and minimum 2 tests	Make routine visits and checks to confirm construction to approved design. Undertake proof rolling and examine and endorse all test results level checks and cross section geometry before joint inspection with Council. Lodge test results with Council.	Conduct joint inspection with Supervising RPEQ engineer (including proof rolling). Upon satisfactory testing approve placement of subbase and base materials or select fill as applicable. Check works for compliance with approved design and issue inspection memo to supervising RPEQ engineer where necessary.
CBR testing	*AS1289* sample compacted at optimum moisture content or greater	100% standard	Representative each material layer and 1 test per 100m carriageway or part thereof min of 2 tests per project		
Horizontal and vertical alignments	Survey				
Profile	String line or level survey	SCC Table of Construction Standards and Tolerances Table 11.2 and Tolerances	IP, TP, Centreline (20m) 2 check per 20m max		
k. Select fill/subgrade replacement					
Material quality	Grading and Atterberg degradation factor Q208B	Minimum CBR 15 Granular or other subject to Council approval	1 test per 500m^3 and minimum 1 test per project/stage and material type	Make sufficient routine visits to ensure quality of materials and that operations will achieve a sound compacted layer. Undertake proof rolling and examine and endorse all test results, level checks cross section geometry before joint inspection with Council. Lodge test results with Council.	Conduct joint inspection with supervising RPEQ engineer (including proof rolling). Upon satisfactory testing approve placement of subbase and base materials.
If forms part of pavement - lower sub-base	Grading and Atterberg degradation factor Q208B	Type 2.5	1 test per 500m^3 and minimum 1 test per project/stage and material type		
Compaction	Proof rolling	No discernible	1 test per 100m		

Elements of works	Testing requirements			Supervising RPEQ responsibility	Council's responsibility
	Test	Standard	Frequency		
For o/s material		movement	carriageway or part thereof		
For graded material	*AS1289* and proof rolling	95% modified and no discernible movement			
Profile and depth	String line or level survey	SCC Table of Construction Standards and Tolerances	1 check per 20m		
l. Subbase Layer					
Material quality	Grading and Atterberg, degradation factor Q208B	MRTS05	1 test per 500m^3 and minimum 1 test per project/stage	Make sufficient visits to ensure gravel quality and that operations will achieve a sound compacted. Undertake proof rolling and examine and endorse all test results, level checks and cross section geometry before placement of base material. Lodge test results with Council.	Visit site for random audit inspections and testing if considered warranted. Obtain periodic quality test results from suppliers as necessary.
Compaction	*AS1289* and proof rolling	95% modified and no discernible movement	1 test per 100m carriageway or part thereof (minimum 2 tests)		
Profile and depth	String line or level survey	SCC construction stds/ tolerances	1 test per 20m		
m. Base layer – pre-seal					
Material quality	Grading & Atterberg, degradation factor Q208B	MRTS05	1 test per 500m^3 and minimum 1 test per project/stage	Make sufficient visits to ensure gravel quality and that operations will achieve a sound compacted layer. Undertake proof rolling and examine and endorse all test results, level checks and cross section geometry before joint inspection with Council. Lodge test results with Council. Check to confirm construction complies with approved design.	Conduct joint inspection with supervising RPEQ engineer (including proof rolling). Inspect drainage. Upon satisfactory testing approve placement of surfacing material. Check works for compliance with approved design and issue inspection memo to supervising RPEQ engineer where necessary.
Compaction	*AS1289* and proof rolling	98% modified and no discernible movement	1 test per 100m carriageway or part thereof (minimum 2 tests)		
Horizontal and vertical alignments	Survey		1 cross section per 20m, at critical locations and 1 cross section per 50m for general control		
Profile	String line or level survey	SCC Table of Construction	1 test per 20m max		

Elements of works	Testing requirements			Supervising RPEQ responsibility	Council's responsibility
	Test	Standard	Frequency		
		Standards/ Tolerances			
n. Surfacing					
Material quality	Mix anaylsis	MRTS30	Min. 1 test per 100 tonne or 1500m^2	Confirm mix design and spray rates. Supervising RPEQ engineer to oversee surfacing operations and to endorse all test and level results.	Visit site for random inspection if considered warranted.
Compaction and thickness		AUS-SPEC or MRTS			
Profile	String line or level survey	Standards/ tolerances	As required		
o. WSUD					
Bioretention construction				Undertake inspections in accordance with Water by *Design Construction and Establishment Guidelines: Swales, Bioretention Systems and Wetlands* and complete applicable forms.	Inspection conducted prior to the installation of the transitional and media.
Filter media	FAWB	FAWB	FAWB	Obtain and provide a certificate of compliance from media supplier or independent NATA laboratory	Media inspected prior to installation.
On or off maintenance	In-situ hydraulic conductivity	FAWB	FAWB	Obtain in-situ results in accordance with the standard prior to requesting either on or off maintenance	
p. Works other					
All works prior to on maintenance	Visual		As required	Ensure all works comply with approved design before arranging on maintenance inspection	Conduct joint on maintenance inspection with Supervising RPEQ engineer, check compliance with approved design and advise any requirements
Prior to acceptance on maintenance	As constructed Drawings to be prepared and submitted to SCC I accordance part 8.1 Complete test results to be compiled Supervision Certificate and CWITP Check	As constructed Drawings to be prepared and submitted to SCC I accordance part 8.1 Complete test results to be compiled Supervision Certificate and CWITP Check	As constructed Drawings to be prepared and submitted to SCC I accordance part 8.1 Complete test results to be compiled Supervision Certificate and CWITP Check	Lodge documentation as per testing requirements Lodge written request for on maintenance Lodge written request for bond refund/ reduction where applicable	Check documentation lodged by Supervising RPEQ engineer within twenty-eight (28) days and advise any requirement. When complete, reply to Supervising RPEQ engineer's request for on maintenance.

Elements of works	Testing requirements Test	Standard	Frequency	Supervising RPEQ responsibility	Council's responsibility
	Sheet to be endorsed	Sheet to be endorsed	Sheet to be endorsed		
During maintenance period				Ensure all minor omissions and defects are rectified Examine and approve site prior to request for off maintenance inspection	Advise supervising RPEQ engineer of any known defects or maintenance not being undertaken.
Bulb wattage check	Visual	ENERGEX Public Lighting Manuals	Each	Accompany Council Inspector and note any requirements. Arrange completion of requirements and check prior to further inspections.	Check works for compliance with approved design and issue inspection memo to supervising RPEQ engineer where necessary.
Road name check	Visual	Council Road Name approval letter	Each	Accompany Council Inspector and note any requirements. Arrange completion of requirements and check prior to further inspections.	Check works for compliance with approved Road Names and issue inspection memo to supervising RPEQ engineer where necessary.
2. As-constructed drawings					
In accordance with Council requirements as outlined in **Section SC6.14.10.8**					

Table SC6.14.10C Construction standards and tolerances

Element course	Minimum thickness	Minimum density/ strength	Horizontal Alignment Tolerance	Vertical Alignment Tolerance	Thickness Tolerance	Shape/Slope Tolerance
General Earthworks Earthworks in Floodprone areas	N/A	Refer Table 5.1 *AS3798*	Limits on Plan	+100mm +100 -0	N/A	Min 1:100 general and over any 10 metres down contours No ponding over 50mm deep
Stormwater Pipes	N/A *AS4058*	Standard Drawings	+100m	+25mm	N/A	Uniform pipe grade
Manholes / Pits	In situ 150mm	32MPa	Lateral +100mm Along line +300mm	+50mm Width K & C +25mm	+100mm -0mm	Circular/ Square / Rectangular and Vertical +50mm
Subgrade	N/A	100% Standard Compaction	+100mm Road width +200mm -50mm	+10mm -50mm	N/A	Design cross fall +0.5%
Select Fill / Subgrade Replacement Lower Subbase	100mm	95% Modified Compaction Min CBR15 Type 2.5	+100mm Road width +200mm - 50mm	+10mm -50mm	+25mm	Design Crossfall +0.5%
Subsoil Drains	N/A	N/A	+100mm	Min 900mm Below kerb 1 metre	Width -25mm +100mm	Uniform pipe Grade 0.5% min
Conduits	Width 300mm	N/A	+300mm	Min 700mm and max 1000mm below top of kerb	N/A	Uniform grade and line
Markers	N/A	N/A	+100 from Conduit	N/A	N/A	N/A
Kerb and Channel	Invert 125mm	20Mpa	+100mm Road width +200mm - 50mm	+25mm	Concrete +20mm -10mm	10mm in 3 metres max + 10% of design grade No ponding greater than 5mm
Subbase	100mm	95% Modified Compaction CBR 45 Type 2.3	+100mm Road width +200mm - 50mm	+25mm	+50mm -20mm	25 min in 3 metres max and no ponding Design crossfall +0.5%
Rock Retaining Walls Brisbane City Council	N/A	N/A	+100mm	+100 +100 -0 Flood Areas		Surface finish +100mm of design slope No openings <100m
Base	100mm	98% Modified compaction CBR80 Type 2.1	+100m Road width +200mm -50mm	+25mm	+25mm -10mm	15mm in 3 metres max Crossfall +0.5% design
Surfacing	30mm	92%	+100mm	+25mm	+15mm	7mm in 3

Element course	Minimum thickness	Minimum density/ strength	Horizontal Alignment Tolerance	Vertical Alignment Tolerance	Thickness Tolerance	Shape/Slope Tolerance
(Asphalt)	or design	Relative Compaction			-0mm	metres max
			Road width +200mm -50mm	+5mm 0mm from lip of channel		Design crossfall +0.5%
Road Verges	N/A	95% Standard compaction	+100mm	+25mm	N/A	±10% of design crossfall
				+25mm -0 from top of kerb		
Topsoil and grassing	100mm	N/A	N/A	+100mm	+25mm	As for general earthworks
				Road verges +25mm		
WSUD Elements	Minimum Thickness	Material Sizes	Material Type	Shape/Slope Tolerance	Thickness Tolerance	
Base Grade	N/A	NA	NA	Design + 0.5% Uniform Grade	N/A	
Drainage Material	200mm	4mm-7mm	Washed Gravel	N/A	+ 25mm (min 50mm cover over drains)	
Transitional Material	100mm	Average 2mm	Coarse Sand	N/A	+ 25mm	
Filter Media	300mm	FAWB Spec	FAWB Spec	N/A	+ 25mm	
Subsurface Drainage Pipe	N/A	90mm or 100mm Diameter	PVC	Design + 0.5% Uniform Grade	N/A	
Stormwater Detention Height	NA	NA	NA	N/A		

SC6.14.10.7 Bonding

General

(1) The purpose of this section of the planning scheme policy is to set out the circumstances and processes associated with Council requirements for:-

(a) accepting security for proposed operational works prior to commencement of construction;

(b) accepting security for completion of operational works prior to on maintenance;

(c) accepting security for defects and maintenance of contributed assets during the on maintenance period;

(d) to cover all development construction works during the operations and maintenance period; and

(e) to cover incomplete development obligations.

Note—development obligations refer to all conditions of approval relative to the development permit. This includes, but is not limited to, civil works, landscaping works, park improvements, provision of as constructed information, test certificates, revegetation and rehabilitation and sediment and erosion control.

(2) The submission of a financial security to Council by the developer may be used at Council's discretion.

Process

(3) The following processes are to be completed in relation to bonding:-

(a) provide schedule of works, including maintenance, and value which are proposed to be bonded;

(b) verify proposed timing for the completion of outstanding works;

(c) payment of relevant fees; and

(d) provide bond security amount; as approved by Council.

Form of bond security

(4) The bond security given is to be in the form of either:-

(a) cash; or

(b) an unconditional, irrevocable bank guarantee; or

(c) such other security as Council may approve.

Uncompleted work bonds

(5) Council's conditions of development approval will generally require that all conditions be complied with prior to Council approving the plan of survey. However, Council may, at its discretion, approve the plan of survey prior to completion of some non-essential infrastructure works (provided all essential infrastructure is completed), subject to lodgement by the developer of an appropriate security bond as guarantee that all outstanding works will be completed within an acceptable time period as prescribed herein.

(6) Consideration will only be given to accepting uncompleted works bonds in instances where a Development Permit for Operational Works has been issued in relation to all works provided as a donated asset to Council.

(7) Council will generally accept a bond for uncompleted works (to enable approval of the plan of survey) only in instances where the allotments which will be created when the plan of subdivision is registered are ready for use, that is all essential works are completed as follows:-

(a) allotment earthworks 100% complete;

(b) all required works within allotments (e.g. inter-allotment drainage, etc.) 100% complete;

(c) roadworks completed with pavement surfacing in place (including external roadworks required to provide access to the development). Road signage and line marking are required to be completed where the safety of the road user warrants;

(d) Certificate of Supply provided to Council in respect of power and telecommunications services;

(e) all major drainage works completed to a stage such that there will be no potential flooding or drainage impacts on any allotment;

(f) WSUD treatments where immediately needed such as road side swales;

(g) the site suitably stabilised/revegetated to prevent on site erosion and sediment transfer; and

(h) items as required to ensure the roadway can be lawfully and safely opened to the public for use.

(8) Council will only accept a bond for uncompleted municipal works where such works are located on public land (i.e. land shown on the plan of survey as road reserve, esplanade, park reserve, drainage reserve, etc.).

(9) Generally, uncompleted works which may be bonded will be restricted to amenity landscaping works on public land. Amenity landscaping works do not include landscape works required for surface, swale/channel stabilisation or protection.

(10) Bonding of uncompleted private works (including on property which will form part of a community title scheme) is not regarded as appropriate and all such works are to be completed prior to approval of the plan of survey.

Operating procedure

(11) In instances where the developer wishes to seek Council's agreement to accepting an uncompleted works bond to enable early release of the plan of survey, the developer's RPEQ engineer or qualified person is to provide a written submission which includes the following:-

(a) fully priced schedule of all operational works required for the development (this schedule will form the basis of the determination of the maintenance bond which will be held by Council until acceptance of the development works off maintenance);

(b) details of the uncompleted works which are proposed to be bonded, with a fully priced schedule of these works (including the cost of any works to be carried out by Council for which payments have not been received); and

(c) certification from an RPEQ engineer or qualified person that:-

(i) the completed works have been constructed on the correct alignments and to the required standards, in accordance with the conditions of the development approval; and
(ii) the information provided to Council in relation to completed and uncompleted works is correct, and that the uncompleted works have been scheduled for completion within 3 months of Council endorsing the plan of survey.

(12) Should Council agree to accept an uncompleted works bond, the following shall be lodged with Council prior to approval of the plan of survey:-

(a) payment of the prescribed administration fee for an uncompleted works bond;

(b) payment of all outstanding rates and charges relating to the property being subdivided;

(c) the uncompleted works bond, the value of which is to be 1.5 times the value of the uncompleted works;

(d) the maintenance bond for the development works (separately itemised in the schedule to be provided for council approval); and

(e) signed letter of unconditional undertaking, guaranteeing that all uncompleted works (as defined in the RPEQ engineers' or qualified person certification) will be completed within 3 months of Council endorsing the plan of survey and include a statement that the developer grants permission to Council to call up the said bond for uncompleted works if not completed by the expiration of the 3 month period and (where applicable) agreeing that the performance bond will be forfeited to Council if the uncompleted works are not completed within the required timeframe.

Maintenance security bond

(13) A bond, being the greater of 5% of the contract value of the whole works or a minimum of $3,000 shall be lodged with Council to guarantee satisfactory maintenance of the works and rectification of defective works during the maintenance period.

(14) For vegetation rehabilitation and vegetated WSUD devices, an amount of 1.5 times the value of all plants and maintenance costs for a 12 month period to be lodged with Council to guarantee satisfactory performance of the works and in recognition of the higher rates of plant failures associated with these types of works.

(15) The minimum 12 month maintenance period for all municipal infrastructure will commence once all uncompleted works have been completed and accepted on maintenance except as otherwise stated in conditions of approval (i.e. WSUD).

Release of bonds

(16) Upon satisfactory completion of all works, and acceptance of the works on maintenance, the uncompleted works bond will be released by Council. In addition, provided the works have been completed within the required period and where applicable, the performance or maintenance bond will also be released at this time.

(17) The maintenance bonds will be released where the applicant has complied with requirements set out in Council's acceptance of works off maintenance.

(18) Council may, where the applicant has failed to comply with the terms of these bonding provisions, serve written notice on the applicant requiring the applicant within seven days of the receipt of the notice to either comply with the terms of these bonding provisions or show cause why Council shall not call up the security bond and complete the works.

(19) Council may call up the security bond if the applicant has failed to comply with the notice served as stated above, and where in the interest of public safety, environmental health or structural failure, certain works are required to be undertaken by Council.

Construction performance bond for non-subdivisional works

(20) Prior to commencement of the construction works, the developer may be required to lodge security in the form of a performance bond in accordance with **SC6.22 Planning scheme policy for performance bonds,** for construction activities not related to subdivisional works.

(21) The bond is to be the greater of 1.5 times the value of the operational works or a minimum of $5,000.

(22) The bond is required to provide security to Council to ensure all works, including maintenance are carried out in accordance with development approvals and in the event that costs are incurred as a result of the following:-

(a) repairs to on street works, including landscape works, resulting from damage caused by contactors, subcontractors and suppliers;

(b) protection and repair of existing Council services;

(c) inadequate soil and water quality management during construction;

(d) inadequate provision for traffic;

(e) urgent action required by Council to resolve unsafe construction or emergency repairs required to protect persons and/ or property from consequential damages, safety and environmental incidents; and

(f) vegetation protection.

(23) Any costs incurred by Council in responding to the above circumstances will be recovered from the bond.

(24) Upon all works being completed in accordance with the development approvals, the performance bond shall be returned to the developer or may be substituted for the maintenance bond if contributed assets are being handed over to Council.

SC6.14.10.8 Plan of survey approval requirements

General

(1) A person who makes application for approval of a plan of subdivision is to make the application in the approved form and shall accompany such application with an application fee of an amount which is in accordance with the schedule of fees as decided by Council, or subject to resolution as determined.

Prior to submission

(2) Prior to the submission of the plan of subdivision with Council the person making the application is to lodge a completed checklist for approval of survey plans together with a copy of the proposed plan of subdivision. The checklist can be obtained from Council's website.

Submission

(3) The application for approval of the plan of subdivision is not be lodged with Council until:-

(a) all subdivision works have been completed to the satisfaction of Council and accepted on maintenance, unless otherwise bonded;

(b) all drawings detailing current as constructed data and ADAC files excluding outstanding bonded works have been approved by Council; and

(c) all conditions of the related higher order development approval/s (RAL, MCU, OPW etc.) have been completed, including payment of all relevant fees, charges and contributions.

Application requirements

(4) The application made for approval of the plan is to:-

(a) be made in the approved form;

(b) be accompanied by the plan of subdivision suitable for deposit in the Titles Registry; and

(c) comply in all respects with relevant higher order approvals, the approval of the engineering requirements, drawings and specifications.

(5) All relevant easement, covenant, building lot envelope, community management statement and any other documents as required in association with the plan of subdivision are to be provided. Where relevant, these are to be accompanied by:-

(a) a list of approved road names for any new roads created prior to the application for plan approval;

(b) the payment of all fees and development contributions and infrastructure charges in accordance with Council's requirements;

(c) electronic files containing AutoCAD.DWG drawings, that contain only the allotment layout, street names and allotment numbers. The electronic file shall be accompanied by certification from the registered surveyor that the information provided is identical to that submitted to the relevant State Government department for registration;

(d) a table listing the applicable 1:100 AEP flood levels appropriate to each lot for Council's records. The table is to be accompanied by certification from a qualified person which certifies that the levels are based on the latest study referenced by Council's relevant development permits and incorporates all amendments; and

(e) a detailed submission addressing compliance of all conditions of the related higher order development approval/s (RAL, MCU, OPW etc.).

Plan Details

(6) In no instance shall amendments be made that contravene the terms and conditions of Council's approval.

(7) Council is to compare the plan of subdivision for approval with the Council pproved plan of subdivision.

(8) Council is to compare any new road names shown on the plan of subdivision with the road name proposal approved by Council.

(9) The plan of subdivision conforms with the proposal plan as approved, and no material change, variation or alteration has been made, and all relevant conditions of the higher order approval/s (RAL, MCU, OPW etc.) have been complied with to Council's satisfaction, approval will be carried out.

(10) Council, as part of the approval process, is to note its approval on the plan of subdivision and return the plan of subdivision to the applicant to be lodged at the Titles Registry Office.

(11) In the event the Registrar of Titles, upon lodgement of the plan approved by Council, requires an alteration of any such plan in any particular way, the licensed surveyor who prepared the plan shall within a period of one month from the requested alteration, notify Council and forward to Council two amended copies.

SC6.14.10.9 As constructed documentation

General

(1) This section of the planning scheme policy details Council's construction guidelines for work that requires Council's approval with regard to its construction, compliance, and acceptance. The submission includes:-

(a) as-constructed documentation; and

(b) the CWITP.

(2) As constructed plans serve three distinct functions:-

(a) checking - to enable a quantitative check of the as constructed works against the approved design, so as to ensure design philosophies and criteria have been achieved;

(b) recording - to provide an accurate record of the as constructed locations of underground services; and

(c) quantity - to provide record of quantity to understand scope of works for maintenance planning.

(3) Information required for the checking function is to be presented in a form which allows ready comparison between design and as constructed data by experienced engineering and landscape staff, whereas information required for the recording function is to be presented in a form which allows ready and unambiguous interpretation and understanding by a wide range of users including engineers, parks managers, landscape architects, maintenance and trades persons and the general public.

Prerequisites for submission

(4) To expedite the approval and checking process the following shall be strictly adhered to in the supervision of development works and preparation of as constructed drawings:-

(a) major departures (a change which varies the design intent) from approved designs are to be approved by Council in writing before implementation and before submission of as constructed drawings;

(b) construction is to generally comply with the approved design (as amended above, if required), within the tolerances cited in the CWITP or Council's approved specifications; and

(c) where tolerances are not stated in the relevant planning scheme policy or Council's standard specifications, tolerances shall be in accordance with the relevant Australian Standard and accepted engineering / landscape and horticultural practice.

Submission for approval

(5) Except as specifically excluded below, every drawing included in the approved design, including stormwater calculation sheets and catchment plans, is to be submitted in certified as constructed form. It is the responsibility of the developer to ensure all requirements associated with the Council as constructed details are completed.

(6) As constructed details are required to help future works identify the real asset location and properties for future reference. Many details may differ during construction from that of the original design, and data records are to be maintained by the consultant during all phases of work.

(7) As constructed submission documentation is to be forwarded to Council prior to the acceptance of the works on maintenance.

(8) The as constructed submission provides for the following activities:-

(a) checking;

(b) recording;

(c) compliance and acceptance;

(d) asset data capture and recording; and

(e) acceptance of works on maintenance.

(9) Drawings are to be lodged in electronic format as PDF and AutoCAD files complying with the Asset Design and As Constructed (ADAC) standard for use and direct transfer to Council's geographic information system (GIS) and Asset Management Systems, as follows:

(a) the digital ADAC XML file must be a complete and detailed digital record of what was constructed, as this information is used by Council in the management of the asset;

(b) it is essential that the ADAC XML file is created using complete and accurate information to correctly identify the assets and the locations being represented in the as constructed drawings; and

(c) the ADAC XML file shall be produced using the most recent ADAC XML schema and is to be validated for compliance before being submitted to Council. Details in the data schema (attributes and required status) describing the asset classes and sub-classes to be addressed by the ADAC capture process are documented in the guidelines available on Council's website.

Properties

(10) Correct street names and lot numbers are to be shown on all relevant drawings.

Earthworks

(11) Certification of design plan(s) require that sufficient levels are provided to show that works have been constructed in accordance with the approval and conform to the level of tolerances as per the CWITP.

Roadworks

(12) Certification of design plan(s) is sufficient provided that as constructed grade and cross sectional information is confirmed in areas where roadway overland flow capacities are critical.

(13) Confirmation is required that permanent street, warning, and regulatory signs are placed in accordance with the approved drawings and standard locations. Accurate survey is not required.

(14) As constructed pavement thickness and composition including minimum CBR values for the pavement materials are to be noted on the plans.

Stormwater drainage – minor and major flow systems

(15) As constructed departures from design exceeding the above tolerances will be accepted where the consultant/applicant can demonstrate and certify that the design intent is not compromised.

(16) Only where the drainage systems have been constructed out of tolerance and they may be extended by future development either upstream or downstream and in exceptional circumstances such as incorrect pipe sizes and major out of tolerance construction are the design calculation sheets to be amended to reflect the as constructed performance of the systems.

Stormwater drainage – major flow system

(17) Amend levels and sections to critical overland flow paths in roadways, pathways and parks to as constructed.

(18) Confirm that critical overland flow paths perform to approved design criteria. Critical overland flow paths are those where design storm flows approach flow path's capacity.

Stormwater drainage – bioretention basins and WSUD devices

(19) Bioretention basins are to be constructed within tolerances as detailed in the CWITP, with profile and volume to be amended to as constructed values, including the following details:-

(a) subsoil flush points;

(b) high flow bypass weir;

(c) low-flow outlet; and

(d) all associated stormwater drainage infrastructure, pipes, pits etc.

Inter-allotment drainage

(20) As constructed roof water longitudinal sections are not required. As constructed departures from design in excess of the tolerances nominated below will be accepted if the supervising RPEQ engineer/applicant certifies that Council's design criteria have been achieved.

(21) Information required for:-

(a) manholes/pits are:-

(i) location (two ties);
(ii) surface level; and
(iii) invert level.

(b) lines are:-

(i) diameter, class, type;
(ii) length;
(iii) grade; and
(iv) alignment.

(c) house connections are:-

(i) location (two ties);
(ii) surface level; and
(iii) invert level.

(d) tolerances are:-

(i) as per the CWITP; and
(ii) provided that such deviation does not result in conflict or interference with any other existing or proposed structure or service, including property boundaries.

Landscape works

(22) Landscape design plans require certification that landscape works, assets and infrastructure have been installed in accordance with approved specifications including but not limited to:-

(a) approved plan(s);

(b) conditions of the decision notice; and

(c) compliance with all relevant environmental and horticultural requirements such as Australian Standards, national specifications and Council's Standard Engineering Drawings.

As constructed submission

(23) Development works will not be accepted on maintenance, or as practically complete, until the following documentation, where applicable, has been submitted, reviewed and approved by Council:-

(a) current version ADAC file of the as constructed plans provided in electronic format as PDF and AutoCAD files complying with the ADAC standard for use;

(b) marked up design drawings with as constructed;

(c) inspection and testing certification by the applicant(s)/supervising RPEQ engineer;

(d) certification of all landscape works by either a qualified landscape architect, horticulturalist, environmental scientist, ecologist contractor and/or arborist;

(e) certification of foundation conditions by the applicant(s)/supervising RPEQ engineer;

(f) certification of major structural elements by the applicant(s)/supervising RPEQ engineer;

(g) certification of overland flow paths and supporting documentation/calculations by the applicant(s) supervising RPEQ engineer;

(h) RPEQ certified as-constructed documentation for electrical, lighting and telecommunication assets and infrastructure;

(i) certification of electrical, lighting and telecommunication services construction work by the responsible electrical worker/contractor (where applicable) via certificate of compliance form and copies of associated test results supplied to council;

(j) all operation and maintenance manuals e.g.: SQIDs, playground equipment, wetland management reports, landscaping;

(k) as constructed data for electrical wiring diagrams for pumping stations, etc.;

(l) manufacturers details and maintenance procedure for GPTs;

(m) wiring diagrams for traffic lights;

(n) a separate and dedicated electrical site plan denoting electrical site features, including but not limited to switchboards and sub boards, poles, lights, pits, conduit and cable runs and other associated equipment; and

(o) a separate and dedicated telecommunications infrastructure site plan denoting Council owned or donated Telecommunications infrastructure, including but not limited to switchboards and cabinets, conduit runs, pits, sensors and other associated equipment.

(24) Copies of test results are to be supplied for the following:-

(a) compaction of fill;

(b) subgrade CBR;

(c) subsoil drain filter media grading;

(d) base, subbase and subgrade replacement course material quality;

(e) base, subbase, subgrade and subgrade replacement course compaction;

(f) prime or primer seal spray and application rates;

(g) AC core tests;

(h) playground soft fall impact attenuation tests;

(i) soil for horticultural purposes;

(j) Unitywater's test requirements and clearance;

(k) any concrete testing required by the technical specifications; and

(l) any other work specific testing carried out or required by Council.

(25) Should any of the above test results fail to meet specification, the applicant is to include in the submission to Council details of retesting rectification carried out.

(26) The documentation is to be presented in electronic format, logically assembled and including a table of contents confirming completeness.

(27) Numerical amendments on the design drawings are usually denoted as a diagonal line through the design value with the as constructed value noted adjacent. Other amendments are usually denoted by encircling with a notated cloud.

Electronic plans

(28) Electronic plans are to be supplied for the following:-

(a) as constructed plan of subdivision of lot layout and all civil works; and

(b) amended approved design plans showing all as constructed changes.

(29) All electronic plans supplied to Council are to be accompanied by a document transmittal form.

(30) All electronic data supplied is to comply to the specifications in the following documents available on council's website:-

(a) *SCC Design Documentation Details*;

(b) *SCC Drafting and Design Presentation Standards*; and

(c) *Guidelines for Creation and Submission of ADAC*.

As constructed drawings

(31) As constructed drawings for road works and drainage are to be submitted on completion of the works.

(32) As constructed information is to be collected and checked as the works progress to identify construction errors as early as possible so that their rectification or the seeking of Council's approval for the change does not delay granting of on maintenance.

(33) Prior to release of the plan of survey and/ or acceptance of the works on maintenance, the supervising RPEQ engineer is to supply an AutoCAD. DWG Drawing file (at a scale of 1:500) of the final lot layout and any external works, including approved street names, lot numbers and landscaping, complete with the engineer's title description of the development.

(34) In the case of subdivisional works, the data is to be accompanied by written certification that the submitted information is identical to the plan of subdivision lodged with Council for plan approval. If the submitted plan of subdivision is altered, a copy of the amended information in DWG Format is to be forwarded to Council within 7 days.

(35) Development works will not be accepted on maintenance until such time as all of the as-constructed drawings have been received, checked and approved.

SC6.14.10.10 On and off maintenance

General

(1) This section defines the requirements to be applied prior to on maintenance approval and off maintenance asset handover by Council.

Acceptance of works on maintenance

(2) To enable formal acceptance of the works on maintenance, the developer will be responsible for maintenance of all contributed assets and the rectification of any defective works or defective materials incorporated into the works for a minimum period of 12 months.

(3) The following certificates, certified drawings or other items are generally required to be supplied by the supervising RPEQ engineer or qualified person:-

(a) on maintenance inspection checklist;

(b) engineering certification;

(c) engineering certification checklist;

(d) all test results required by the CWITP;

(e) geotechnical and structural certificates (where applicable);

(f) overland flowpath certification and supporting documentation/calculations;

(g) landscape certification generally;

(h) playground safety certification (including equipment and softfall);

(i) fauna management plan certification;

(j) arboriculture certification;

(k) vegetation management certification (i.e. clearing, weed management, revegetation);

(l) soil tests;

(m) as constructed plans including hard copy and electronic ADAC (refer **Section SC6.14.10.9** as constructed for detailed requirements);

(n) submission of a list and details of non–complying elements;

(o) copies of all relevant test results;

(p) maintenance security bond – 5% of contract value, or $3000, whichever is the greater;

(q) payment of any outstanding private works accounts;

(r) written clearances to be obtained for works carried out on land under other ownership, upon completion of the works;

(s) any other documentation as may be required by Council; and

(t) payment of any outstanding fees and permits.

(4) Council will accept operational works on maintenance on completion of those works to an acceptable standard, for a minimum period of twelve months. However, longer periods may be required for WSUD elements and compliance with any conditions of the development permit which may include:-

(a) completion of works in accordance with the requirements and conditions of the development permit;

(b) submission of all as constructed documentation;

(c) payment of any other contributions or charges specified in the development permit or levied by Council;

(d) submission of RPEQ engineer's certification that the works have been undertaken in accordance with the approved plans and specification and to Council's requirements;

(e) submission of all test results required by the CWITP;

(f) submission of location and AHD values of PSMs installed in the subdivision;

(g) landscaping maintenance programs submitted; and

(h) submission of an agreed maintenance security bond.

(5) Prior to acceptance of any works on maintenance, it will be necessary for the works to be inspected.

(6) In the event of the works being unacceptable, a reinspection fee may be charged for subsequent inspections.

(7) Following a satisfactory inspection and acceptance of the as constructed drawings and documentation, the applicant is to submit a written request for acceptance of the works on maintenance and release or reduction of any uncompleted works bond within seven days.

(8) Council will, upon confirming that the maintenance security bond amount has been approved and received, and all other relevant fees and charges paid, confirm acceptance of the works on maintenance and arrange for release or reduction of any uncompleted works bond held.

(9) During the on maintenance period the applicant is to pay the full cost of any necessary maintenance and repairs to roadworks, drainage and associated works.

(10) If necessary, Council may advise the applicant or the applicant's agent or representative of works required during the on maintenance period and a time in which repairs are to be completed.

(11) The applicant is responsible for maintenance works including any defects during the on maintenance period and advising Council of any rectification works.

(12) The supply financial accounts for water and electricity for park assets are to be transferred to into council's name.

(13) Should a safety issue of either a technical or operational perspective be identified during the maintenance period, it is the responsibility of the developer to attend to the issue immediately to ensure public safety is maintained. If the issue cannot be addressed immediately, emergency temporary works to ensure the safety of the site are to be carried out within 24 hours and appropriately signed until repairs can be undertaken. Advice of all operations shall be provided to Council.

(14) Should the above described works not be carried out by the developer or nominated representative within 24 hours, Council is to complete the required safety works and all costs are to be borne by the developer from the security bond.

On maintenance inspections

(15) At time of inspection, the supervising RPEQ engineer is to arrange for representatives from the principal contractor to be present.

(16) A loaded water cart is to be present on site for the purposes of flow testing the kerb and channel. Failure to do so may result in cancellation of the inspection and/or the charging of a reinspection fee.

(17) Notwithstanding the above, the works will not be formally accepted on maintenance until the maintenance security deposit has been lodged and as constructed drawings and documentation have been submitted and approved.

Acceptance of works off maintenance

(18) On completion of the on maintenance period the applicant may request release of the maintenance bond.

(19) For landscape (i.e. streetscape, park or environment reserve, WSUD planting) the applicant is to apply for off maintenance a minimum of 3 months prior to the end of the maintenance period to allow for Council maintenance contracts to accommodate the contributed assets.

(20) Prior to final acceptance of the works off maintenance by Council it will be necessary for the works to be inspected and RPEQ engineer certification submitted that certifies the works are performing as designed, are in sound condition and the works will achieve their design life.

(21) Should the works require refurbishment due to an extended maintenance period, the cost is to be borne by the applicant (i.e. landscape areas have reached their useful life and require replacement).

(22) The applicant is to be responsible for ensuring that all Council requirements are satisfied prior to requesting an off maintenance inspection.

(23) In the event of the works being unacceptable, a reinspection fee may be charged for subsequent inspections.

(24) Following a satisfactory off maintenance inspection the applicant is to submit a written request for acceptance of the works off maintenance and release of the maintenance security bond.

(25) Council will upon confirmation that no outstanding accounts arising from the development are due to Council, confirm acceptance of the works off maintenance and arrange for the release of the maintenance security bond.

(26) Should the applicant wish to maintain the works beyond the on maintenance period, a separate agreement shall be entered into between the applicant and Council.

(27) To enable formal acceptance of the works as off maintenance (when Council accepts and is responsible for the contributed assets), items must be provided as agreed by Council at the time of formal acceptance of the works as on maintenance.

SC6.14.10.11 Guidelines

(1) For the purpose of achieving compliance with this section of the planning scheme policy, the following are relevant guidelines:-

(a) Queensland Aus-Spec, Development Specification Series (Construction), listed in **Table SC6.14.10C (Queensland Aus-Spec development specifications)**;

(b) Queensland Department of Transport and Main Roads (DTMR), Standard Specifications for Roadworks including earthworks, pavement drainage and protective treatment, pavement bituminous surfacing/spray seals or asphalt, road furniture, line-marking and street lighting. DTMR specifications are available on the DTMR website;

(c) *MUTCD- Manual of Uniform Traffic Control Devices (Queensland)*;

(d) *WSUD Technical Design Guidelines for South East Queensland* (Healthy Waterways, 2006);

(e) *Guidelines for Filter Media in Bioretention Systems (Version 3.01) June 2009* (FAWB);

(f) *Standard Water Sensitive Urban Design Drawings Guidelines* (Institute of Public Works Engineering Australia Queensland);

(g) *Construction and Establishment Guidelines for Swale, Bioretention Systems and Wetlands* (Water by Design, 2009); and

(h) *Practice Note 1: In Situ Measurement of Hydraulic Conductivity* (FAWB, 2008).

(2) A full list of Council civil works Standard Engineering Drawings can be obtained from:-

(a) Council's website; and

(b) Institute of Public Works Engineering Australia Queensland Standard Water Sensitive Urban Design Drawings, including; WSUD-001, WSUD-003, WSUD-005, WSUD-006, WSUD-008, WSUD-009, WSUD-010, WSUD-011, WSUD-012).

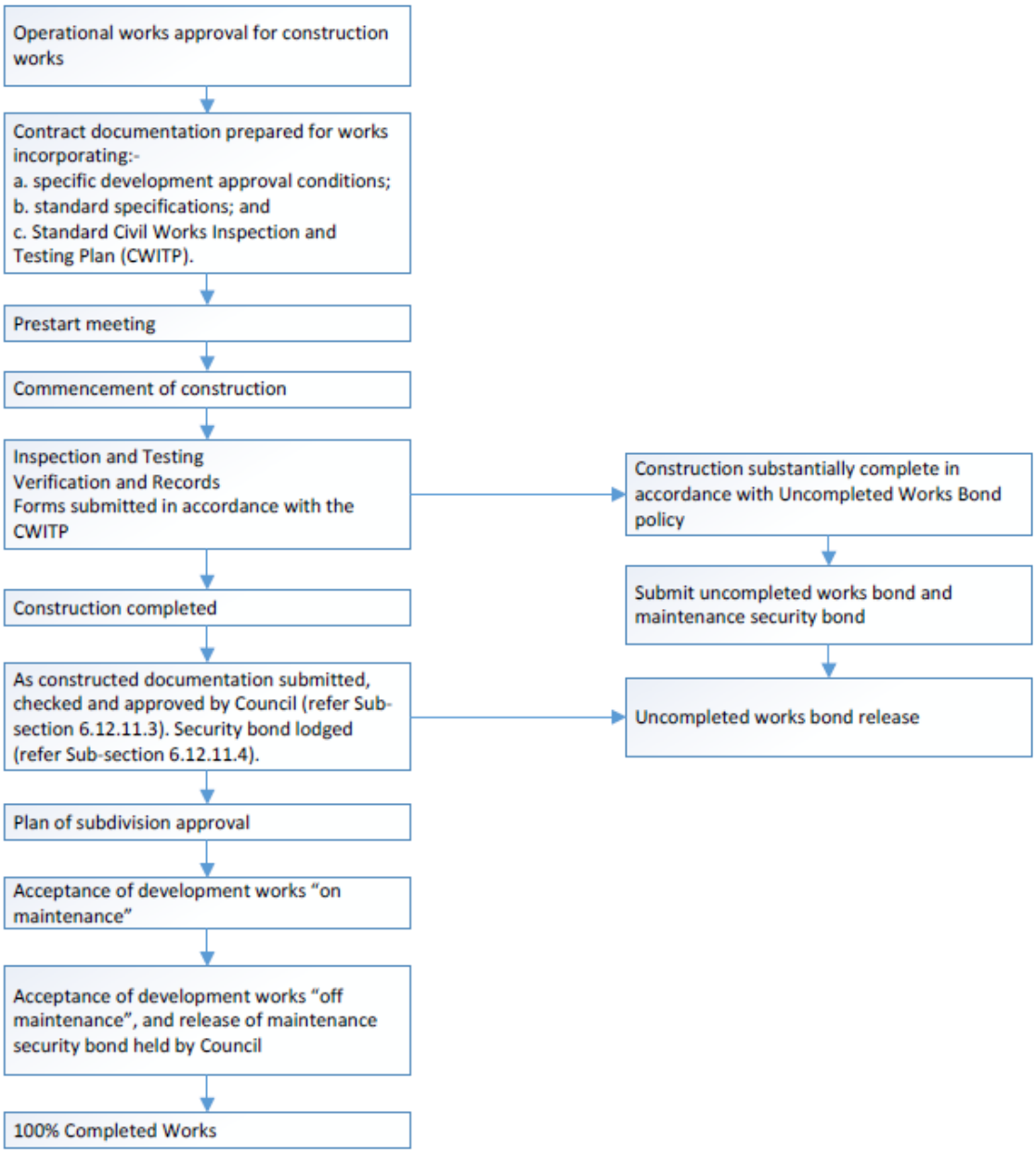
Note—relevant guideline documents in existence or available over the life time of this planning scheme policy are to be referenced and used where appropriate. The above list is not exhaustive and the use of locally based guidelines by a recognised authority or agency would take preference to those developed regionally or nationally.

Table SC6.14.10C Queensland Aus-Spec development specifications

Specification No.	Specification Title
CQS	Quality System Requirements
CQC	Quality Control Requirements
C101	General
C201	Control of Traffic
C211	Control of Erosion and Sedimentation
C212	Clearing and Grubbing
C213	Earthworks
C220	Stormwater Drainage – General
C221	Pipe Drainage
C222	Precast Box Culverts
C223	Drainage Structures
C224	Open Drains including Kerb and Gutter (Channel)
C230	Subsurface Drainage – General
C231	Subsoil and Foundation Drains
C232	Pavement Drains
C233	Drainage Mats
C241	Stabilisation
C242	Flexible Pavements
C244	Sprayed Bituminous Surfacing
C245	Asphaltic Concrete
C247	Mass Concrete Subbase

Specification No.	Specification Title
C248	Plain or Reinforced Concrete Base
C254	Segmental Paving
C255	Bituminous Microsurfacing
C261	Pavement Markings
C262	Signposting
C263	Guide Posts
C264	Non-Rigid Road Safety Barrier Systems (Public Domain)
C265	Boundary Fencing
C271	Minor Concrete Works
C273	Landscaping
C501	Bushfire Protection (Perimeter Tracks)
DQS	Quality Assurance Requirements for Design
D1	Geometric Road Design (Urban and Rural)
D2	Pavement Design
D3	Structures/Bridge Design
D4	Subsurface Drainage Design
D5	Stormwater Drainage Design
D6	Site Regrading
D7	Erosion Control and Stormwater Management
D8	Waterfront Development
D9	Cycleway and Pathway Design
D10	Bushfire Protection

Appendix SC6.14D Typical development construction process



SC6.15 Planning scheme policy for the nuisance code

SC6.15.1 Purpose

The purpose of this planning scheme policy is to:-

(a) provide advice and guidelines about achieving outcomes in the **Nuisance code**; and

(b) identify information that may be required to support a development application where:-

(i) nearby existing or planned development may be affected by noise, light, odour or dust, or particulate emissions from the proposed development; or
(ii) the proposed development is likely to be subject to noise, light, odour or dust, or particulate imissions from existing or planned nearby development.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.15.2 Application

This planning scheme policy applies to all assessable development which requires assessment against the **Nuisance code**.

SC6.15.3 Advice for preventing or minimising nuisance emissions and imissions associated with road traffic noise

The following is advice for achieving Performance Outcomes PO1 and PO2 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for emissions or imissions associated with road traffic noise to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcomes PO1 and PO2 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be demonstrated in part or aided by the submission of a noise impact assessment report prepared by a competent person, which properly addresses, describes or includes the following:-

(i) a location plan identifying the subject site, existing or planned roads in the locality that could potentially affect sensitive land uses and any significant features such as topographic variation, barriers and intervening buildings;

(ii) predicted noise levels based on traffic flows for a 10 year growth horizon from the first year of occupancy of the development for each floor and occupancy type; and

(iii) where mitigation measures in the form of site boundary barriers are considered necessary, measures to maintain the visual amenity of the road corridor, minimise detrimental effects on residential amenity and ensure the ongoing provision of natural light to residences and open space are provided; and

(b) for sensitive land uses the following design elements should be reflected in the road corridor design and/or the design of sensitive land uses adjacent to the road corridor:-

(i) existing site features that can provide a natural barrier or partial barrier to noise exposure;

(ii) appropriate building orientation that mitigates or reduces the exposure of living areas, bedrooms and private open space areas to noise; and

(iii) minimal facade treatments (such as windows and doors) facing the road traffic noise source to minimise internal noise exposures.

Note—Refer to the **Planning scheme policy for Sippy Downs Town Centre** for general guidance in relation to road traffic noise attenuation in the Sippy Downs Town Centre.

SC6.15.4 Advice for preventing or minimising nuisance emissions and imissions associated with noise and/or vibration

The following is advice for achieving Performance Outcomes PO1 and PO2 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for noise and/or vibration emissions or imissions to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcomes PO1 and PO2 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be demonstrated in part or aided by the submission of a noise impact assessment report prepared by a competent person, which properly addresses, describes or includes the following:-

(i) a location plan identifying the subject site and sensitive land uses or the nearest potentially sensitive land uses to the subject site and any significant features such as topographic variation, barriers and intervening buildings;

(ii) the results of measurements of background LA90 noise levels using an appropriate methodology at a location representative of the nearest potentially affected sensitive land uses to the subject site in the absence of noise emissions from the subject site, with:-

(A) the background noise levels to include time periods that are most likely to be sensitive from a noise perspective (generally at night); and
(B) the background noise monitoring to be completed for a sufficient period of time to establish 'the average minimum background noise levels' for the locality;

(iii) comparison of the background noise level with predicted source noise levels using an appropriately recognised methodology and criteria, from the proposed activity at the nearest potentially affected sensitive land uses to determine compliance with criteria as defined in Schedule 1 of the *Environmental Protection (Noise) Policy 2008*; and

(iv) specification of appropriate control and mitigation measures as necessary;

(b) for a proposed development that has the potential to be affected by noise and/or vibration from an existing railway, or proposed new railway, Council may also require submission of a report prepared by a competent person that presents information relating to the following:-

(i) location of the site in relation to the existing or proposed railway corridor;

(ii) forecast rail movements for a 10 year growth horizon including hours of operation and type;

(iii) assessment of the measured and predicted noise levels using an appropriately recognised methodology and criteria, for the 10 year growth horizon affecting the proposed development; and

(iv) mitigation measures that are to be adopted at the subject site to achieve the performance outcomes of the **Nuisance code**; and

(c) where a sensitive land use is proposed in a locality with existing noise sources, Council may also require submission of a noise impact assessment report prepared by a competent person that includes the following:-

(i) a location plan identifying the subject site, any existing or future potential noise sources in the locality that could potentially affect sensitive land uses on the subject site and any significant features such as topographic variation, barriers and intervening buildings;

(ii) the results of measurements of LA10, LAeq and background LA90 noise levels at the subject site, with:-

(A) the noise measurements to include time periods that are most likely to be affected by noise from existing sources and also include measurement of background in the absence of noise from local emission sources; and
(B) the noise monitoring to be completed for a sufficient period of time to establish typical and worst case pre-existing noise levels for the subject site;

(iii) an assessment of the measured and predicted noise levels using an appropriately recognised methodology and critieria. From the assessment, the determination of compliance with the criteria as defined in Schedule 1 of the *Environmental Protection (Noise) Policy 2008*; and

(iv) specification of appropriate control measures if necessary.

SC6.15.5 Advice for preventing or minimising nuisance emissions and imissions associated with live entertainment, amplified music and voices – Other than in a designated special entertainment precinct or associated buffer

The following is advice for achieving Performance Outcome PO1 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the Nuisance code where there is potential for emissions or imissions associated with live entertainment, *amplified music* and voices, other than in a designated special entertainment precinct or associated buffer, to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcome PO1 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be demonstrated in part or aided by submission of a noise impact assessment report prepared by a competent person, which properly addresses, describes or includes:-

(i) in respect to a venue in existing or new premises, the following:-

(A) a location plan identifying the subject site and the nearest potentially affected or approved sensitive land uses (including residential, commercial, educational, health and industrial) and any significant features such as topographic variation, barriers and intervening buildings;
(B) results of measurements of octave band background noise levels as LA90, Oct noise levels at a position representative of the nearest potentially affected sensitive land uses to the subject site in the absence of noise emissions from the subject site. The background noise levels are to be recorded for the time period most likely to be the most sensitive from a noise perspective;
(C) results of measurements of octave band noise levels as LA10, Oct noise levels at the nearest potentially affected sensitive land uses to the subject site during noise emissions from live entertainment, amplified music or voices at the subject site. The source noise levels during the noise monitoring are to be representative of the worst case noise emissions from the subject site at maximum patron and music design capacity during the type of entertainment events likely to be held at the premises;
(D) measurements are to be made to represent each type of event likely to occur. The noise tests are to be conducted under conditions representative of normal operations (e.g. all proposed hours of operation, if doors and windows would normally be open, this is to occur for the test);
(E) an assessment of the measured and predicted noise levels using an appropriately recognised methodology and criteria. From the assessment, the determination of compliance with the criteria;
(F) comment on potential noise impacts associated with patron noise at the premises and noise from departing patrons associated with the entertainment event;
(G) specification of appropriate control measures if necessary (e.g. operational conditions such as closed windows, or mitigation measures such as improved acoustic insulation, including Rw of glazing, walls, roof, and materials, and/or barrier density); and
(H) specification of the maximum source noise level to be emitted at the premises for each type of event, each room and each event configuration (e.g. for different positions used for a live band in the same venue) as appropriate.

SC6.15.6 Advice for improving amenity of residential uses in a prescribed mixed use area

The following is advice for achieving Performance Outcome PO3 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for imissions associated with non-residential activities to cause environmental harm or nuisance at a sensitive land use in a *prescribed mixed use area*:-

(a) compliance with Performance Outcomes PO3 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be demonstrated by utilising glazing to the external building envelope which achieves a minimum acoustic performance of:-

(i) Rw 35 where total area of glazing (windows and doors) for a habitable room is greater than 1.8m^2; or

(ii) Rw 32 where total area of glazing (windows and doors) for a habitable room is less than or equal to 1.8m^2.

Note:- The acoustic performance ratings are to be based on a glazing system which was acoustically tested with the same frame, seals and glass as per the proposed system.

(b) where façade treatments are required for operable windows and doors of noise affected bedrooms or living rooms, mechanical ventilation is provided.

SC6.15.7 Advice for preventing or minimising nuisance emissions and imissions associated with live entertainment, amplified music and voices in a designated special entertainment precinct or associated buffer

The following is advice for achieving Performance Outcome PO4 to PO8 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for emissions or imissions associated with live entertainment, *amplified music* and voices, in a designated special entertainment precinct or associated buffer, to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcome PO4 to PO8 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be demonstrated in part or aided by submission of a noise impact assessment report prepared by a competent person, which properly addresses, describes or includes:-

(i) in respect to a venue, the following:-

(A) a location plan identifying the subject site, location of site within the special entertainment precinct, the nearest potentially affected sensitive land uses (including residential, commercial, educational, health and industrial) and any significant features such as topographic variation, barriers and intervening buildings;
(B) plans showing the proposed venue layout including building envelope construction and areas with live entertainment, *amplified music* and voices;
(C) a review of expected internal one-third octave band noise levels from live entertainment, *amplified music* and voices, and external noise levels calculated (or measured) at maximum patron and music design capacity using an appropriately recognised methodology and assessed with demonstrated compliance with the criteria in PO4 and PO5; OR
(D) a review of expected outdoor (e.g. beergarden) one-third octave band noise levels from live entertainment, *amplified music* and voices, and external noise levels calculated (or measured) at maximum patron and music design capacity using an appropriately recognised methodology and assessed with demonstrated compliance with the criteria in PO7 at a use in the residential activity group;
(E) measurements of 3 to 5 minute duration.
(F) comment on potential noise impacts associated with patron noise at the premises and noise from departing patrons associated with the entertainment event;
(G) specification of appropriate control measures if necessary (e.g. operational conditions such as closed windows, or mitigation measures such as improved acoustic insulation, including Rw of glazing, walls, roof and materials and/or barrier density); and
(H) specification of the maximum source noise level to be emitted at the premises for each type of event, each room and each event configuration (e.g. for different positions used for a live band in the same venue) as appropriate; and

(i) in respect to a use in the residential activity group, the following:-

(A) a location plan identifying the subject site, location of site within the special entertainment precinct and associated buffer, the nearest potentially affected venues with live entertainment, *amplified music* and voices, and any significant features such as topographic variation, barriers and intervening buildings;
(B) acoustic rating (Rw) and 63Hz octave band calculated transmission loss values for the building facade elements (walls, roof/ceiling and glazing systems) and overall facade, and a description of the methodology used to forecast the performance of the glazing system (note: the noise reduction required in PO6 is typically 6 dB less than the transmission loss of the overall facade at 63 Hz);
(C) a review of one-third octave band noise levels from live entertainment, *amplified music* and voices located in the same building or within 5m of the building (including measurement of noise from existing venues at maximum patron and music design

capacity), and indoor noise levels calculated using an appropriately recognised methodology and assessed with demonstrated compliance with the criteria in PO7; and

(D) detailed plans and elevations showing the proposed external building facade construction, including walls, roof/ceiling and glazing systems. Glazing system detail is to include glazing thicknesses, glazing area (i.e. window and door dimensions), airgaps, seal types, and opening mechanism (e.g. sliding, awning, fixed). Where façade treatments are required for operable windows and doors of noise affected bedrooms or living rooms, mechanical ventilation is to be provided.

SC6.15.8 Advice for preventing or minimising nuisance emissions and imissions associated with odour

The following is advice for achieving Performance Outcomes PO9 and PO10 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for odour emissions or imissions to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcomes PO9 and PO10 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be demonstrated by the preparation and submission of an odour impact assessment report prepared by a competent person, which properly addresses, describes or includes the following:-

(i) the potential for odour emissions from a proposed activity to be detected at existing sensitive land uses; or

(ii) the potential for odour emissions from existing activities to be detected at a proposed sensitive land uses;

(b) an odour impact assessment report should make reference to the most appropriate contemporary guidelines, criteria and methods for a particular type of source or activity; and

(c) the justification for the selected guidelines, criteria and methods should form part of the odour impact assessment report.

SC6.15.9 Advice for preventing or minimising nuisance emissions and imissions associated with dust and particulates

The following is advice for achieving Performance Outcomes PO9 and PO10 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for dust and particulate emissions or imissions to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcomes PO9 and PO10 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may be achieved by the submission of an air quality impact assessment report undertaken by a competent person which utilises an appropriately recognised methodology and air quality criteria.

SC6.15.10 Advice for preventing or minimising nuisance emissions and imissions associated with lighting

The following is advice for achieving Performance Outcome PO11 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** where there is potential for lighting emissions or imissions to cause environmental harm or nuisance at a sensitive land use:-

(a) compliance with Performance Outcome PO11 of **Table 9.4.3.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Nuisance code** may achieved by the incorporation of such measures as:-

(i) building facades which have no flashing lights;

(ii) suitable boundary fencing and landscaping to prevent lighting overspill;

(iii) suitable lighting design (e.g. directional measures) to prevent overspill; and

(iv) external areas that are lit in accordance with *AS4282 – Control of the Obtrusive Effects of Outdoor Lighting*; and

(b) Council may require submission of a lighting impact assessment report prepared by a competent person to demonstrate that lighting proposed to be established in conjunction with development will not have adverse amenity impacts.

SC6.15.11 Guidelines for achieving the nuisance code outcomes

For the purposes of the performance outcomes in the **Nuisance code** the following are relevant guidelines:-

(a) *AS1055.1-1997: Acoustics – Description and Measurement of Environmental Noise General Procedures* (Standards Australia) 1997;

(b) *AS1158.3.1:2005: Lighting for roads and public spaces – Pedestrian Area (Category P) lighting – Performance and design requirements* (Standards Australia) 2005;

(c) *AS2107:2000: Acoustics – Recommended design sound levels and reverberation times for buildings interiors* (Standards Australia) 2000;

(d) *AS2670.2: 1990: Evaluation of human exposure to whole body vibration -Continuous and shock induced vibration in buildings (1 to 80 Hz)* (Standards Australia) 1990;

(e) *AS3671: 1989: Acoustics – Road traffic noise intrusion – Building siting and construction* (Standards Australia) 1989;

(f) *AS4282 – 1997: Control of the obtrusive effects of outdoor lighting* (Standards Australia) 1997;

(g) *Queensland Development Code: Mandatory Part 4.4 - Buildings in a transport noise corridor*;

(h) *Environmental Protection (Noise) Policy 2008*;

(i) *Environmental Protection (Air) Policy 2008;*

(j) *Road Traffic Noise Management: Code of Practice* (Department of Main Roads) 2008;

(k) *Guideline for development in a special entertainment precinct and buffer area (Sunshine Coast Council) 2018;*

(l) *Guideline: Planning for noise control (Department of Environment & Heritage Protection);*

(m) *Guideline: Odour Impact Assessment from Developments* (Department of Environment and Heritage Protection);

(n) *Guideline: Application requirements for activities with noise impacts* (Department of Environment and Heritage Protection);

(o) *Guideline: Application requirements for activities with impacts to air* (Department of Environment and Heritage Protection)*;* and

(p) *Noise Measurement Manual* (Department of Environment and Heritage Protection)*.*

SC6.16 Planning scheme policy for the reconfiguring a lot code

SC6.16.1 Purpose

The purpose of this planning scheme policy is to:-

(a) provide advice about achieving outcomes in the **Reconfiguring a lot code**; and

(b) identify and provide guidance about information that may be required to support a development application where subject to the **Reconfiguring a lot code**.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.16.2 Application

This planning scheme policy applies to development which requires assessment against the **Reconfiguring a lot code** and which involves development:-

(a) on a site exceeding 10 hectares in area; or

(b) involving the creation of 50 or more new lots.

SC6.16.3 Advice for lot layout, site responsive design and neighbourhood / estate design outcomes

The following is advice for achieving outcomes in the **Reconfiguring a lot code** relating to lot layout, site responsive design and neighbourhood/estate design:-

(a) compliance with Performance Outcomes PO1 and PO2 of the **Reconfiguring a lot code** may be demonstrated in part or aided by the submission of a local area structure plan prepared by a competent person in accordance with **Section SC6.16.4 (Guidance for the preparation of a local area structure plan)**.

Note—for the purposes of this, planning scheme policy, a competent person is an appropriately qualified and experienced town planner, urban designer, surveyor or a combination of these disciplines.

SC6.16.4 Guidance for the preparation of a local area structure plan

(1) A local area structure plan is to provide the necessary local area planning framework to ensure that new development is planned and occurs in an orderly and integrated manner.

(2) A local area structure plan is to inform and be reflected in the proposed plan of subdivision.

(3) The scope and detail of a local area structure plan is to have regard to, and appropriately reflect, the size and location of the site, the size and complexity of the proposed development and the extent and nature of the constraints present on the site.

(4) In general terms, a local area structure plan is to include or identify the following:-

   (a) site and context details, if these are not separately identified by a site analysis plan;

   (b) constraints, including watercourse corridors, ecologically important areas and sensitive landscape features; and

   (c) analysis of site characteristics and constraints demonstrating how the proposed lot layout responds to site characteristics and constraints and achieves integration in terms of:-

      (i) surrounding land uses;
      (ii) the strategic transport network and road hierarchy;
      (iii) the potential for development of adjoining land;
      (iv) the provision of infrastructure corridors and sites; and
      (v) the outcomes identified in any applicable local plan code.

(5) For land in the Emerging community zone, a local area structure plan is to demonstrate that:-

(a) the land is used primarily for residential purposes;

(b) the layout and design of streets and lots meets contemporary neighbourhood design standards and principles;

(c) residential communities will be well serviced and have good access to public transport, local parks, schools, shops and community facilities;

(d) a range of housing options are able to be accommodated;

(e) concentration of higher densities of residential use are located close to centres or public transport; and

(f) the proposal does not impinge on the legitimate operation of existing uses.

(6) A local area structure plan is to be provided at a maximum scale of 1:2000 and include a bar scale and north point.

SC6.17 Planning scheme policy for the transport and parking code

SC6.17.1 Purpose

The purpose of this planning scheme policy is to:-

(a) provide guidelines and advice about achieving outcomes in the **Transport and parking code**;

(b) state standards identified in the **Transport and parking code**; and

(c) identify information that may be required to support a development application which may impact upon the transport network.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.17.2 Application

This planning scheme policy applies to assessable development which requires assessment against the **Transport and parking code**.

SC6.17.3 General advice about achieving transport and parking code outcomes

(1) The following is general advice about achieving outcomes in the **Transport and parking code**, related to transport networks:-

(a) development should provide integrated and connected transport networks and support infrastructure that:-

(i) protects the region's distinctive lifestyle and character, reduces the ecological footprint and greenhouse gas emissions, while meeting the transport infrastructure needs of a growing and aging population;
(ii) is integrated with and improves the connection with land use and urban design, considering the immediate surrounds, broader network and environment it exists within;
(iii) considers the needs of all users in accordance with the user hierarchy and provides transport choice;
(iv) achieves high levels of permeability, access, connection, legibility and convenience, minimising travel time and distance to encourage self containment, affordable living and transit oriented development and maximise walking, cycling (active) and public transport use to reduce reliance on private motor vehicle travel;
(v) is cost effective and reliable, delivered in a timely manner and adaptable for other future uses;
(vi) provides an efficient freight system that supports economic development;
(vii) improves safety to reduce road trauma; and
(viii) minimises impacts on amenity and sensitive uses.

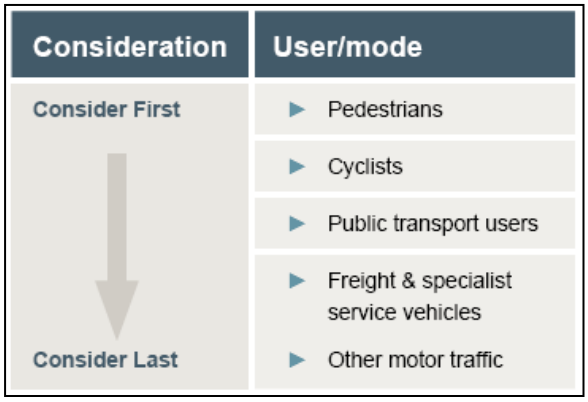
(2) The following is general advice about achieving outcomes in the **Transport and parking code**, related to user hierarchy:-

(a) development should demonstrate application of the transport user hierarchy, where:-

(i) all users are important and shall be considered in the order shown, to ensure a balance of all modes. This does not necessarily imply an order of priority in the corridor and all modes do not have to be accommodated in every transport corridor;
(ii) the vulnerability of users influences the order in which the design and management of transport networks are considered;
(iii) pedestrians are considered first, then cyclists, public transport users, specialist service vehicles (emergency services, waste etc.) and other general motor transport, in accordance with the hierarchy shown in **Figure SC6.17A (User hierarchy)**;
(iv) the network for each mode is planned separately, without considering constraints from other modes or land uses, then assessed to provide a balanced level of service to meet the requirements of users;

(v) if an existing transport corridor is unable to cater for all user modes, need is addressed in accordance with the user hierarchy; and
(vi) on-street parking is considered last and determined based on nearby land use, supply and demand.

Figure SC6.17A User hierarchy



(3) The following is general advice about achieving outcomes in the **Transport and parking code**, related to pedestrian and cyclist networks:-

(a) development should provide a comprehensive, high quality pedestrian and cyclist network and support infrastructure that:-

(i) are consistent with **Figures 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** of the **Transport and parking code**;
(ii) are direct, continuous, convenient, legible, easy to use, enjoyable, attractive, safe, cost effective and maximises community benefit;
(iii) supports and encourages walking and cycling as an alternative to private vehicle use and as a healthy activity for all;
(iv) connects destinations, including homes, schools, work places, centres, community and recreational areas, open space and public transport stations/stops/nodes and other key walking and cycling attractors;
(v) provides green links to facilitate walking and cycling;
(vi) provides for pedestrians and cyclists on all street and road corridors unless specifically prohibited (e.g. Motorways);
(vii) provides:-
(A) shorter travel distances and greater accessibility and connectivity than that for private vehicles, including connection through mid blocks and access places;
(B) consideration of natural travel desire lines;
(C) universal access;
(D) for recreation, commuting, utility and sport cycling trips;
(E) for off-road use of motorised and non-motorised mobility aids, including scooters, skateboards and new technology as it becomes available off-road;
(F) for a reduction in reliance on private vehicle trips;
(G) pedestrian priority in centres and other areas with high pedestrian activity;
(H) pedestrian and cyclist friendly precincts around high trip generating land uses;
(I) legible way-finding signage;
(J) on-trip facilities, including weather protection and water points;
(K) end of trip facilities at trip attractors; and
(L) secure cycle parking where identified as required in **Table 9.4.8.3.3 (Minimum on-site parking requirements)** of the **Transport and parking code**;
(viii) is designed and constructed using CPTED principles, including street and path lighting and casual surveillance from roads, residences and other areas of activity; and
(ix) minimises conflicts between users.

(4) The following is general advice about achieving outcomes in the **Transport and parking code**, related to public transport networks:-

(a) development should provide for a comprehensive high quality public transport network and support infrastructure that:-

(i) are consistent with **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)** of the **Transport and parking code** and relevant design manuals and standards, including (but not limited to) the *TransLink Public Transport Infrastructure Manual*, May 2012 and the *DTMR Road Planning and Design Manual*;
(ii) is planned concurrently with land use, acknowledging the symbiotic relationship and maximising the benefits of integrating development and public transport;
(iii) improves accessibility, safety, convenience, coverage and comfort of services;
(iv) enables efficient and frequent public transport services;
(v) provides corridors suitable for high capacity and frequent public transport services as well as facilitating public transport services for the local area;
(vi) provides for public transport priority over private vehicles, including dedicated lanes, queue jumps and priority signals and new green links between adjacent development or centres to improve penetration through urban areas with sufficient density;
(vii) provides centre to centre connection, as well as promoting self containment with local feeder services linking surrounding areas to centres;
(viii) enables connection with intra and inter regional services for longer journeys;
(ix) services significant trip generating land uses and zones, such as higher density residential and business zones;
(x) provides stops and interchanges that are well connected to other transport networks, particularly pedestrian networks;
(xi) provides interchange facilities at high trip generating land uses;
(xii) provides universal access;
(xiii) is easy to understand; and
(xiv) are capable of responding to changing technology and infrastructure requirements over time, particularly with regard to mode.

(5) The following is general advice about achieving outcomes in the **Transport and parking code**, related to street and road networks:-

(a) development should provide a high quality street and road network and support infrastructure that:-

(i) are consistent with **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**;
(ii) provides a safe, efficient and convenient street and road network for the movement of people and goods;
(iii) provides for pedestrians on all street and road corridors, unless specifically prohibited (e.g. motorways);
(iv) provides for cyclists on all street and road corridors:-
(A) to share traffic lanes as mixed traffic on access places, access streets and neighbourhood collector streets where the street does not form part of the cycle route on **Figures 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** of the **Transport and parking code**;
(B) with on-road cycle lanes on all other urban streets and roads unless specifically prohibited (e.g. Motorways);
(C) pathways on one or both sides of the street or road, except on access laneways and access places; and
(D) physically separated cycleways in some circumstances;
(v) minimises adverse impacts from traffic flow, particularly on residential amenity and pedestrian and cyclist safety;
(vi) provides low speed corridors and wide pathways within the core of new centres;
(vii) provides for staging of delivery in accordance with Council's trunk road construction program to maximise efficiency; and
(viii) meets the endorsed levels of service for ultimate development of the Sunshine Coast; and

(b) the **2031 Functional Transport Hierarchy (Figure 9.4.8A)** of the **Transport and parking code** should be read in conjunction with **Table SC6.17A (Role of transport corridors)**, which provides guidance as to the role of each corridor in the hierarchy. In addition, **Table SC6.17B (Urban transport corridors)** and **SC6.17C (Rural transport corridors)** provide further specifications for each corridor.

(6) The following is general advice related to development application requirements:-

(a) development applications should be accompanied by appropriately scaled and dimensioned drawings, clearly showing all aspects of the proposal, including details of all interfaces with

(b) existing and proposed external pedestrian and cyclist facilities, public transport and roads (including relevant features and services, kerb lines, channelisation and line marking);

(c) Council may require preparation and submission of a traffic impact assessment report and/or travel plan, subject to demonstrated compliance with this policy and other relevant codes and guidelines; and

(d) DTMR and the Council routinely prepare plans for transport network and road upgrades, that may incorporate dedicated and/or constructed road widening or new transport corridor requirements, which a development may be reasonably required to meet. Where these works are not considered by Council to be reasonably required as a condition of a development approval, the development should not compromise the ability to deliver them in the future.

SC6.17.4 Advice for achieving transport network outcomes

The following is advice for achieving Acceptable Outcomes AO3 and AO4.1 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** of the **Transport and parking code** relating to the transport network:-

(a) in addition to complying with and providing infrastructure consistent with **Figure 9.4.8A (2031 Functional Transport Hierarchy)**, **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways)), Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** and **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)** of the **Transport and parking code**, development should provide a street and road network that is consistent with:-

(i) **Table SC6.17A (Role of transport corridors)**;

(ii) **Table SC6.17B (Urban transport corridors);**

(iii) **Table SC6.17C (Rural transport corridors)**;

(iv) **Table SC6.17D (Industrial transport corridors)**;

(v) **Table SC6.17E (Street and road networks)**;

(vi) **Appendix SC6.17A (Typical street and road cross sections)**; and

(vii) **Appendix SC6.17B (Active transport infrastructure guidelines standard treatments)**;

Note—a planning scheme policy for a local plan or structure plan may identify alternative cross sections for the street and road network (see planning scheme policies **SC6.3 (Planning scheme policy for Sippy Downs Town Centre)** and **SC6.19 (Planning scheme policy for the Palmview structure plan)**.

(b) where there is an inconsistency between the networks and hierarchies shown on **Figure 9.4.8A (2031 Functional Transport Hierarchy)**, **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** and **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)** of the **Transport and parking code**:-

(i) **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** should take precedence over **Figure 9.4.8A (2031 Functional Transport Hierarchy)**; and

(ii) **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)** should take precedence over **Figure 9.4.8A (2031 Functional Transport Hierarchy)**;

(c) development should provide transport infrastructure that accounts for the potential impacts of the development on the Functional Transport Hierarchy, Strategic Network of Pedestrian and Cycle Links and Strategic Network of Public Transport Links;

(d) streets serve residential, rural, commercial, industrial and rural residential uses. The primary function of streets is to provide:-

(i) local amenity and safe pedestrian and cycle movements;

(ii) access to individual properties or developments; and

(iii) access to higher order streets and roads, not through traffic movement.

(e) the primary function of roads is to provide:-

(i) connections for through traffic; and

(ii) public transport (bus) routes.

Table SC6.17A Role of transport corridors

Corridor classification	Function	Hierarchy	Typical characteristics
Local Streets	• Low speed and traffic volume environment. • Prioritise needs of pedestrians and cyclists over motor vehicles. • Direct property access. • Discourage through traffic. • Short trips for local traffic.	**Access Laneway**	• Rear access to properties. • Should not provide vehicular short-cuts to other streets.
		Access Place	• Short no-through streets for private vehicles. • Front access to properties.
		Mixed Use Access Street	• Access to a local area. • Accommodates higher traffic volumes in centres where mixed uses have higher trip generating potential.
		Access Street	• Access to a local area.
Neighbourhood and District Streets	• Carry traffic with a trip end within the local area. • Bus routes. • Direct access to property frontages to enhance safety through casual surveillance. • Rear, side or consolidated property access, where traffic volumes exceed levels acceptable for frontage access.	**Neighbourhood Streets** (Neighbourhood Collector Street and Mixed Use Collector Street)	• Within a local area for traffic with a trip end in that area. • Bus routes where higher order roads cannot service the area. • May be appropriate for parked vehicles to restrict traffic flow. • Accommodates higher traffic volumes in centres and industrial areas, where fewer lots are served and mixed/commercial uses have higher trip generating potential.
		District Streets (District Collector Street and District Main Street)	• Connect residential streets, a group of neighbourhoods or district with centres and higher order roads. • Form spines of towns and neighbourhoods, not edges. • Accommodates higher traffic volumes in centres and industrial areas, where fewer lots are served and mixed/commercial uses have higher trip generating potential. • Provides for bus route connectivity and stops.
Sub-arterial Roads	• Provide greater convenience than streets. • Connect residential, commercial, or industrial areas to arterial roads. • Terminate at arterial roads, do not serve longer regional movements. • Pedestrian routes.	**Sub-arterial Main Street**	• Only in existing corridors with commercial land uses on both sides e.g. centres. • Seek to reduce traffic volume and create pedestrian friendly environment. • Seek to bypass freight movements. • Provides for bus route connectivity and stops/stations. • Pedestrian and cycle friendly.
		Sub-arterial Roads (Distributor and Controlled Distributor)	**Distributor** • The default sub-arterial road. • Meets all the functions and characteristics of sub-arterial roads in: o greenfield conditions and master-planned communities, or

Corridor classification	Function	Hierarchy	Typical characteristics
	• Local and regional cycle routes. • Form spines of towns and neighbourhoods, not edges.		○ where opportunity exists to provide Distributor standard in existing partially developed areas. • May facilitate priority public transport services and stops, frequent bus services, dedicated lanes and/or queue jump/ priority signals. Also provides for some local bus network connectivity. • Reduce direct property access. • Dwellings should be set well back from the road. **Controlled Distributor** • In existing urban environments, Council may consider relaxing one or more of the desired characteristics of the preferred Distributor road, including: ○ speed, to accommodate existing direct residential frontage or alignment constraints; ○ volume, to avoid road widening or excessive pressure on adjoining uses; ○ usage, to protect amenity of abutting uses or accommodate alignment constraints; and ○ access, reducing intensification of traffic on existing access.
Arterial Roads	• Longer movements, across town and between suburbs and centres. • Regional and longer distance cycle routes. • Freight and dangerous goods routes. • Reduce direct property access.	**Arterial Main Street**	• Only in existing corridors with commercial land uses on both sides e.g. sections of Aerodrome Road and Brisbane Road. • Provide pedestrian and cycle friendly environment. • Incorporate street scaping to reduce visual and acoustic impacts. • Seek to bypass freight movements • Provides for bus route connectivity and stops/stations.
		Arterial Roads	• Limited intersections with streets. • Divided carriageway preferred, two lane undivided carriageway may be appropriate for a lower volume rural or industrial road, subject to sufficient passing opportunities. • High volumes may require grade separation or signalisation. • Abutting land use should not impact road function. • In rural areas, land uses should be set back more than 30 metres. • May facilitate priority public transport services and stops, frequent bus services, dedicated lanes and/or queue jump/ priority signals. May also provide for some local bus network connectivity.
		Highway / Motorway	• Typically state-controlled, regionally and nationally significant. • Divided carriageway preferred, two lane undivided carriageway may be appropriate for a lower volume rural highway, subject to sufficient passing opportunities.

Table SC6.17B Urban transport corridors

Note—this table applies to transport corridors within the Urban area as identified on **Strategic Framework Map SFM 1 (Land use elements)**. The transport corridors are mapped on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code.**

Criteria		Arterial Roads			Sub-arterial Roads			District Streets		Neighbourhood Streets		Local Streets			
		Highway / Motorway	Arterial Road	Arterial Main Street	Distributor	Controlled Distributor	Sub-Arterial Main Street	District Collector Street	District Main Street	Neighbourhood Collector Street	Mixed Use Collector Street	Access Street	Mixed Use Access Street	Access Place	Access Laneway
Typical adjacent land use	residential	not sensitive to traffic	building & site design to minimise noise from traffic		not sensitive to traffic			●		●		●		●	●
	mixed use			●			●	●	●		●		●		
	commercial								●						
Typical catchment (detached dwelling lots or equivalent)								300 to 1000		up to 300		up to 75		up to 15	
Minimum reserve width (metres) increase to accommodate utilities, public transport, WSUD etc, without reducing landscaping, pathways, signage etc.		40-100	40-60	39.4	29.6 (2 lane) 37 (4 lane)	24 (2 lane)	29.8	26.8 29.8 if median	24.8 27.8 if median	21-25.4	23.4	15.3-16.6	20	14	6.5
Design speed (km/h) minimum for roads		80-110	70	60	70	60	50								
Design environment (km/h) speed appropriate for safety, amenity and convenience for the subject street								**60**	**40**	**50**	**40**	**30**	**30**	**30**	**20**
Maximum desirable volume / capacity ratio by location		0.75	0.85	0.85	0.85	0.85	0.85								
Maximum traffic volume (vehicles/day) * may increase to 10,000 if no direct vehicle access	per lane		9000	9000	9000	9000	9000								
	per road							5000 10000 if median	5000* 15000 if median	3000	5000	750	3000	150	
Vehicle property access + only via service roads or signalised intersections that meet spacing requirements ++ subject to safety and locational criteria		none	major development only +	limited to existing	major development only ++	ideally none, limited to existing and consolidated (forward in/out) where no alternate		rear/side preferred, consolidated (forward in/out), direct (if median and reversing into parking lane for detached dwellings) ++		rear/side preferred, direct ++		direct ++			
General traffic lanes * operates as single moving lane for passing		2-6	2-4	2-4	2-4	2-4	2-4	2	2	2	2	2	2	2*	2*

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Criteria		Arterial Roads			Sub-arterial Roads			District Streets		Neighbourhood Streets		Local Streets			
		Highway / Motorway	Arterial Road	Arterial Main Street	Distributor	Controlled Distributor	Sub-Arterial Main Street	District Collector Street	District Main Street	Neighbourhood Collector Street	Mixed Use Collector Street	Access Street	Mixed Use Access Street	Access Place	Access Laneway
Transit / bus lanes			●		○	○	○	○	○	○	○				
Pathways (minimum, metres) + local 2.5m, district and regional 3m, if shown on Figure 9.4.8B(i) (2031 Active Transport Network) and/or Sunshine Coast My Maps * fully paved through centres		grade separated	3 both sides	both sides*	3 both sides		both sides*	2 one side 3 other side +	both sides*	2 both sides +		1.8 one side+	both sides*	+	none
On-road cycling lane width (metres) may not be required if: + design speed ≤30km/h and no traffic signals * not part of an on-road cycle route shown on Figure 9.4.8B(ii) (2031 Active Transport Network) and/or Sunshine Coast My Maps		refer DTMR	2	2	2 carside 1.8 kerbside	1.5 carside 1.8 kerb-side	1.5 carside 1.8 kerb-side +*	1.5 carside 1.8 kerbside	1.5 carside 1.8 kerb-side +	1.5 carside 1.8 kerbside*	1.5 carside 1.8 kerb-side+	none - low speed, low volume traffic environment appropriate for shared use			
Pedestrian/ cyclist crossings at intersections, bus stops, pathways and other crossing desire lines	refuge		●	●	●	●	●	●	●	●	●		●		
	signalised		●	●	●	●	●	●	●						
	zebra - comply with DTMR TRUM manual, may be considered midblock						●		●						
	grade separated	●	●												
Public transport	bus routes and stops (separate right-of-way or mixed with traffic)		●	●	●	●	●	●	●	if no rear lane access	●			○	
	bus priority measures * desirable		○*	●	○	●*	●	if no median	●	○	○		○		
On-street parking	unmarked									if no rear lane access		●		●	
	indented parking both sides			●			●		●	if rear lane access	●		●		
	parking lane both sides			●			●	●	●	●					
	parking lane (where permitted)					●									
	no parking / prohibited	●	●		●										●
Intersection treatments accommodate pedestrians and link cycle lanes and pathways	priority T		●	●	●	●	●	●	●	●	●	●	●	●	●
	priority 4-way														○
	roundabout		●	●	●	●	●	●	●	●	●	●	●		
	traffic signals		preferred	●	●	●	●	●	●	●	●	●			
	grade separated	●	●												

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Criteria		Arterial Roads			Sub-arterial Roads			District Streets		Neighbourhood Streets		Local Streets			
		Highway / Motorway	Arterial Road	Arterial Main Street	Distributor	Controlled Distributor	Sub-Arterial Main Street	District Collector Street	District Main Street	Neighbourhood Collector Street	Mixed Use Collector Street	Access Street	Mixed Use Access Street	Access Place	Access Laneway
Median		●	●	desirable	●	desirable	desirable	localised where required, if not entire street							
May intersect with usually a corridor one classification higher or lower. Other intersections only where there is no alternative, subject to other design requirements.	access laneway											●	●	●	
	access street							O	O	●	●	●	●	●	●
	neighbourhood collector					O	O	●	●	●	●	●	●	●	●
	mixed use collector					O	O	●	●	●	●	●	●		
	district collector				●	●	●	●	●	●	●	●	●		
	sub-arterials		●	●	●	●	●	●	●	●	●				
	arterials	●		●	●	●	●	●	●	●	●				
	highways		●												
Minimum intersection spacing (metres) + 150 if constrained by existing development * same side, # opposite side		1.5-2km	0.5-1km	>150	300	300+	150	100* 80# 100 if median	100	60* 40#	60	60* 40#	40	40	40
Stopping distance (metres)		Austroads guidelines								42	30	20	20	20	10
General minimum sight distance (metres)		Austroads guidelines								84	60	40	40	40	20
Street leg length (metres)	Desirable			150		150	100	150	100	100	100	75	75	75	
	Maximum			180		180	155	180	120	≤140	120	75	75	75	
End conditions (km/h)								≤25		≤25					
Desirable maximum grade (%)		specific consideration	5	5	8	8	8	8	8	12	6	12	6	12	12
Absolute maximum grade (%) + up to 20% for ≤100m over the entire street, if constrained and limited heavy vehicle use			6	7	10	10	10	12 (10 if >5,000vpd)	12 (10 if >5,000vpd)	15 (12 if rear lane access)	12	15+	12	15+	15+
Freight route		primary (except through populated areas)	yes	yes	yes	selected routes		restricted access		no	restricted access	no			
Dangerous goods route			restricted access		restricted access			restricted access		no	restricted access	no			
Longitudinal drainage	kerb & channel			●		●	●	●	●	●	●	●	●	●	●
	swale	●	●		●			●							
Street lighting	Refer AS1158.3.1: 2005														

Note O Optional at discretion of Council.
Note—DTMR current guidelines or standards apply to planning and design of State-controlled roads.
Note—DTMR approval is required where any additional access is sought or existing access is modified to a State-controlled road.

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Table SC6.17C Rural transport corridors

Note—rural residential streets referred to in this table are those within the Rural residential area as identified on **Strategic Framework Map SFM 1 (Land use elements)**. All other roads and streets are located within the Rural area as identified on **Map SFM 1**. The transport corridors are mapped on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**.

Criteria		Arterial Roads		Sub-arterial Roads		District Streets		Neighbourhood Streets		Local Streets			
		Highway / Motorway	Arterial Road	Distributor	Controlled Distributor	District Collector Street	Rural Residential District Collector Street	Neighbourhood Collector Street	Rural Residential Neighbourhood Collector Street	Access Street	Rural Residential Access Street	Access Place	Rural Residential Access Place
Minimum reserve width (metres) excluding any embankment		100	60	45	35	30	30	25	20	20	20	20	18
Design speed (km/h) minimum on roads, maximum on streets appropriate for safe environment and places		**110**	**100**	**80**	**80**	**80**	**60**	**80**	**60**	**70**	**50**	**70**	**50**
Maximum desirable volume / capacity ratio by location		**0.7**	**0.75**	**0.75**	**0.75**	**0.8**							
Maximum traffic volume (vehicles/day)		**>40,000**	**20,000-40,000**	**<15,000**	**<15,000**	**1000-5000**	**5000**	**500-1000**	**2400**	**150-500**	**750**	**150**	**300**
Vehicle property access + auxiliary lanes or widened sealed shoulders required for safety near accesses * highway service centre may be allowed		**none***	**limited/ existing +**	**limited/ existing +**	**limited/ existing +**	**limited/ existing +**	**limited/ existing**	**direct+**	**direct**	**direct**	**direct**	**direct**	**direct**
Pathways		**none required**	**none required**	**none required**	**none required**	**none required**	**none required**	**none required**	**none required**	**none required**	**none required**	**none required**	**none required**
Traffic lane width (metres)		**volume driven**	**volume driven**	**3.5**	**3.5**	**3.3**	**3.3**	**3.3**	**3.3**	**3**	**3**	**3**	**3**
Sealed shoulder (and verge) width (metres) Full width seal to reduce maintenance and improve moisture conditions under pavements, especially under the outer wheel path. Widen verges for road safety barriers, horizontal sight distances, or to balance cut and fill. Short lengths of wider shoulder seals or lay-bys in suitable locations for discretionary stops.		**volume driven**	**volume driven**	**2**	**2**	**1.8**	**1.8m in 10.1m carriageway**	**1.8**	**1.5m in 9.5m carriageway**	**1m in 8m carriageway**	**1m in 8m carriageway**	**6m carriageway**	**6m carriageway**
On-road cycling lane width (metres) accommodated on sealed shoulders		**Refer DTMR**	**2.5**	**2.5**	**2.5**	**2**	**2**	**2**					
Public transport	routes	●	○	○	○		○						
	school bus route		●	●	●	●	○	●	○		●		
	stops						●						

Schedule 6

Criteria		Arterial Roads		Sub-arterial Roads		District Streets		Neighbourhood Streets		Local Streets			
		Highway / Motorway	Arterial Road	Distributor	Controlled Distributor	District Collector Street	Rural Residential District Collector Street	Neighbourhood Collector Street	Rural Residential Neighbourhood Collector Street	Access Street	Rural Residential Access Street	Access Place	Rural Residential Access Place
	indented stops Refer IPWEA Drawings SEQ R-180 and R-181 and *Translink Public Transport Infrastructure Manual*		●	●	●	●	○	●	○				
On-street parking						appropriate – sealed bus bays and acceleration / deceleration tapers near major arterials	where a building envelope is within 15m of a street and access is gained, widen the carriageway and reserve for on-street parking of one car per rural residential lot; do not provide access to urban residential subdivisions		where a building envelope is within 15m of a street and access is gained, widen the carriageway and reserve for on-street parking of one car per rural residential lot; do not provide access to urban residential subdivisions	appropriate – no special provisions	where a building envelope is within 15m of a street and access is gained, widen the carriageway and reserve for on-street parking of one car per rural residential lot; do not provide access to urban residential subdivisions		where a building envelope is within 15m of a street and access is gained, widen the carriageway and reserve for on-street parking of one car per rural residential lot; do not provide access to urban residential subdivisions
Intersection treatments	priority T		●	●	●	●	●	●	●	●	●	●	●
	roundabout		●	●	●	●	●		●				
	traffic signals		●	●	●								
	grade separated	●											
May intersect with	access street					●	●	●	●	●	●	●	●
	neighbourhood collector				●	●	●	●	●	●	●	●	●
	district collector			●	●	●	●	●	●	●			
Minimum intersection spacing (metres)		**5 to 8km**	**>1000**	**300**	**300+**	**>100**	**100**	**>100**	**100**	**>100**	**100**		**100**
Maximum grade		**5**	**6**	**7**	**8**	**9**	**9**	**10**	**16**	**16**	**16+**	**16**	**16+**

Criteria		Arterial Roads		Sub-arterial Roads		District Streets		Neighbourhood Streets		Local Streets			
		Highway / Motorway	Arterial Road	Distributor	Controlled Distributor	District Collector Street	Rural Residential District Collector Street	Neighbourhood Collector Street	Rural Residential Neighbourhood Collector Street	Access Street	Rural Residential Access Street	Access Place	Rural Residential Access Place
+ up to 20% for ≤100m over the entire street, if constrained and limited heavy vehicle use; limit length of steep grades using Austroads Guide to Road Design.													
Freight route		primary	primary/ secondary	secondary	secondary	access only	access only	access only	access only	access only	access only	access only	access only
Dangerous goods route		primary	selected routes	selected routes	selected routes	access only	access only	access only	access only	access only	access only	access only	access only
Longitudinal drainage	**kerb and channel**						●		●		●		●
	swale	●	●	●	●	●	●	●	●	●	●	●	●
Street lighting	**Refer AS1158.3.1 2005**	v5	v5	v5	v5	p5	p5	p5	p5	p5	p5	p5	p5

Note **O** Optional at discretion of Council.
Note—DTMR current guidelines or standards apply to planning and design of State-controlled roads.
Note—DTMR approval is required where any additional access is sought or existing access is modified to a State-controlled road.

Schedule 6

Table SC6.17D Industrial transport corridors

Criteria		Industrial Streets	
		Collector Street	**Access Street**
Typical adjacent land use and catchment		Industrial 30 hectares	Industrial 8-10 hectares
Minimum reserve width (metres)		25	22.5
Minimum overall carriageway width (metres)		15	12
Verge width (metres)		5	4
Design speed (km/h) to be appropriate for the speed environment		60	50
Maximum traffic volume (vehicles/day)		12000	5000
Vehicle property access		direct - subject to location criteria	direct - subject to location criteria
Number of moving lanes		2	2
Pathways		both sides	one side
On road cycle lanes		yes	no
Pedestrian/cyclist crossings		refuge, signalised	refuge
Public transport		routes and bus stops (in parking lane)	no special provisions
On-street parking define with no-stopping line marking around intersections and major driveways to ensure heavy vehicle turning areas are not compromised		parking lanes - both sides	parking lanes - both sides
Intersection treatments		priority T, roundabout, traffic signals	priority T, roundabout
Provision for turning traffic		none	none
Median		no if expected to carry >7500 vehicles/day, increase reserve width and provide a raised median, minimum 4.5m wide, with U-turn facilities or other route choice options	no
Minimum intersection spacing (metres)	same side	100	60
	opposite side	150	60
Maximum grade %	**desirable**	6	6
	absolute	8	10
Typical longitudinal drainage		kerb & channel	kerb & channel
Street lighting refer AS1158.3.1 2005		v3	p5

Table SC6.17E Street and road networks

Element	Requirement
Location and connection	• Site responsive, integrated into the surroundings, including existing and future, adjacent and nearby development. • Position to limit earthworks and facilitate good drainage controls. • Highly interconnected, avoiding the creation of circuitous or inefficient movement. • Provide for safe passage of vehicles, pedestrians and cyclists, facilitating active and public transport, maximising travel choice. • Enable direct trips within and between neighbourhoods and to centres. • Usually connect with streets or roads one level higher or lower in the transport hierarchy. • Distance from furthest lot to nearest district collector street or road by vehicle:- o 700 metres along the road corridor, where located within the urban footprint; o 2000 metres along the road corridor, where located outside the urban footprint (rural and rural residential areas). • Prevent vehicular shortcutting through neighbourhoods, which may require street layouts that restrict through access to active and public transport. • Provide access places to ≤15% of lots in a residential development. • Active transport connections through mid blocks and access places.
Access	• Provide at least two street access routes for general access and emergency use:- o in residential areas with catchments ≥100 equivalent detached dwelling lots; o in all industrial subdivisions.
Legibility	• Logical and legible. • Streets should not change direction at intersections with lower order streets, particularly at roundabouts. • Simple navigation to and from the nearest district collector street or road to maintain sense of direction. • Three or less vehicle turns from the furthest point to the nearest district collector street or road.

(f) compliance with the performance outcomes and acceptable outcomes for assessable development of the **Transport and parking code** may be demonstrated in part or aided by the submission of one or more of the following reports and plans, as relevant:-

(i) traffic impact assessment report that meets the requirements in **Table SC6.17F (Traffic impact assessment reports)**;

(ii) travel plan that meets the requirements in **Table SC6.17G (Travel plans)**;

(iii) transport hierarchy plan, that indicates the proposed road hierarchy, how it will meet the street and road network planning requirements, and integrate with the existing or planned transport hierarchy shown on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**;

(iv) active transport network plan, showing the proposed pedestrian and cyclist network, including proposed treatments, how it meets the pedestrian and cyclist network planning principles and integrates with the existing or planned:-
(A) active transport network shown on **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** of the **Transport and parking code**;
(B) transport hierarchy shown on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**; and
(C) public transport network shown on **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)** of the **Transport and parking code**;

(v) public transport network plan, show the proposed public transport network, including routes, stops and interchanges, how it meets the public transport network planning principles and integrates with the existing and proposed:-
(A) public transport network shown on **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)** of the **Transport and parking code**;
(B) transport hierarchy shown on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**; and
(C) active transport network shown on **Figures 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** of the **Transport and parking code**.

Table SC6.17F Traffic impact assessment reports

Element	Requirement	
When required	• May be required for development proposals:- o with the potential to generate significant transport capacity and land use impacts; o which potentially increase the following peak period or daily traffic movements ≥ 5% (except where all intersection approaches are, and will remain, urban neighbourhood collectors streets or lower in the hierarchy):- ▪ total traffic through a signalised intersection; ▪ turning traffic (not priority movements) at a priority controlled intersection; ▪ on an approach to a roundabout; ▪ on a traffic route; o for high trip generating land uses with the potential to increase demand for car parking above the amount required by **Table 9.4.8.3.3 (Minimum on-site parking requirements)** of the **Transport and parking code**; o that have potential to significantly impact on the amenity of existing or planned residential communities, particularly relative to community expectations based on the planning scheme; o which are part of an overall development (by one or several applicants), whether staged or independent, where the overall development may have significant impacts as defined above, considering the individual stages and overall development.	
Purpose	• Assess the impact of the proposed development on traffic operations (based on current traffic operations and a minimum 10 year planning horizon from the anticipated completion date of the proposed development). • Assess the impact of the proposed development on both the existing and planned (regardless of whether funding has been allocated) transport infrastructure. • Address compliance of the proposed development with the **Transport and parking code** and this planning scheme policy and address any inconsistencies. • Calculate the likely traffic generated from the proposed development. • Identify works to address the traffic impacts generated by the proposed development, and/or the extent of any contribution the proposed development should make to infrastructure upgrading, planned or proposed, by Council or relevant State Government Agencies.	
Preparation	• By a competent person. • Identify data sources and assumptions. • Provide the output of all relevant analyses. • Consider the parameters for assessment specified herein. • Comply with DTMR requirements, particularly the *Guidelines for Assessment of Road Impacts of Development Proposals*, if they trigger referral to DTMR.	
Scope	• Address, including, but not limited to:- o pedestrian and cyclist movements and facilities; o public transport connections and facilities; o internal vehicular traffic; o on-site servicing and parking; and o integration with existing and planned transport infrastructure.	
Seasonal variation	• Account for any seasonal variations, which may require analyses of traffic operations during off-peak periods and peak holiday periods using design traffic impacts assessed and including:- o safety considerations; o degrees of saturation; o queue lengths; o delays; o signal operation efficiency; o coordination with other nearby traffic signals; and o effects of interaction with adjacent intersections.	
Parameters for assessment	Item	References, assumptions and procedures
	Traffic generating potential	• 85th percentile demand estimate (for new development).
	Likely traffic generated	• *DTMR Road Planning and Design Manual*. • *RTA Guide to Traffic Generating Developments*; • Any locally derived traffic generation surveys of land uses completed by Council. • Where there is no comparable traffic generation rate for the land use, calculate the likely traffic generated through traffic and generation surveys of similar land

Element	Requirement	
		use examples as the proposed development.
	Seasonal variations	• Based on traffic during the 80th highest hour in the year; (for off-peak periods and peak holiday periods).
	Car parking demand	• 50th highest hourly demand in the year based on sufficient data to reliably estimate (for new development).
	Signalised intersections – degree of saturation	• Average delay < 60 seconds on any approach.
	Roundabouts	• Comply with *Austroads Guide to Road Design*. • Degree of saturation for any movement ≤ 0.85.
	Priority junctions	• Comply with *Austroads Guide to Road Design*. • Degree of saturation for any movement ≤ 0.80.
	Queue lengths	• 95% confidence limit (95th percentile queue length). • Where excessive queue length is likely to cause significant problems, a greater confidence limit may be appropriate.
	Traffic facilities	• Design to operate at Level of Service D/E.
	Sight distance (at intersections)	• *Austroads Guide to Road Design* or as modified by *DTMR Road Planning and Design Manual*.

Table SC6.17G Travel plans

Element	Matters to be addressed
When required	• May be required for development proposals involving:- o 20 or more residential units; o 500m^2 or more GFA of commercial business uses; o 1,000m^2 or more GFA for retail business uses; o 1,000m^2 or more GFA for industrial uses; and o any high trip generating land use.
Purpose	• Identify measures to promote sustainable travel choices. • Consider user needs. • Encourage walking, cycling and use of public transport. • Provide for high levels of convenience and accessibility to reduce reliance on private vehicles and contribute to a mode shift towards sustainable transport. • Minimise potential adverse traffic and parking impacts on the surrounding street and road network and land uses.
Preparation	• By a competent person.
Site context	• Existing transport facilities on-site and nearby, including, but not limited to:- o location, nature, quality of and access to:- ▪ on and off-site pedestrian facilities; ▪ on and off-road cycling facilities; ▪ public transport facilities, routes, hours of operation, frequency, available capacity and accessibility; and ▪ any other transport mode facilities; o access for mobility impaired travellers; and o any other relevant information.
Travel survey	• Survey users where development provides for relocation from existing location:- o purpose of the survey and method/s for data collection; o users needs (staff, visitors, students, patients etc); o how the survey results inform the actions, targets and measures; and o attach surveys and complete results to the report.
Objectives and targets	• Short and long-term objectives, with emphasis on reducing single-occupancy car journeys. • Targets for the 3rd and 5th year of implementation.
Action plan	• Actions to be implemented, including priorities, role and responsibilities, timeframes, resources and funding requirements for each action. • Actions should consider, but are not be limited to:- o provision of pedestrian, cycle and public transport infrastructure and services, with regard to:- ▪ safety, amenity and accessibility for all users; ▪ the catchment population for each mode; ▪ direct, convenient access, integrated with the surrounding area; ▪ integration with the local active transport network (pathways and both on and off-road cycling); ▪ minimising routes that traverse large areas of car parking or other

Element	Matters to be addressed
	areas that impede pedestrians or cyclists; ▪ high quality end of trip facilities including lockers, showers and change facilities and sufficient, clearly marked, accessible and secure bicycle parking; ▪ provisions for future increase in usage; and ▪ bus access where appropriate; o map/s identifying existing and proposed pedestrian, cycle and public transport infrastructure and services; o managing private car use, with regard to:- ▪ on and off site car parking, regulation and demand reduction; ▪ car pooling; and ▪ car park sharing; o a map identifying any existing and proposed car parking and management provisions; o education and marketing to promote sustainable transport; o work arrangements, including flexible practices e.g. working from home and teleworking; o organisational culture and operation, e.g. courier use and general service delivery; o likely business travel and mechanisms to reduce private vehicle use; and o use of energy efficient vehicles.
Monitoring and reporting	• Monitoring and reporting arrangements, including frequency, for the implementation of the Travel Plan over time.

(g) Council may require a transport hierarchy plan, public transport network plan and active transport plan for development proposals involving:-

(i) the establishment of master-planned communities; or

(ii) 100 or more lots or residential dwellings.

SC6.17.5 Advice for achieving pedestrian and cyclist network and facilities outcomes

The following is advice for achieving Acceptable Outcomes AO5.1 and AO6 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** of the **Transport and parking code** relating to pedestrian and cycle network and facilities:-

(a) development should provide a pedestrian and cycle network and facilities that are consistent with:-

(i) **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**;

(ii) **Figures 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways)) and Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** of the **Transport and parking code**;

(iii) the other parts of this planning scheme policy and in particular, **Section SC6.17.4 (General advice about achieving transport and parking code outcomes)** and **Section 6.17.4 (Advice for achieving transport network outcomes)**;

(iv) **Appendix SC6.17A (Typical street and road cross sections)**;

(v) **Appendix SC6.17B (Active transport infrastructure guidelines standard treatments)**;

(vi) **Table SC6.17H (Pathways and cycleways)**;

(vii) **Table SC6.17I (On-road cycling)**;

(viii) the following documents for design matters not otherwise addressed by this planning scheme policy, with precedence given to documents in the order listed:-
(A) Austroads publications;
(B) DTMR publications;
(C) Australian Standards;
(D) Institute of Municipal/Public Works Engineering Australia Queensland Division (IPWEAQ) publications;
(E) MUTCD;
(F) TRUM Manual; and

(G) NSW Bicycle Guidelines.

Table SC6.17H Pathways and cycleways

Element	Requirement
General	• Provide for both pedestrians and cyclists, unless specifically signed otherwise. • Shorter travel distances and greater accessibility and connectivity than that for private vehicles. • Consider natural travel desire lines (shortcuts) and minimum longitudinal gradients, which may require provision of alternate routes in areas with steep slopes etc. to cater for all users. • Connect destinations and key walking and cycling attractors, including homes, schools, centres, employment areas, community and recreational facilities, open space and public transport. • Pedestrian and cyclist friendly precincts around high trip generating attractors. • Pedestrian priority in centres and other areas with high pedestrian activity. • Universal access, including kerb ramps, pedestrian crossings and tactile ground surface indicators (TGSI's), where appropriate, in accordance with:- o *Disability Discrimination Act 1992*; o Disability (Access to Premises-Buildings) Standards 2010; o AS1428 Design for Access and Mobility; o Councils Standard Drawing for installation of TGSI's. • Limit directional TGSI's to high pedestrian trafficked areas (e.g. major centres). • TGSI proposals to be fully detailed and approved by Council prior to installation. • Verge treatments including the location of landscaping, pathways and street furniture are detailed in **Appendix SC6.17B (Active transport infrastructure guidelines standard treatments)** and Council Standard Drawings. • Design pathways and landscaping to avoid continuously damp pathways caused by seepage, constant shade and groundwater flow paths (installation of subsurface drainage may be required. • Accommodate motorised and non-motorised mobility aids. • Accommodate skateboards and scooters. • Continue across both sides of all bridges, culverts and structures along the transport corridor with required clearances to fencing and barriers. • Construct suitable structures, such as a bridges, boardwalks or culverts, to elevate pathways above localised water flows, where they:- o cross floodways; or o are located in open space or drainage reserves. • Structures are to be above the flow of a storm event with an annual exceedance probability (AEP) of:- o 18% AEP (Q5) if a regional or district level facility; o 39% AEP (Q2) if a local facility.
Width	• Comply with **Table SC6.17B (Urban transport corridors)**, **Table SC6.17C (Rural transport corridors)**, **Table SC6.17D (Industrial transport corridors)** and **Appendix SC6.17A (Street and road cross sections)**. • Reserves at through block connections - 7 metres. • Widen at potential conflict points, junctions and areas likely to have high peak demand (e.g. commuting and recreational routes). • Increase the cross section/verge to accommodate pathways if necessary. • Match the width over a bridge or culvert to that of the pathway or cycleway on the approaches to the structure, plus any additional clearances required to railings etc.
Setbacks / clearances (minimum, metres)	• 0.5 metres from vertical obstructions including fences, guard rails, barriers etc. • 1.5 metres from the boundary line to path edge if adjacent to fences ≥ 0.9 metres high or building faces or 1.0m (0.5m may be considered for short sections in constrained road reserves). • 2 metres from nominal kerb face to path edge to allow for poles, street trees and opening car doors if parking is permitted (lower widths based on design speed may be considered where street trees and/or landscaping are not required).
Surface	• Comply with Council's Standard Drawing (except using the widths nominated in this planning scheme policy). • Concrete pavement, unless adjacent to significant trees, where permeable pavement, segmental paving or timber boardwalks should be used. • Coloured pavement if 2.5 metres wide or more, to reduce glare and blend with the surrounding environment. • Maximum 2.5% crossfall.

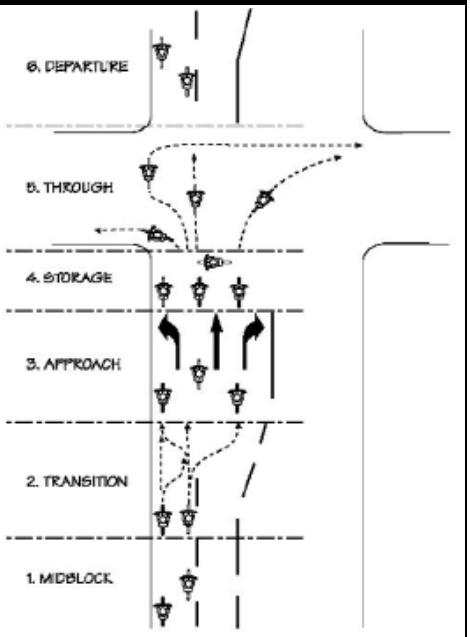
Element	Requirement
	• Continue concrete pavements on both sides of a bridge or culvert. • Pavers should not be used, unless required in mixed use or main street locations for streetscape outcomes where pavers are to be laid over reinforced concrete.
Holding rails	• Class 1 reflective material where there is potential to be impacted by errant vehicles (i.e. installed on non-kerbed roads). • Class 2 reflective tape elsewhere (i.e. behind kerbs or mounted on islands).
Crossing treatments e.g. refuges, slow points, thresholds, traffic signals	• Comply with:- o MUTCD; o TRUM Manual; o AS1158.4 for lighting. • At logical locations, in a direct, straight line. • Pedestrian Level of Service A, B or C (TRUM Manual). • Where pedestrian Level of Service is D, E or F, without treatment (TRUM Manual). • Through central and/or splitter islands:- o at grade; o minimum 2 metres wide (unless pedestrian volumes are high (e.g. active main streets and foreshores); • Design to enhance informal crossing opportunities.
Kerb ramps	• Provide at all intersections and crossings, with attention to universal access. • Use kerb ramps to join pathways to kerb and channel. • Equally sized kerb ramps on both sides of the street or road and cut-through refuges (min width 2m). • Comply with:- o Council's Standard Drawing for kerb ramps, including:- ▪ construction with plain concrete; ▪ gradient of 1 in 10 to 1 in 15; ▪ minimum 1.5 metre pathway width beyond the top of the ramp; ▪ match pathway width to a maximum of 2 metres; ▪ located on the straight section of kerb (not kerb return); ▪ minimum angle of 166 degrees between roadway; ▪ minimum height change of 110mm; o AS1428 otherwise.
Safety	• Minimise potential conflict by:- o considering the predicted demand and the likely speed differential between pedestrians and cyclists; o widening at potential conflict points, junctions and areas likely to have high demand; o separating users in high conflict areas; o avoiding heavy vehicle routes and reversing areas; o providing adequate sight distances for path users, motorists and people and vehicles exiting properties; o providing intersection treatments, pathway/road crossings and refuges; o managing speed without the use of restrictive devices such as Z chicane bars, banana bars and raised pavement markings; o avoiding installation of bollards, fencing and holding rails near path entrances; o where bollards are necessary to restrict vehicle entry, comply with IPWEA Drawing SEQ P-010 Type 1 Alternative Treatment. • Provide for casual surveillance and avoid routes hidden from view.
Signage and lighting	• Legible way-finding signage. • Comply with:- o TRUM Manual; o Austroad publications; and o DTMR publications. • Pathway way-finding in accordance with Council's infrastructure standards way-finding signage suite. • Light pathways, cycleways and crossings for visibility, safety and security, in accordance with AS1158.3.1. • Lighting may be required:- o to site entries, driveways, parking areas, building entrances and other areas outside road reserves; and o on pathways and cycleways through parkland, including at road entrances.
Landscaping	• Comply with the **Landscape Code** and **SC6.14 Planning scheme policy for development works**. • Pathways and street trees should not be installed until 95% of site/development

Element	Requirement
	stage is developed.

Note—cycleway/veloway is a pathway exclusively for cyclists. Cycleways can be bi-directional, are physically separated from vehicular traffic and usually located alongside major arterial roads. Veloways are dedicated high capacity, high quality facilities for high speed cycling trips.

Table SC6.17I On-road cycling

Element	Requirement

General	• Provide for cyclists:-
	  ○ on all street and road corridors unless specifically prohibited (e.g. Motorways);
	  ○ in shared traffic lanes as mixed traffic on access places, access streets and neighbourhood collector streets where the street does not form part of the cycle route on **Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle links (On Road Cycleways))** of the **Transport and parking code**;
	  ○ with on-road cycle lanes for all other urban streets and roads;
	  ○ through all movement stages as shown;
	  ○ with bicycle detection systems in cycle lane approaches to signalised intersections; and
	  ○ with cyclist push button sensors at signalised crossings which include bicycle facilities.
	• Cater for recreation, commuting, utility and sport cycling trips.
	• Provide adequate sight distances.
	 
	(Source: Cumming, 1999)

Cycle lane width	• Measured from nominal face of kerb. • Comply with **Table SC6.17B (Urban transport corridors)**, **Table SC6.17C (Rural transport corridors)**, **Table SC6.17D (Industrial transport corridors)** and **Appendix SC6.17A (Typical street and road cross sections)**.
Obstructions	• Ensure cycle lanes are free from obstructions (e.g. signage, speed management devices and reflectorised raised pavement markers, are to be installed on the motorists' side of the line). • Bypass slow points to allow safe continuation of cycle lanes. • Set splitter islands back 1.5 metres from edge line to allow space for cyclists (except where specific treatments are provided).
Roundabouts	• Provide for cyclists to queue at approaches to roundabouts via designated cycle lanes or advanced storage boxes across traffic lanes. Advanced storage boxes to be used where speed limit is <60km/h and primarily on single lane roundabouts where right turn cycle movement demand is high. • Terminate cycle lanes where the approach street or road meets the circulating carriageway of the roundabout (at holding line), so cyclists merge into the traffic stream and share the road space within the roundabout. • Ensure marked cycle lanes do not continue through the roundabout. • Provide cycle ramps between the carriageway and adjacent verge on all roundabout approaches, enabling cyclists to negotiate the intersection on pathways on district collector streets and roads, or where the speed limit is ≥ 60km/h. • Where traffic volumes in multilane roundabouts are problematic for cyclists, consider grade separation/ underpass facilities to allow safer road crossings, where practicable.

Line marking and signage	• Legible way-finding signage.
	• Comply with:-
	  ○ MUTCD;
	  ○ Council's adopted Standard Specification (Pavement Markings); and

Element	Requirement
	○ **Appendix SC6.17B (Active transport infrastructure guidelines standard treatments)**. • Cycle lane symbols:- ○ white thermoplastic; ○ 1.1 x 1.8 metres; and ○ maximum 200 metres apart. • Yellow "no stopping" lines if there is potential for conflict and parking within the cycle lane. • Cycle lane coloured treatments at sections of cycle lanes which are frequently crossed by motor vehicles and where safety is a concern, particularly at left slip lanes and roundabouts, painted in accordance with:- ○ **Appendix SC6.17B (Active transport infrastructure guidelines standard treatments)**; and ○ TRUM Manual. • Green coloured cycle lane treatments are generally not to be used in areas identified as a *character area* or *State heritage place* or *local heritage place* under the **Heritage and character areas overlay code**. It is preferable to use edge lines and symbols or the like in its place.

(b) compliance with Acceptable Outcome AO5.2 and AO5.3 of **Table 9.4.8.3.1 (Requirements for accepted development and performance outcomes and acceptable outcomes for assessable development)** of the **Transport and parking code** may be demonstrated by providing cycle parking and end of trip facilities that complies with:-

(i) **Table SC6.17J (Bicycle parking and end of trip facilities)**;

(ii) *AS2890.3 – Parking Facilities Part 3 – Bicycle Parking Facilities*;

(iii) *Austroads Guide to traffic management Part 11: Parking*; and

(iv) *Manual of Uniform Traffic Control Devices* (MUTCD)**.**

Table SC6.17J Bicycle parking and end of trip facilities

Element	Requirement
General	• Accessible, convenient, secure, safe and sufficient. • Attractive, designed to complement the streetscape. • Capable of being shared by multiple uses, either because of variation in demand or efficiencies gained from sharing. • Secure bicycle parking where identified, as required in **Table 9.4.8.3.3 (Minimum on-site parking requirements)** of the **Transport and parking code**. • Appropriately signed. • Well lit in accordance with *AS1158*.
Location	• At trip attractors (e.g. centres, shops, public transport interchanges, work places, patrolled beaches, education facilities, hospitals, sports grounds etc.). • At major transport interchanges, where provided by new development in accordance with Translink requirements. • As close as possible to the cyclist's ultimate destination. • Allows a bicycle to be ridden to within 20 metres of the parking space. • Easy access to cycle routes, building entrances and end of trip facilities. • Highly visible, in areas with passive surveillance for security (when not in a compound). • Occupant parking within the building, or on-site, within 70 metres of the destination and protected from the weather. • Visitor parking adjacent to a major public entrance to the building. • Does not interfere with reasonable access to doorways, loading areas, access covers, furniture, services and infrastructure. • Does not impede the movement of pedestrians or other vehicles.
Parking spaces	• Refer to Council's Drawing R-070A. • Minimum 1.7 metres long, 1.2 metres high and 0.7 metres wide at the handlebars.

<table>
<tr><th>Element</th><th colspan="7">Requirement</th></tr>
<tr><td>Rails</td><td colspan="7">• Designed and located to easily park, support the whole bicycle, lock both the frame and wheels and remove the bicycle.
• Securely fixed to a wall, floor or the ground.
• Minimum 1 metre spacing between rails.
• Vertical storage can use alternative systems (e.g. wall mounted rails and racks, pods) allowing for the differing heights and strengths of users.
• Provide stainless steel rails in coastal zone areas.</td></tr>
<tr><td>Compounds and lockers</td><td colspan="7">• Fully enclosed and lockable.
• Provide weather protection for the bicycle if outside.
• If a locker, provide space for one bicycle.
• If a compound, provide:-
o wall or floor rails for parking; and
o an internal access path at least 1.5 metres wide.
• Open plan storage layouts can use alternative storage systems (e.g. double parker/double storey parking, pods).</td></tr>
<tr><td>Personal lockers</td><td colspan="7">• Secure and available for use by bicycle parking facility users.
• Co-located with either the change room or bicycle parking facility.
• Minimum dimensions 900mm x 300mm x 500mm.</td></tr>
<tr><td>Change rooms</td><td colspan="7">• Cater for all active transport (cycling, scooters, walking, running etc.).
• Within the building, or if not within the building then on-site, co-located with bicycle parking facilities and within 70 metres of the destination.
• 5m^2 minimum floor area for 1 to 5 bicycle spaces, plus 1.5m^2 for each additional bicycle space.
• Fitted with a lockable door or otherwise screened from public view.
• Showers dispense both hot and cold water.
• Showers, sanitary compartments and wash basins located within change rooms as specified in this table.
• A mirror above each wash basin.
• A power outlet beside the mirror.
• Consider providing a wall mounted ironing board with power outlet in change rooms.</td></tr>
<tr><td rowspan="6">Lockers, change rooms, showers, sanitary compartments and washbasins</td><td>Employee bicycle parking spaces</td><td>Personal lockers</td><td>User group</td><td>Change rooms</td><td>Showers</td><td>Sanitary compart-ments</td><td>Wash basins</td></tr>
<tr><td>1 - 5</td><td>1 / space</td><td>Female and male</td><td>1 of unisex design</td><td>1</td><td>1 closet pan</td><td>1</td></tr>
<tr><td rowspan="2">6 – 19</td><td rowspan="2">1 / space</td><td>Female</td><td>1</td><td>1</td><td>1 closet pan</td><td>1</td></tr>
<tr><td>Male</td><td>1</td><td>1</td><td>1 closet pan</td><td>1</td></tr>
<tr><td rowspan="2">20 or more</td><td rowspan="2">1 / space</td><td>Female</td><td>1</td><td>2, plus 1 additional for every 20 bicycle parking spaces thereafter</td><td>2 closet pans plus 1 additional for every 60 bicycle parking spaces thereafter</td><td>1, plus 1 additional for every 60 bicycle parking spaces thereafter</td></tr>
<tr><td>Male</td><td>1</td><td>2, plus 1 additional for every 20 bicycle parking spaces thereafter</td><td>2 closet pans plus 1 additional for every 60 bicycle parking spaces thereafter</td><td>1, plus 1 additional for every 60 bicycle parking spaces thereafter</td></tr>
</table>

SC6.17.6 Advice for achieving public transport facility outcomes

The following is advice for achieving Acceptable Outcome AO7.5 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** in the **Transport and parking code** relating to public transport facility outcomes:-

(a) development should provide public transport facilities and infrastructure that are consistent with:-

(i) **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**;

(ii) **Figure 9.4.8C (2031 Strategic Network of Public Transport Links)**;

(iii) the other parts of this planning scheme policy and in particular, **Section SC6.17.3 (General advice about achieving transport and parking code outcomes)** and **Section SC6.17.4 (Advice for achieving transport network outcomes)**;

(iv) the requirements of DTMR on new roads or development sites;

(v) **Table SC6.17K (Public transport)**; and

(vi) *Translink Public Transport Infrastructure Manual*.

Table SC6.17K Public transport

Element	Requirement
General	• Plan concurrently with land use, acknowledging the symbiotic relationship and maximising the benefits of integrating development and public transport. • Priority over private vehicles, including dedicated lanes and green links. • Accessible, convenient, secure and safe. • Universal access in accordance with:- o *Disability Discrimination Act 1992*; o *Disability (Access to Premises-Buildings) Standards 2010*; o *Disability Standards for Accessible Public Transport 2002*; and o *AS1428 Design for Access and Mobility*; • Easy to understand and navigate.
Route location	• On streets and roads suitable for buses. • Centre to centre connection. • Connect to high frequency services. • Connect to intra and inter regional services for longer journeys. • Enable efficient, frequent and high capacity services. • Enable local. feeder bus services in areas surrounding centres. • Serve significant trip generating land uses and zones. • Through the centre of neighbourhoods to maximise patronage and minimise walking distances. • Within a 400 metre walk of at least 90% of new development within the urban footprint. • Along retirement village frontages.
Intersections	• Minimum 12.5 metre wide swept turning path for a single unit truck/bus in accordance with Austroads Design Vehicles and Turning Path Templates. • Where routes link residential areas across roads carrying ≥ 6000 vehicles per day, roundabouts and/or traffic signals should enable a left turn from one area, then a right turn into the adjoining residential area. • Priority measures such as queue jumps and priority signals.
Bus movement	• Design to achieve comfortable bus movement. • Avoid traffic management devices such as speed humps, chicanes and other slow points with 25 kilometres per hour spot speeds.
Interchanges	• Well connected to other transport networks, particularly pedestrian networks and taxi facilities. • At locations determined in conjunction with Translink.
Stops	• At existing and future key destinations and public transport attractors, including homes, schools, centres, employment areas, community and recreational facilities and open space. • Near pedestrian crossing points to facilitate safe user movement. • 400 metre average spacing, balancing accessibility and running time. • Provide localised widening of street and road reserves to accommodate wider verges required for indented bus bays, stops, shelters and other bus stop infrastructure, clear of pathways.

SC6.17.7 Advice for achieving layout and design of access and on-site parking outcomes

The following is advice for achieving Acceptable Outcomes AO1.1 and AO2.1 of **Table 9.4.8.3.1 (Requirements for accepted development and performance outcomes and acceptable outcomes for assessable development)** in the **Transport and parking code** relating to location, layout and design of on-site parking and access:-

(a) development should comply with the other parts of this planning scheme policy and in particular, **Section SC6.17.3 (General advice about achieving transport and parking outcomes)** and **Section 6.17.4 (Advice for achieving transport network outcomes)**;

(i) access should comply with:-
  (A) **Table SC6.17L (Site access/driveways)**;
  (B) IPWEA Standard Drawing (R51-53) Residential, commercial and rural driveways;
  (C) Council's Standard Drawings; and
  (D) *Austroads Guide to Road Design*;

(ii) vehicle queuing provisions should comply with **Table SC6.17M (Queue provisions)**, noting that greater provisions may be required in some circumstances;

(iii) on-site circulation, manoeuvring and parking should be provided that:-

  (A) provides safe and functional access for pedestrians, cyclists and vehicles, that minimises potential for conflict between users;
  (B) discourages high speeds;
  (C) provides for trolleys, prams and wheelchairs (e.g. space and gradients);
  (D) is designed in accordance with *AS2890.1 – Part 1: Off Street Car Parking and AS2890.2 – Off Street Parking Part 2: Commercial Vehicles*;
  (E) provides for the largest service vehicles expected to visit the site (except where these vehicles are only occasionally expected to visit the site); and
  (F) complies with the design criteria identified in **Table SC6.17O (Service vehicles)** for the operational requirements of different types of service vehicles;

Table SC6.17L Site access/driveways

Element	Requirement

General	• Safe, legible and convenient.
	• Facilitate easy ingress and egress for all users.
	• Provide for vehicles to enter and leave in a forward motion.
	• Consider needs of pedestrians and cyclists first to minimise potential conflict between pedestrians, cyclists and vehicles.
	• Comply with (except where modified within this policy):-
	  o Council's Standard Drawings for access construction across road verges;
	  o *DTMR Road Planning and Design Manual*;
	  o *Austroads Guide to Road Design*;
	  o MUTCD for direction, regulation, warning and information signage and line marking.

Location, width and design	• Appropriate for design traffic volumes and vehicle types that will use the site. • Only one access/driveway, unless a major development and additional are necessary to meet the purpose of the code. • Separate access for heavy vehicles, where appropriate and it will provide safer traffic operations or reduced impact on the external road network. • Limited to the normal frontage of the site (including splays at the kerb line), unless shared (i.e. do not splay across adjoining properties). • Where there is more than one frontage, from the lowest order transport corridor to which the site has frontage, except where traffic generated would adversely impact amenity or safety. • Located and sized to maximise on-street parking opportunities. • Adequate to accommodate the driveway, turn lanes and/or pavement widening on the intersecting road (where permitted) for safe movement of turning traffic, passing bays, pedestrian and vehicle movements and facilities, service corridors, stormwater drainage, earthworks, retaining walls, landscaping, verges and clearances. • If straight, ≥ 3 metres wide, with separate provision for pedestrians if necessary. • If curved, width determined by the turning paths of 99th percentile vehicles. • Configured as roadway approaches to traffic signal, roundabout or priority controlled intersections in special industrial circumstances.

<table>
<tr><th>Element</th><th>Requirement</th></tr>
<tr><td></td><td>• Truncate adjoining lots if necessary for safe and convenient access.</td></tr>
<tr><td>Construction</td><td>• Non-slip surface.
• Concrete if industrial.
• Construct accesses/driveways:-
o on lots with steep slopes to building sites;
o on lots with frontages with visibility constraints;
o in conjunction with subdivisional works if the development creates allotments where accesses/driveways will be restricted to specific locations;
o along the full length of the access strip or easement in conjunction with subdivisional works if the development creates an allotment which will access the public road network via an access strip or easement.
• Reinstate any damaged infrastructure to previous standard and make good the area for the safe passage of pedestrians.</td></tr>
<tr><td>Sight distances</td><td>• Comply with the DTMR Road Planning and Design Manual.
• Tapered set-backs to buildings and/or landscaping from the property boundary.
• ≥ 2 metres from openings in buildings if there is no set back to the buildings.
• Reduced only if there is no practical alternative, and specific traffic design and/or control measures are used to minimise potential hazards (e.g. left-in / left-out).
• Increase if significant truck volumes, likely to require longer gaps in traffic to complete turning, crossing and merging manoeuvres.</td></tr>
<tr><td>District collector streets and all roads</td><td>• Left turns to and from driveways only.
• Right or left turns may require turn lanes and medians or reserve widening to ameliorate increased traffic volumes.
• Council may close any median break at any time.</td></tr>
<tr><td>Separation - minor development</td><td>
<table>
<tr><th>Type of frontage</th><th>Adjacent feature</th><th>Minimum separation along kerb (measured tangent point to tangent point of curve at intersection or other driveway closest to proposed minor driveway)</th></tr>
<tr><td rowspan="4">Street</td><td>Minor intersection</td><td>10 metres</td></tr>
<tr><td>Major intersection
(traffic signals, roundabout, median break, or priority-controlled intersection)</td><td>20 metres</td></tr>
<tr><td>Other driveway
(on same side only)</td><td>3 metres between extent of splays</td></tr>
<tr><td>Controlled intersection</td><td>Clear of 95th percentile queue areas and turn lanes</td></tr>
<tr><td rowspan="5">Road (including district, district main and industrial collector streets)</td><td>Minor intersection</td><td>20 metres</td></tr>
<tr><td>Major intersection</td><td>30 metres</td></tr>
<tr><td>Median break</td><td>15 metres (or twice one-way carriageway width, whichever is greater)</td></tr>
<tr><td>Other driveway
(on both sides of undivided carriageways)</td><td>15 metres
(may be permitted to be reduced to 3 metres between driveways for dwellings)</td></tr>
<tr><td>Controlled intersection</td><td>Clear of 95th percentile queue areas, turn lanes and approach tapers</td></tr>
</table>
</td></tr>
<tr><td>Major development</td><td>
<table>
<tr><th>Zone / development</th><th>Min. access width (m)</th><th>Min. driveway width (m)</th><th>Passing bay</th><th>Max. grade (%)</th><th>Seal</th><th>Stormwater drainage</th></tr>
<tr><td>Low density residential</td><td>6</td><td>3</td><td>Yes</td><td>20</td><td>bitumen</td><td>39% AEP (Q2) underground</td></tr>
<tr><td>Low density residential
(1 lot only)</td><td>5</td><td>2.5</td><td>5m
No</td><td>20</td><td>concrete</td><td>39% AEP (Q2) underground</td></tr>
<tr><td>Commercial and industry</td><td>8</td><td>6</td><td>N/A</td><td>8</td><td>concrete</td><td>10% AEP underground</td></tr>
<tr><td>Rural residential</td><td>10</td><td>3 on a 5 formation</td><td>5.5 on a 7.5 formation</td><td>20</td><td>sealed as per Council's standard drawings</td><td>39% AEP (Q2) culverts and table drains</td></tr>
</table>
</td></tr>
</table>

Schedule 6

Table SC6.17M Queue provisions

<table>
<tr><th>Element</th><th colspan="2">Requirement</th></tr>
<tr><td>Minimum for any driveway</td><td colspan="2">• Provide for at least one vehicle at entry and exit, measured along the driveway, from the property boundary to the first parking space or internal intersection.
• Comply with MUTCD for direction, regulatory, warning and information signage and line marking.</td></tr>
<tr><td>Design length</td><td colspan="2">• Minimum 6 metre long space for each vehicle.
• Consider:-
o form of control at the driveway/intersection;
o the external road and traffic volumes carried;
o size of the car park and turnover rate; and
o design of the internal traffic and parking system.
• Calculate using conventional intersection analysis techniques, for peak design period 95th percentile queue.
• Where there is more than one access, calculate on the proportion of the site served by each access.
• In the absence of appropriate calculations, the following applies:</td></tr>
<tr><td></td><td>Nominal Car Park Capacity</td><td>Design Queue Length</td></tr>
<tr><td></td><td>5-20</td><td>1</td></tr>
<tr><td></td><td>21-50</td><td>2</td></tr>
<tr><td></td><td>51-100</td><td>3</td></tr>
<tr><td></td><td>101-150</td><td>4</td></tr>
<tr><td></td><td>151-200</td><td>5</td></tr>
<tr><td></td><td>201-250</td><td>6</td></tr>
<tr><td></td><td>251-300</td><td>7</td></tr>
<tr><td></td><td>Over 300</td><td>2.25% of nominal capacity (rounded up)</td></tr>
<tr><td>Controlled access (including gates)</td><td colspan="2">• Accommodate queue between the property boundary and the gate.
• Provide for a light vehicle to turn on the site if declined entry.</td></tr>
<tr><td>Controlled car parks</td><td colspan="2">• Calculate on the estimated peak entry and exit rates and control facility capacity.
• Accommodate queue at all ticket spitters, card readers and pay booths.
• Separate provisions at entrances and exits, both inside and outside the control facility.</td></tr>
<tr><td>Drive-through facilities fast-food (10 vehicles) and bottle shops (12 vehicles)</td><td colspan="2">• Separate internal queue provisions.
• Calculate on the peak period 95th percentile queues.
• If a fast food outlet, provide short term parking of one or two vehicles diverted from the queue while orders are prepared.</td></tr>
</table>

SC6.17.8 Advice for achieving parking requirement outcomes

The following is advice for achieving Acceptable Outcome AO14.2 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development only)** in the **Transport and parking code** relating to on-site parking for motorcycle and scooter outcomes:-

(a) motorcycle and scooter parking should comply with:-

(i) **Table SC6.17N (Motorcycle and scooter parking)**; and

(ii) Council's Standard Drawing for scooter parking.

Table SC6.17N Motorcycle and scooter parking

Element	Requirement
General	• Accessible and located convenient to entrances to the premises. • Interact positively with the streetscape. • Capable of being shared by multiple uses, either because of variation in demand over time or efficiencies gained from the consolidation of shared facilities. • Relatively flat, non-slip surface. • Ramp or driveway to access any raised parking area.

Element	Requirement
	• Measures to prevent cars hitting motorbikes (if necessary). • Minimises potential conflict between motorcycles/scooters and pedestrians, cyclists and other vehicles.
Size	• Generally 1.5 metres wide, dependant on the angle of the space. • Comply with *AS2890 – Parking Facilities*.
Safety and security	• Highly visible, in areas with passive surveillance for security.
Signage	• Easily identifiable by riders. • Signed in accordance with MUTCD (directional and at the space).
Lighting	• Comply with *AS1158* for lighting.

SC6.17.9 Advice for achieving service vehicle requirements outcomes

The following is advice for achieving Acceptable Outcome AO6.2 and AO7.2 of **Table 9.4.8.3.1 (Requirements for accepted development and performance outcomes and acceptable outcomes for assessable development)** in the **Transport and parking code** relating to service vehicle requirements outcomes:-

(a) service vehicle access, internal circulation and manoeuvring, loading and unloading, refuse collection facilities and parking areas should:-

(i) be safe and functional;

(ii) minimise potential conflict between pedestrians/cyclists and vehicles;

(iii) discourage high speeds;

(iv) provide for the largest service vehicles expected to visit the site (except where these vehicles are only occasionally expected to visit the site);

(b) comply with:-

(i) **Table SC6.17O (Service vehicles)**;

(ii) *AS2890.2 - Off-street commercial vehicle facilities*;

(iii) Austroads design guides;

(iv) vehicle-specific turning templates or computer generated templates consistent with the parameters set in *AS2890.2*; and

(v) **Figure SC6.17B (Standard turning path templates for Vans and WCVs)**;

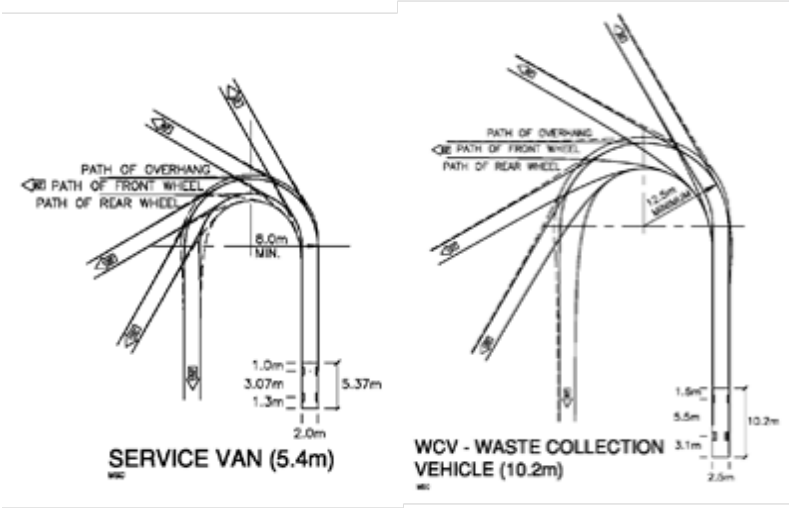
Table SC6.17O Service vehicles

Element	Requirement
General	• Locate service areas:- o where they will not dominate the streetscape; o conveniently close to service entrances (or other building entrances); o where they will not unduly intrude upon pedestrian use of pathways, e.g. at rear lanes, below ground level or through shared driveways; o separate from parking areas; and o clear of queue areas and where safety could be compromised. • Provide for:- o sufficient area for manoeuvres in and out of service vehicle parking spaces, including when adjacent service vehicle spaces are occupied; o a maximum of one reversing manoeuvre to enter or leave the space; o AV's to reverse anti-clockwise into docks to maximise driver vision; and o wider bays if vehicles (other than AV's) must reverse clockwise.
Waste collection	• Maintain access by vehicles to refuse bins or compactors at all times. • Provide evidence (e.g. a complete copy of any waste collection contract) for:- o specific waste collection hours if access is to be obtained through other service vehicle spaces; and o specific vehicle sizes and heights if proposing dimensions less than a standard WCV.

<table>
<tr><th>Element</th><th colspan="8">Requirement</th></tr>
<tr><td></td><td colspan="8">• Provide for a road tanker collecting industrial or commercial liquid waste to stand fully on the site and comply with other access design requirements.</td></tr>
<tr><td rowspan="11">Service vehicle specifications</td><td colspan="2">Element</td><td>Van</td><td>SRV</td><td>MRV</td><td>HRV</td><td>WCV</td><td>Coach</td><td>AV</td></tr>
<tr><td colspan="2">Size (m)</td><td>5.4x2</td><td>6.4x2.3</td><td>8.3x2.5</td><td>12.5x2.5</td><td>10.2x2.5</td><td>12.5x2.5</td><td>19x2.5</td></tr>
<tr><td colspan="2">Service bay (m) *does not include bin or compactor area</td><td>5.4x3</td><td>7x3.5</td><td>9x3.5</td><td>13x3.5</td><td>10.5x2.5*</td><td>13x3.5</td><td>19.5x4.5</td></tr>
<tr><td colspan="2">Clear height (m) to be maintained throughout changes in grade</td><td>2.3</td><td>3.5</td><td>4.5</td><td>4.5</td><td>4.5</td><td>4.5</td><td>4.5</td></tr>
<tr><td colspan="8">4.8 for animal transportation vehicles
6.5 where access to the top of a tall vehicle or load is required</td></tr>
<tr><td colspan="2">Loading dock height (m) indicative only</td><td></td><td>0.7-0.9</td><td>0.9-1.1</td><td>1.1-1.4</td><td></td><td></td><td>1.1-1.4</td></tr>
<tr><td colspan="2">Max gradient manoeuvre areas (%) measured along the inside of a curve</td><td>12</td><td>12</td><td>8</td><td>8</td><td>5</td><td>5</td><td>4</td></tr>
<tr><td rowspan="2">Min access road width (m)</td><td>one way</td><td colspan="4" rowspan="2">refer to AS2890.2 (Table 3.1)</td><td>5</td><td></td><td rowspan="2">refer to AS2890.2 (Table 3.1)</td></tr>
<tr><td>two way</td><td>7</td><td></td></tr>
<tr><td colspan="2">Max gradient access route (%) measured along the inside of a curve</td><td>16.7</td><td>16.7</td><td>15.4</td><td>15.4</td><td>15.4</td><td>15.4</td><td>15.4</td></tr>
<tr><td colspan="8">12.5 where reverse manoeuvres are permitted on the access route</td></tr>
<tr><td colspan="2">Max gradient queue area (%)</td><td>10</td><td>10</td><td>8</td><td>8</td><td>5</td><td>5</td><td>4</td></tr>
<tr><td>Fuel deliveries</td><td colspan="8">• Comply with:-
o AS1940; and
o Council's Local Laws;
• Fuel is assumed to be delivered in a HRV, with appropriate access design.
• The vehicle may stand in a suitable circulation road, aisle or forecourt area subject to the frequency and out of hours occurrence of deliveries.</td></tr>
</table>

Notes—
1. Operating clear heights for WCV – front load 6.1m, side load 6.7m, rear (roll-off) 7.1m.
2. 6.5m clearance where access to the top of a tall vehicle e.g. pantechnicon, or load is required.

Figure SC6.17B Standard turning path templates for Vans and WCVs



(c) compliance with Acceptable Outcome AO15.2 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** of the **Transport and parking code** may be demonstrated by providing bus parking that complies with:-

(i) allow buses to manoeuvre in a forward direction only;

(ii) comply with *AS2890 – Parking facilities*; and

(iii) comply with any state government requirements.

SC6.17.10 Advice for achieving transport corridor widths, pavement, servicing and verges outcomes

The following is advice for achieving Acceptable Outcomes AO20, AO21, AO22.1, AO22.2, AO23 and AO24 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** in the **Transport and parking code** relating to transport corridor widths, pavement, surfacing and verges outcomes:-

(a) the design and construction of external street and road works, transport corridors, street and road pavements, pavement edging, street and road drainage and verges should comply with:-

(i) current and future transport corridors shown on **Figure 9.4.8A (2031 Functional Transport Hierarchy)** of the **Transport and parking code**;

(ii) current and future pedestrian and cyclists network shown on **Figures 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** and **Figure 9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))** of the **Transport and parking code**;

(iii) current and future public transport corridors shown on **Figures 9.4.8C (2031 Strategic Network of Public Transport Links)** of the **Transport and parking code**;

(iv) other parts of this planning scheme policy and in particular, Section **SC6.17.3 (General advice about achieving transport and parking code outcomes)** and **Section 6.17.4 (Advice for achieving transport network outcomes)**;

(v) **Table SC6.17B (Urban transport corridors)**;

(vi) **Table SC6.17C (Rural transport corridors)**;

(vii) **Table SC6.17D (Industrial transport corridors)**;

(viii) **Appendix SC6.17A (Typical street and road cross sections)**;

(ix) **Appendix SC6.17B (Active transport infrastructure guidelines standard treatments)**;

(x) **Table SC6.17H (Pathways and cycleways)**;

(xi) **Table SC6.17P (Street and road works)**; and

(xii) requirements of DTMR, where access is proposed onto a State Controlled Road, or where the proposed development is likely to have significant impact on a State Controlled Road.

Table SC6.17P Street and road works

Element	Requirements
General	• If an existing street or road:- o circumstances are not created or exacerbated where the function differs from that intended, due to the staged nature of transport network and urban development; o works are required on it, or to extend it, the existing reserve width is matched if it is greater than specified within this policy; and o the speed environment is higher than the design speed identified in this policy, the design speed is determined by a higher order street or road type with a similar design speed. • Roads and streets are not to be constructed of pavers or pebbles due to noise and instability and slip hazard.
Sight distances	• Comply with: o DTMR design guides; o Austroads design guides; and o on access places, access streets and neighbourhood collector streets achieve the minimum sight distance required for the drivers of two opposing vehicles to see each other and stop in sufficient time to avoid a collision, equivalent to twice the stopping distance , as these streets operate on a “single moving lane” concept.
Frontage works on roads	• Where an existing sealed frontage is to be widened to meet ultimate design width and profile, re-construct the existing pavement at least to the carriageway centreline.

Element	Requirements
Access places	• Use circular heads unless Y or T heads are approved by Council. • End point visible from the access place entrance. • Provide a 'parking island' in or adjacent to the head if kerbside parking is unavailable. • Downhill access places are only acceptable if adjoining a park, pathway or drainage reserve and piped drainage is provided at the access place head for the minor system drainage in accordance with Council standards. • Comply with:- o Austroads design guides for turning areas at heads; o turning requirements of waste collection vehicles. • In residential areas:- o 20 metre minimum approach curve radius; o 9 metre turning circle radius. • In industrial and commercial areas:- o 30 metre minimum approach curve radius; o 12.5 metre turning circle radius.
On-street car parking	• On streets and roads with pedestrian and vehicular access to properties. • In addition to off-street parking in the **Transport and parking code**:- o 2 spaces per 3 dwelling houses plus one space per 3 or 4 bedroom attached dwellings, plus one space per four 1 or 2 bedroom attached dwellings; o 1 space per 2 dwelling houses on small lots (i.e. ≤ 300m^2). • On residential streets:- o at least 75% within 25 metres of the closest lot boundary they are to serve; o 100% within 40 metres of the closest lot boundary they are to serve. • Use "T"s and "L"s only to mark parallel parking where allowed. • "Pair" spaces in mixed use/main streets, to allow vehicles to park in a forward motion. • May be consolidated (e.g. on one side of the street). • Provide passing opportunities at least every 50 metres on streets without formal parking provisions (i.e. access laneways, places and streets). • Parks, community facilities, medium and high density residential streets, access places and small lot locations may require additional parking, indented bays or other special provisions.
Water Sensitive Urban Design	• Provide appropriate verge width to accommodate the required design size devices. • Asymmetrical verge widths may be considered.
Kerb and channel	• Use barrier type kerb and channel for Arterial Roads, Sub-arterial Roads, District Streets and Industrial Streets. • Use mountable type kerb and channel for Neighbourhood Collector Streets and Local Streets. • Use semi-mountable kerb for medians.
Footpath dining	• Provide a clear width of 2 metres adjacent to the property boundary to allow passage of pedestrians and bicycles.
Indented bus stops	• Provide on bus routes, as required by the *Road Planning and Design Manual*, chapter 20, or the *Austroads Guide to Road Design*, parts 3 and 4. • Comply with clearances in *TransLink Public Transport Infrastructure Manual* (where not in conflict with the *Road Planning and Design Manual*, or the *Austroads Guide to Road Design*). • Can be accommodated by local widening of the road reserve, or a combination of cycle lane width and parking lane width. • The verge width adjacent to a bus stop is to also be widened to accommodate shelters and other bus stop infrastructure clear of pathways.
Street signage	• Estate and street signage should comply with MUTCD.

SC6.17.11 Advice for achieving intersections and traffic controls outcomes

The following is advice for achieving Acceptable Outcomes AO25.1 and AO25.2 of **Table 9.4.8.3.2 (Additional performance outcomes and acceptable outcomes for assessable development)** in the **Transport and parking code** relating to intersections and traffic controls:-

(a) intersections are designed and constructed to comply with:-

(i) **Table SC6.17B (Urban transport corridors)**;
(A) **Table SC6.17C (Rural transport corridors);**
(B) **Table SC6.17D (Industrial transport corridors)**;
(C) **Table SC6.17Q (Intersections)**;

(D) *DTMR Road Planning and Design Manual*;
(E) Austroads design guides if district collector street, sub-arterial, arterial or industrial road;
(F) *Complete Streets and Queensland Streets* if access place or street or neighbourhood collector street; and
(G) *Austroads Guide to Road Design* for the design turning vehicle and check turning vehicle.

Table SC6.17Q Intersections

Element	Requirements
General	• Facilitate safe and efficient traffic flows. • Provide for all movements by cyclists through intersections. • Threshold treatments constructed in stamped asphalt (or reinforced concrete if approved by Council), using a colour and texture to achieve high visibility for motorists (segmental paving will not be accepted). • Consistent approach to traffic priority at intersections. • Priority measures for public transport where required.
Grades	• Approach grades ≤ 3% over the required stopping sight distance. • Consider longitudinal grade in relation to potential instability of high vehicles turning through the intersection.
Channelisation	• Channelisation is required for all roads and may be required for some streets. • At major intersections, design channelisation to accommodate turning by a design semi-trailer with a clearance of not less than 0.6 metres between the wheel track and the kerb at all points. • Give particular attention to sight distance when commencing channelisation at horizontal and vertical curves.
Turning provisions	• Treatments necessary for intersection safety. • The check turning vehicle should not encroach on verges or landscaped medians. • Upgrade intersections (e.g. roundabouts or u-turn facilities at traffic signals) to accommodate increased u-turns where right turn movements are eliminated by central medians. • A turning area for service vehicles at the end of each road carriageway:- o to a standard consistent with the general road carriageway design; o to accommodate turning of vehicles reasonably expected to use the road; o to accommodate as a minimum, a 12.5 metre single unit truck; o is free draining.
Specific streets and roads	• If an access or neighbourhood collector street intersects with a district collector street or higher-order road, widen the side street carriageway and associated reserve on the intersection approach to allow a heavy rigid vehicle to enter the side street while a car is waiting to exit.
Priority T	• Access places, access streets and neighbourhood collector streets ≤ 50km/h and ≤ 3000 vehicles per day - no specific turn treatments. • District collector streets and roads - minimum separate right-turn lane. • All other roads - minimum turning treatments in accordance with the *DTMR Road Planning and Design Manual*. • A widened area (minimum 6 metres including the adjacent through lane and cycle lane) on the major road prior to the intersection to assist left-turn movement where a basic left-turn treatment (BAL) is used on urban streets and roads and there is no parking lane.
Signalised	• Layout, lane configuration and phasing for the most efficient operation for pedestrians, cyclists and vehicles during the entire day (including coordination with adjacent signals). • Only achieving a degree of saturation, delay or queue length during the design traffic peak hour at or below the maximum permissible is not acceptable. • Separate right turn lanes on approaches, regardless of traffic volumes or hierarchy. • Operation of signals is to be integrated into the traffic management system e.g. STREAMS.
Roundabout	• Outside diameter on urban streets:- o ≥ 26m, where the speed limit is ≤ 50km/h; o ≥ 30m where the speed limit is 60 km/h, or a bus route; and o a greater diameter may be required where adjacent legs are considerably more or less than 90 degrees, there are medians on some or all of the carriageways, or to accommodate larger vehicles. • The clear zone of a roundabout and its approaches should be free of roadside hazards such as retaining walls, rocks and boulders, trees and shrubs with an ultimate trunk diameter <80mm, and other non-frangible items.

Element	Requirements
	• Central island kerb SM3 type with decorative concrete backing strip compliant with Council's standard requirements for semi-mountable and mountable kerb (where practicable). • Kerbed splitter islands on all approaches:- o incorporating a "cut through" pedestrian refuge at least 1 car length (6 metres) from the holding line, with the opening at least 2 metres wide on urban neighbourhood collector and on all approaches to roundabouts on higher-order streets and roads; o minimum 2 metres wide at the refuge; o minimum 5m^2 on access streets and places. • Adjacent lane width minimum 4.2 metres on access places, access streets and neighbourhood collector streets, unless specific on-road cycle treatments required. • Where the centre island will contain landscaping, provide:- o a water source; o perimeter sub-soil drainage; o reinforced concrete backing strip, minimum 1 metre wide, around the perimeter of the island.

(b) speed management should comply with:-

(i) **Table SC6.17B (Urban transport corridors)**;

(ii) **Table SC6.17C (Rural transport corridors)**;

(iii) **Table SC6.17D (Industrial transport corridors)**; and

(iv) **Table SC6.17R (Speed management)**;

Table SC6.17R Speed management

Element	Requirement
General	• Vertical alignment of streets and roads with a design speed of < 50 km/hr, must achieve the stopping sight distance for a speed of 50 km/hr. • Manage speed with street alignment, with devices as a last resort. • Achieve the desired pedestrian and cyclist friendly, low speed environment (as defined in **Tables SC6.17B** to **SC6.17D**). • Techniques may include building setbacks, fence construction, street alignment, cross section elements, provision for cycles and on-street parking, sight distances to and from driveways and reducing reversing from driveways. • Design with tight bends (>60 degrees) and roundabouts at intersections. • Widen carriageways to allow two-way bus movement on bus routes and mixed use streets and around all bends to allow safe passing and operation of the occasional heavy vehicle. • Widen carriageways at tight bends and provide median islands to control vehicle paths. • Comply with:- o *DTMR Road Planning and Design Manual*; and o *Austroads Guide to Traffic Management* and the *MUTCD for Local Area Traffic Management* (LATM).
District collector streets	• Frontage management techniques to reduce potential amenity and safety impacts due to the higher speed environment. • Roundabouts or tight bends with angles >60 degrees;
Neighbourhood collector streets	• On bus routes, provide kerb build outs at regular intervals to narrow the effective width of the street and enhance landscaping opportunities.
Speed management devices	• Generally comply with MUTCD. • Not on bus routes unless designed to enable safe and comfortable bus movement, i.e. without mounting kerbs or swerving, or devices such as speed humps or chicanes that create spot speeds ≤25km/h. • Speed management techniques may include landscaping treatments such as street trees, landscape treatments and the like, where in compliance with the **Landscape Code** and **Planning scheme policy for development works**.
Traffic islands for LATM	• Consider location in respect to sight distance and vertical geometry. • Formed (not kerb mix) to an approved profile. • Constructed with reinforced N32 concrete or formed with full depth structural stamped/coloured concrete.

Element	Requirement
	• Colour treatment with a high level of contrast to the carriageway surface; • Appropriately delineated and linemarked.

SC6.17.12 Guidelines for achieving transport and parking code outcomes

(1) For the purposes of the performance outcomes and acceptable outcomes in the **Transport and parking code** the following are relevant guidelines:-

(a) Austroads publications, including:-

(i) *Cycling Aspects of Austroads Guides*;
(ii) *Design Vehicles and Turning Path Templates*;
(iii) *Guide to Pavement Technology*;
(iv) *Guide to Road Design*;
(v) *Guide to Road Safety*; and
(vi) *Guide to Traffic Management*;

(b) Queensland Department of Transport and Main Roads (DTMR) publications, including:-

(i) *A Guide to Signing Cycle Networks*;
(ii) *Cycle Notes*;
(iii) *Guidelines for Assessment of Road Impacts of Development Proposals*;
(iv) *Pavement Design Manual*;
(v) *Queensland Manual of Uniform Traffic Control Devices* (MUTCD);
(vi) *Road Drainage Manual*;
(vii) *Road Planning and Design Manual*; and
(viii) *Traffic and Road Use Management (TRUM) Manual*;

(c) *TransLink Transit Authority Public Transport Infrastructure Manual* (2012);

(d) *Queensland Urban Drainage Manual* (QUDM);

(e) South East Queensland (SEQ) Healthy Waterways Partnership Publications, including:-

(i) *Water Sensitive Urban Design (WUSD) Technical Design Guidelines for South East Queensland Construction*; and
(ii) *WSUD Deemed To Comply Solutions for SEQ*;

(f) Institute of Municipal/Public Works Engineering Australia Queensland Division (IPWEAQ) publications, including:-

(i) *Complete Streets: Guidelines for Urban Street Design*;
(ii) IPWEA SEQ Standard Drawings; and
(iii) *Queensland Streets: Design Guidelines for Subdivisional Streetworks*;

(g) New South Wales Roads and Traffic Authority (RTA) publications, including:-

(i) *Guide to Traffic Generating Developments*; and
(ii) *NSW Bicycle Guidelines*;

(h) *Highway Capacity Manual* (Transport Research Board);

(i) Australian Standards, including:-

(i) *AS2890 – Parking facilities*;
(ii) *AS1158 – Lighting for roads and public spaces*;
(iii) *AS1428 – Design for access and mobility*; and
(iv) *AS1100 – Technical drawing – general principles*;

(j) Council's Standard Specifications and Standard Drawings (available on Council's website);

(k) *Sunshine Coast Sustainable Transport Strategy 2011-2031*;

(l) *Energex Design Guide – Design of Rate 2 Public Lighting Installations*;

(m) *Next Generation Planning: A handbook for planners, designers and developers in South East Queensland* (Council of Mayors (SEQ));

(n) *Beyond the Pavement: Urban design policy, procedures and design principles* (Transport for NSW, 2009).

Note—the above list is not exhaustive and other available publications may be applicable to the design and construction of some infrastructure.

(2) Except where explicitly stated otherwise in this planning scheme policy, the following is the order of precedence in which the above guidelines are to be applied:-

(a) requirements contained in this planning scheme policy are to take precedence over all other guidelines;

(b) Council's Standard Specifications and Standard Drawings;

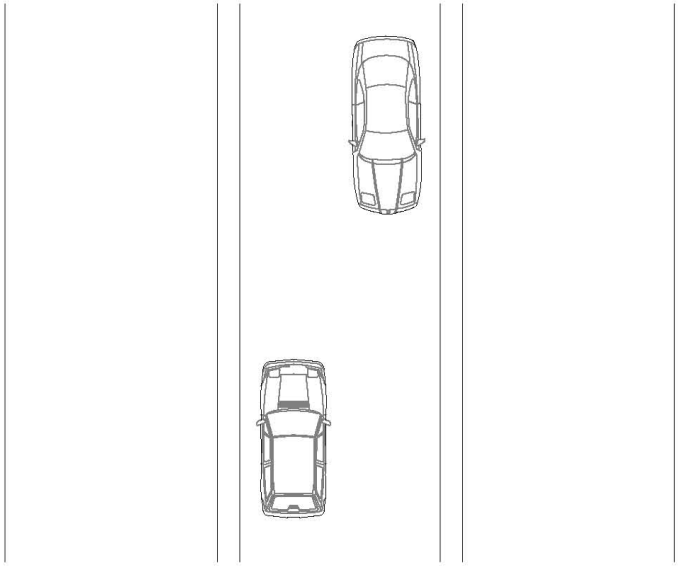
(c) the *DTMR Road Planning and Design Manual* is to take precedence over Austroads publications, except where advised otherwise by DTMR;

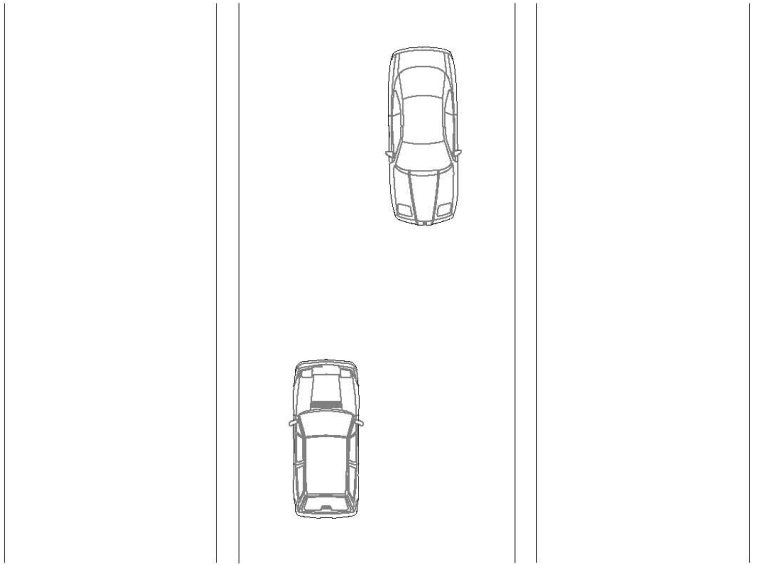
(d) the DTMR MUTCD is to take precedence over Austroads publications and Australian Standards;

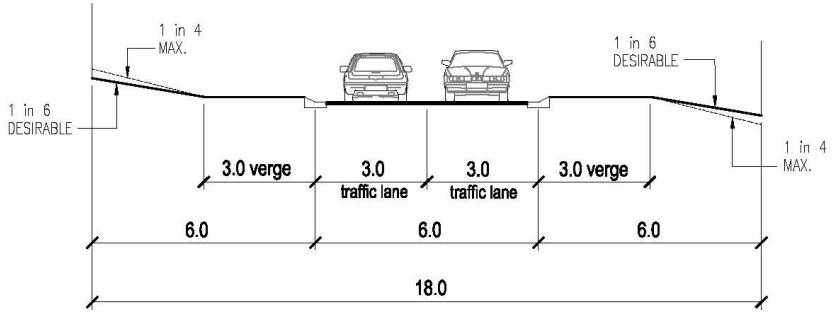
(e) Austroads publications are to take precedence over the Australian Standards with respect to the design of the street and road networks; and

(f) all other guidelines.

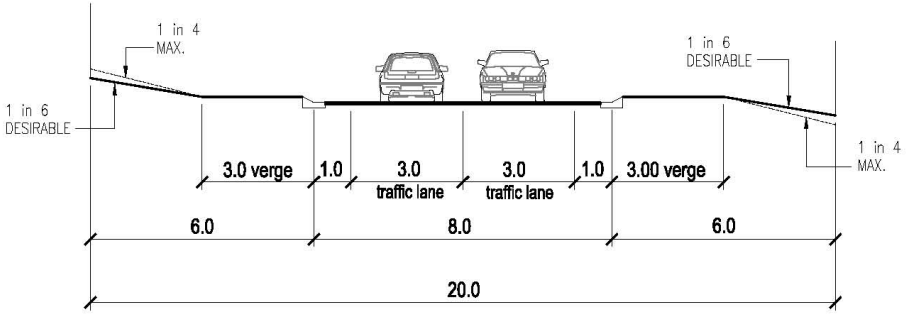
Appendix SC6.17A Typical street and road cross sections





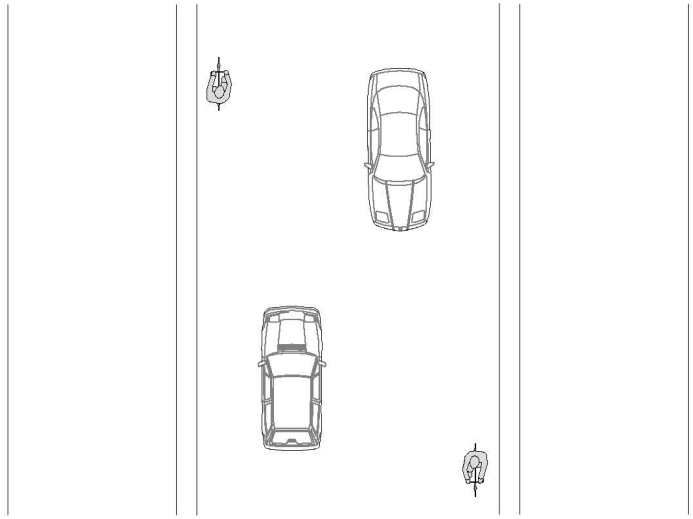


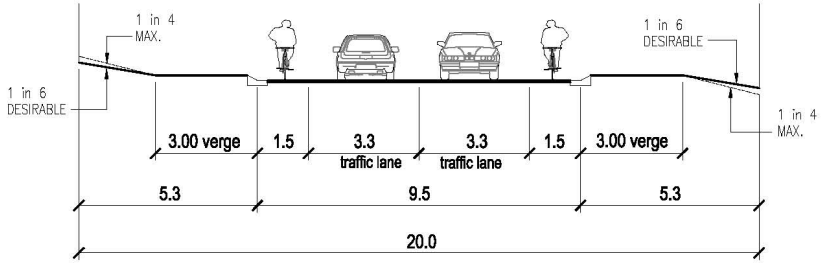
RURAL RESIDENTIAL ACCESS PLACE



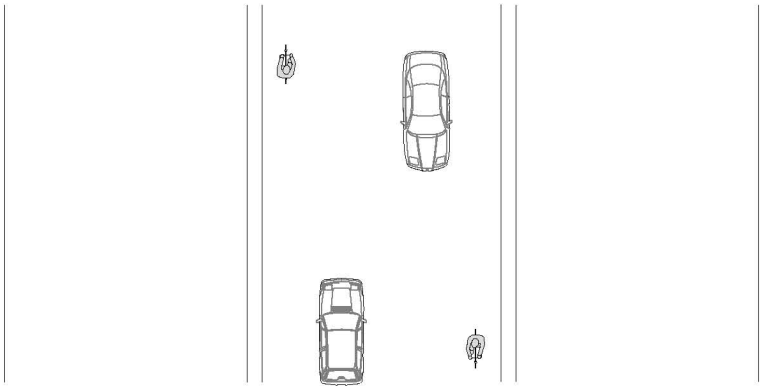
RURAL RESIDENTIAL ACCESS STREET

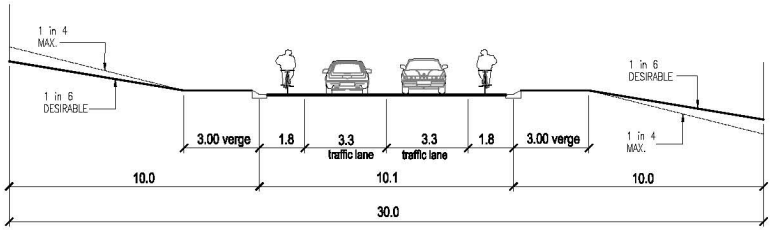
Schedule 6





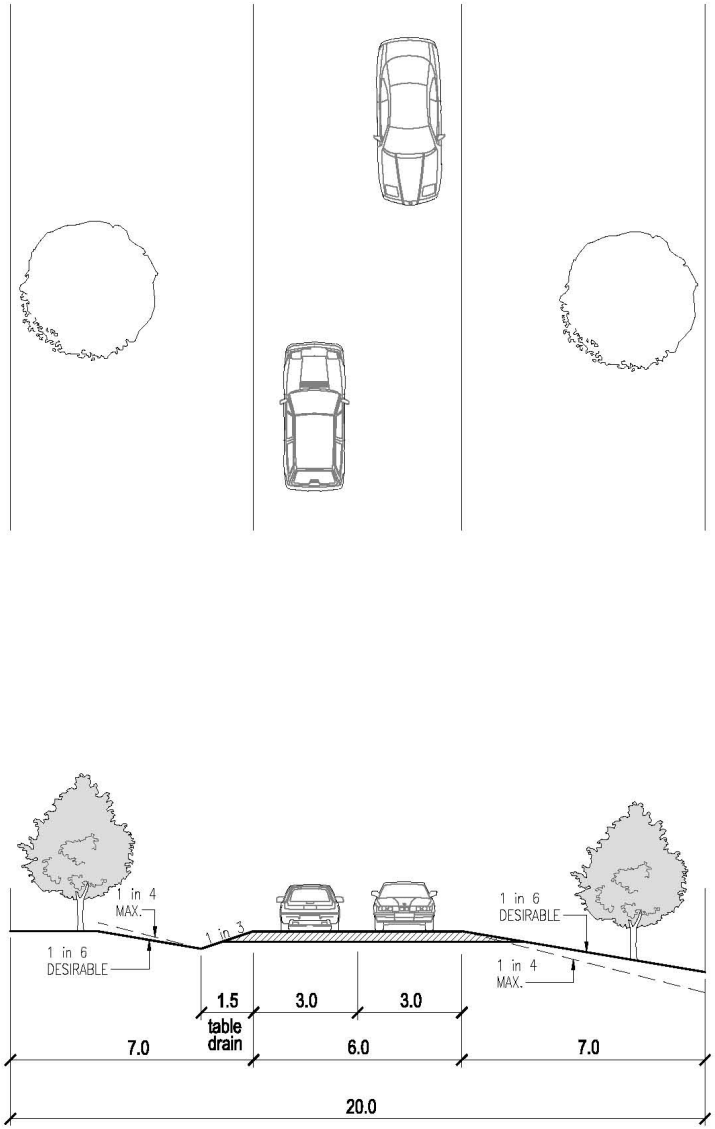
RURAL RESIDENTIAL
NEIGHBOURHOOD COLLECTOR STREET





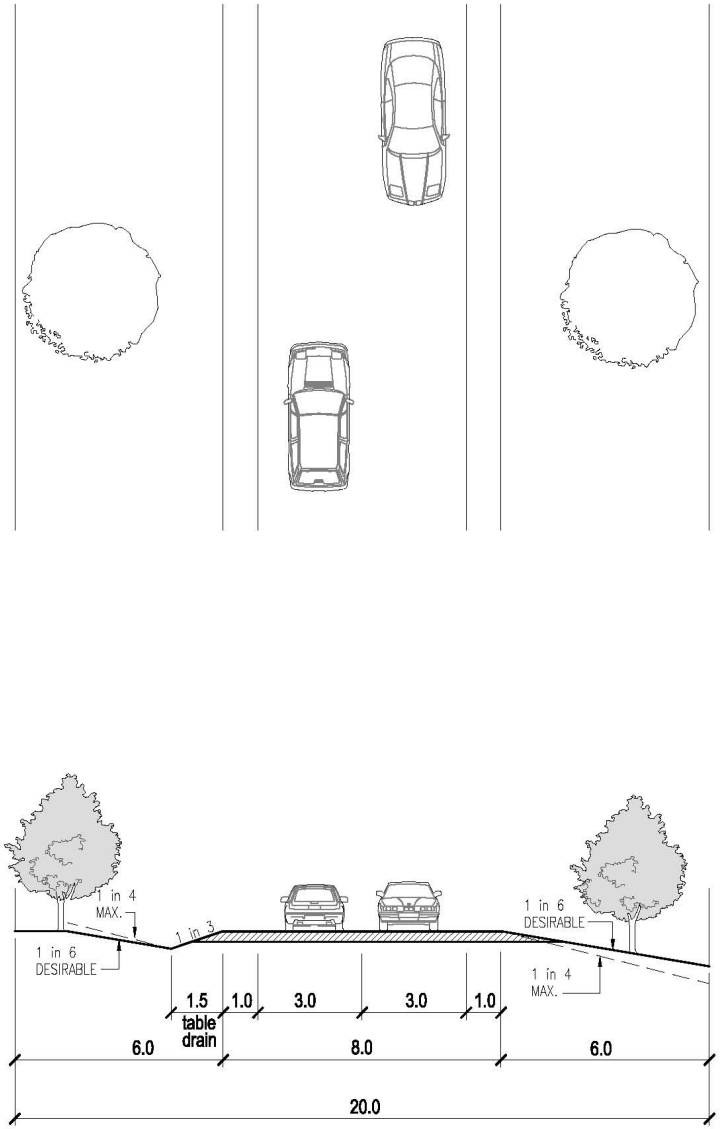
RURAL RESIDENTIAL
DISTRICT COLLECTOR STREET

Schedule 6



RURAL ACCESS PLACE

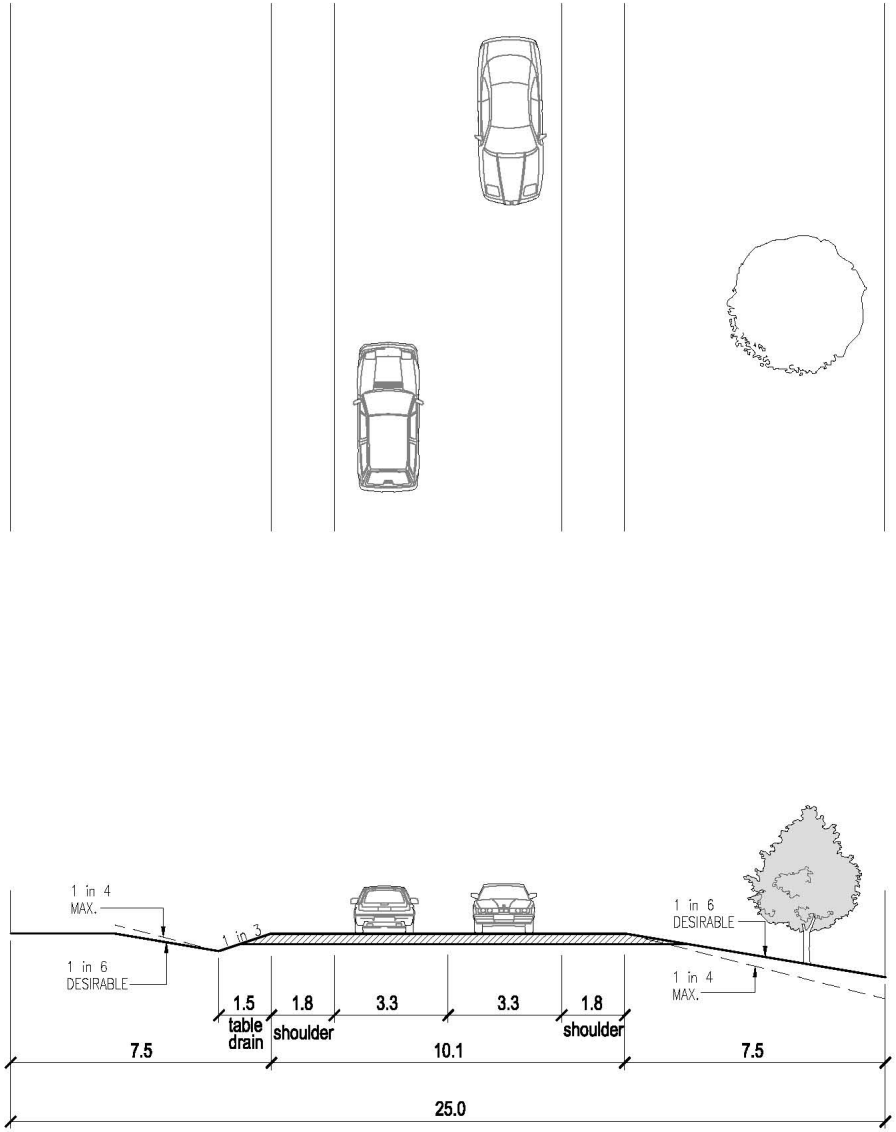
Note—
Table drain to have a depth of 0.50m or be 0.30m below bottom of pavement.



RURAL ACCESS STREET

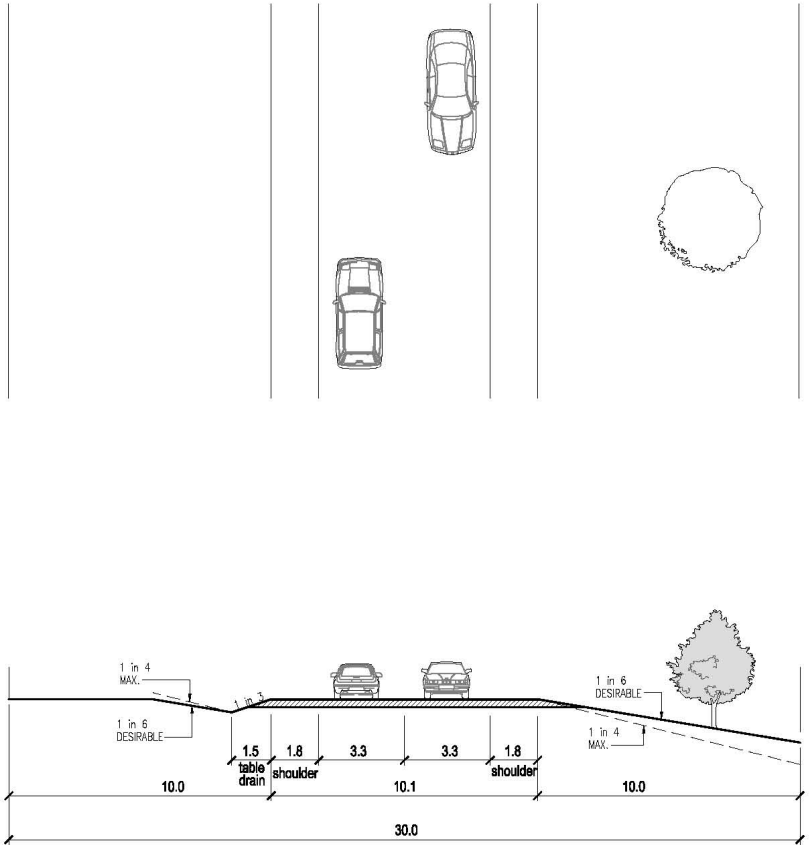
Note—
Table drain to have a depth of 0.50m or be 0.30m below bottom of pavement.

Schedule 6



RURAL NEIGHBOURHOOD COLLECTOR STREET

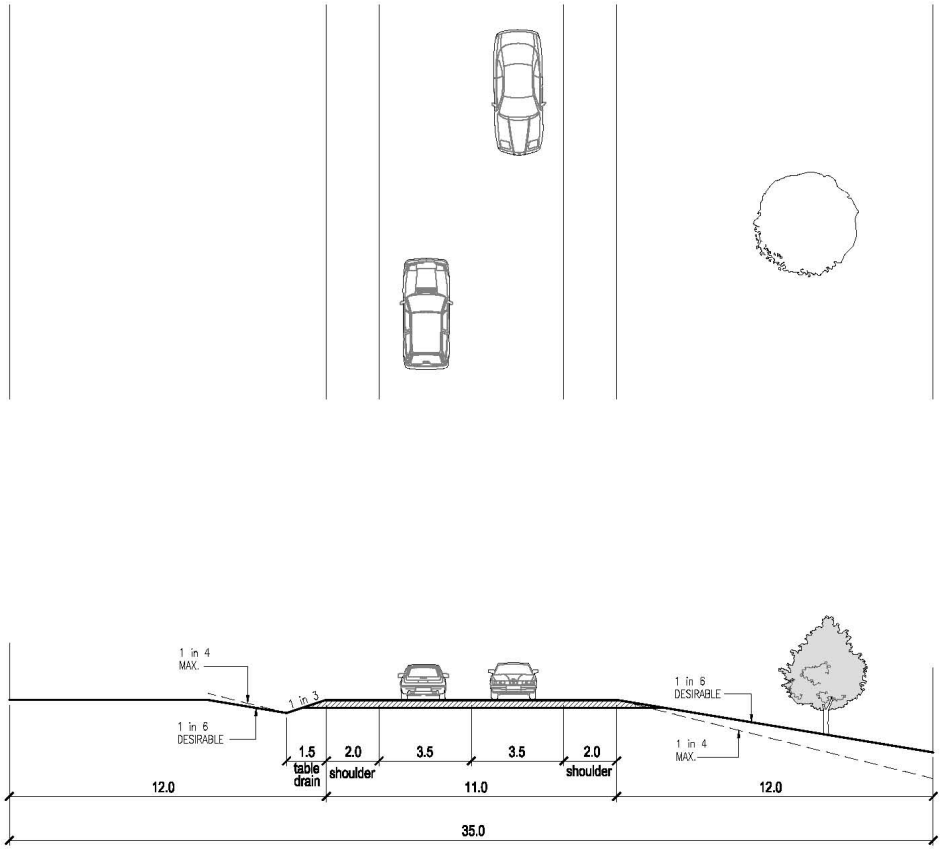
Note—
Table drain to have a depth of 0.50m or be 0.30m below bottom of pavement.



RURAL DISTRICT COLLECTOR STREET

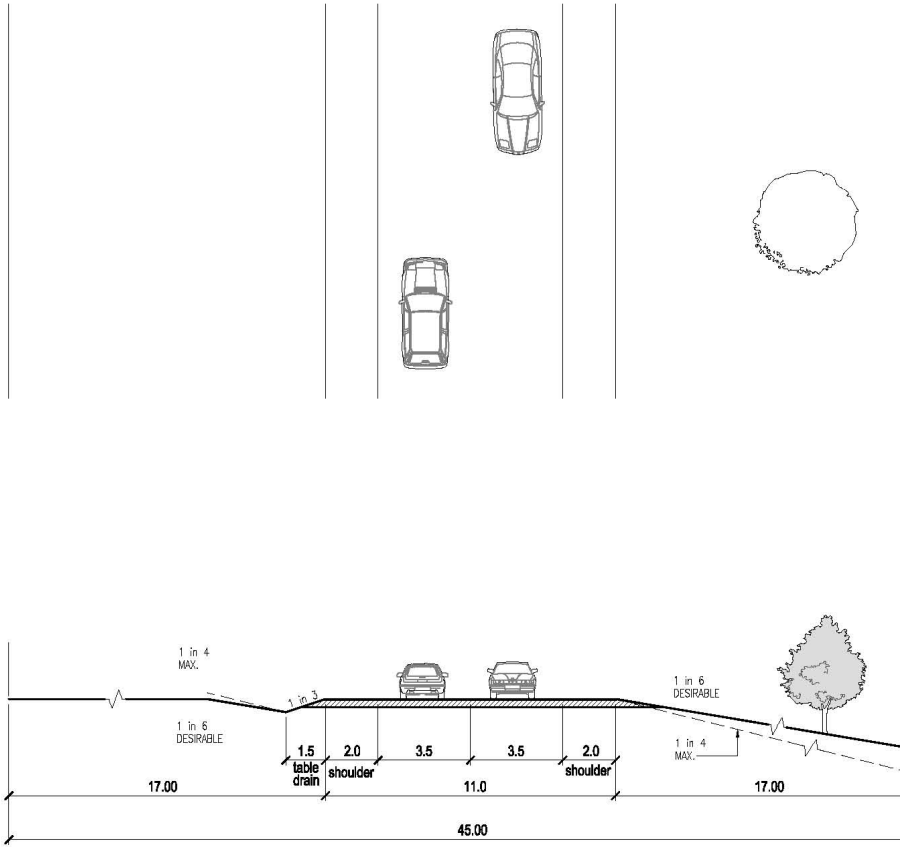
Note—
Table drain to have a depth of 0.50m or be 0.30m below bottom of pavement.

Schedule 6



RURAL CONTROLLED DISTRIBUTOR

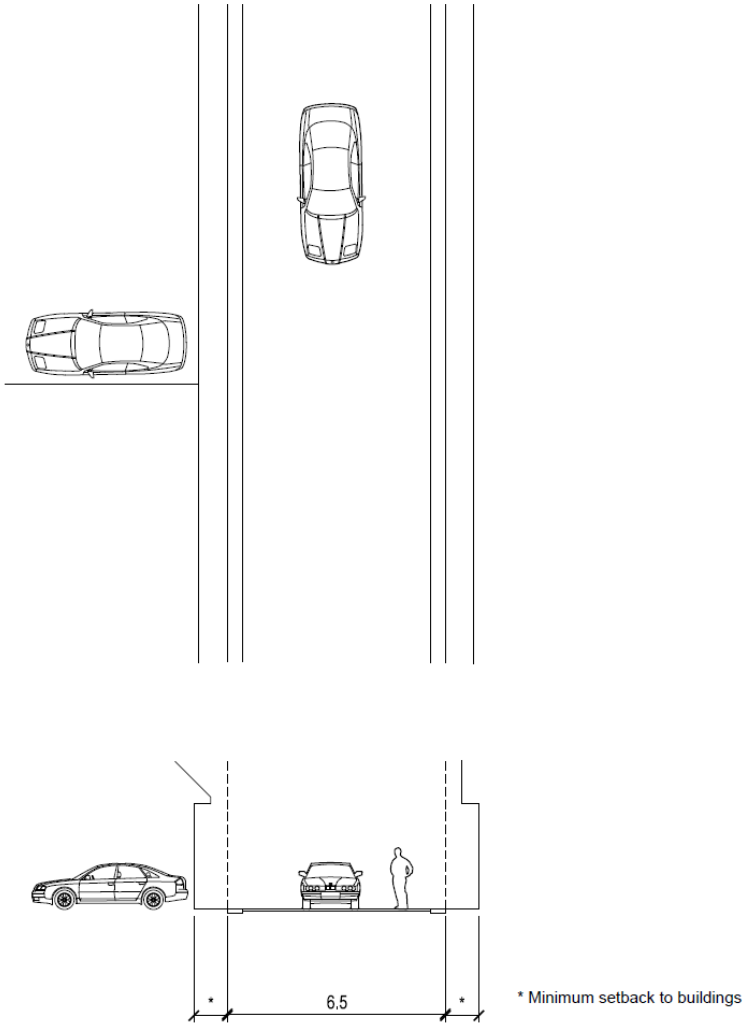
Note—
Table drain to have a depth of 0.50m or be 0.30m below bottom of pavement.



RURAL TRAFFIC DISTRIBUTOR

Note—
Table drain to have a depth of 0.50m or be 0.30m below bottom of pavement.

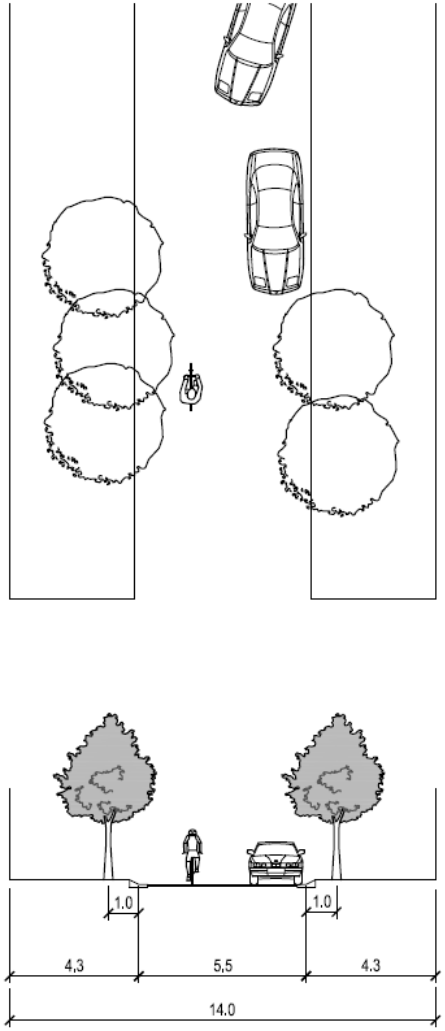
Schedule 6



ACCESS LANEWAY

Notes—

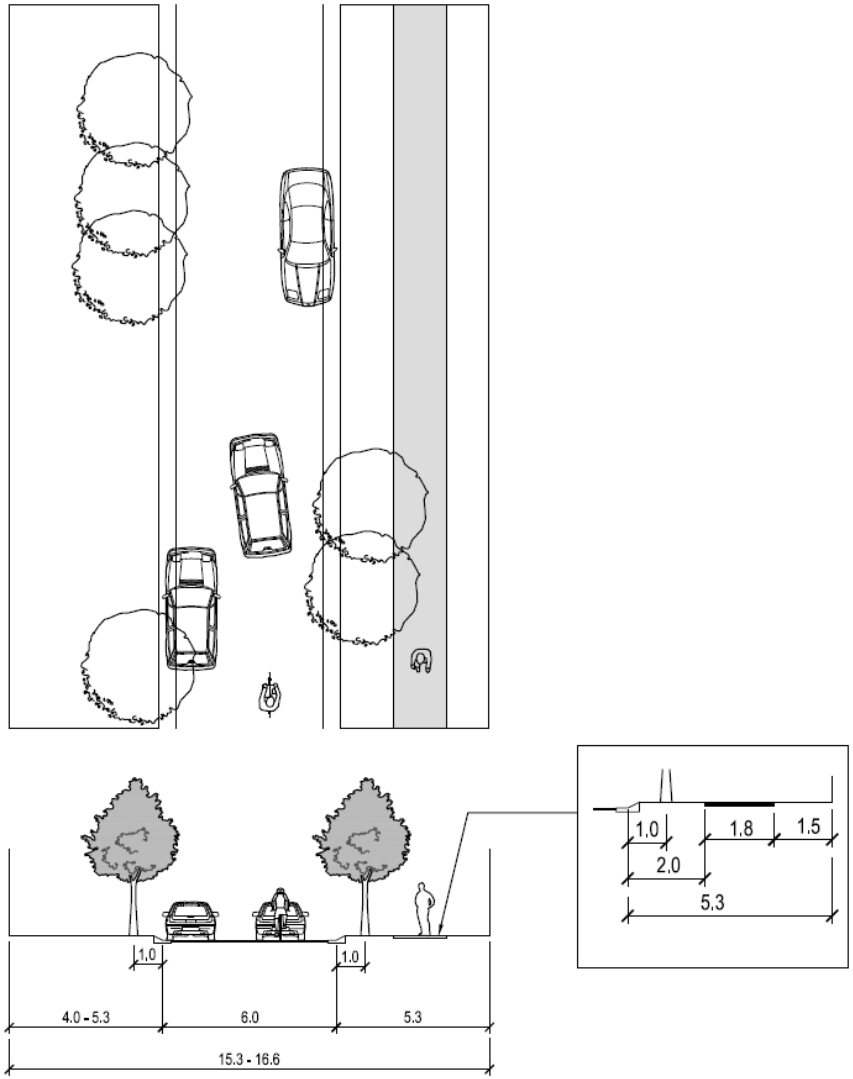
1. Access laneways provide access to properties; refuse collection and servicing with no parking within the laneway.
2. Pavements may be narrowed to 4 – 5m at lane entrances to improve sightlines to paths in adjacent streets.
3. Minimum rear setback of 1.0m to ground storey and 0.5m to first upper storey.



ACCESS PLACE

Notes—

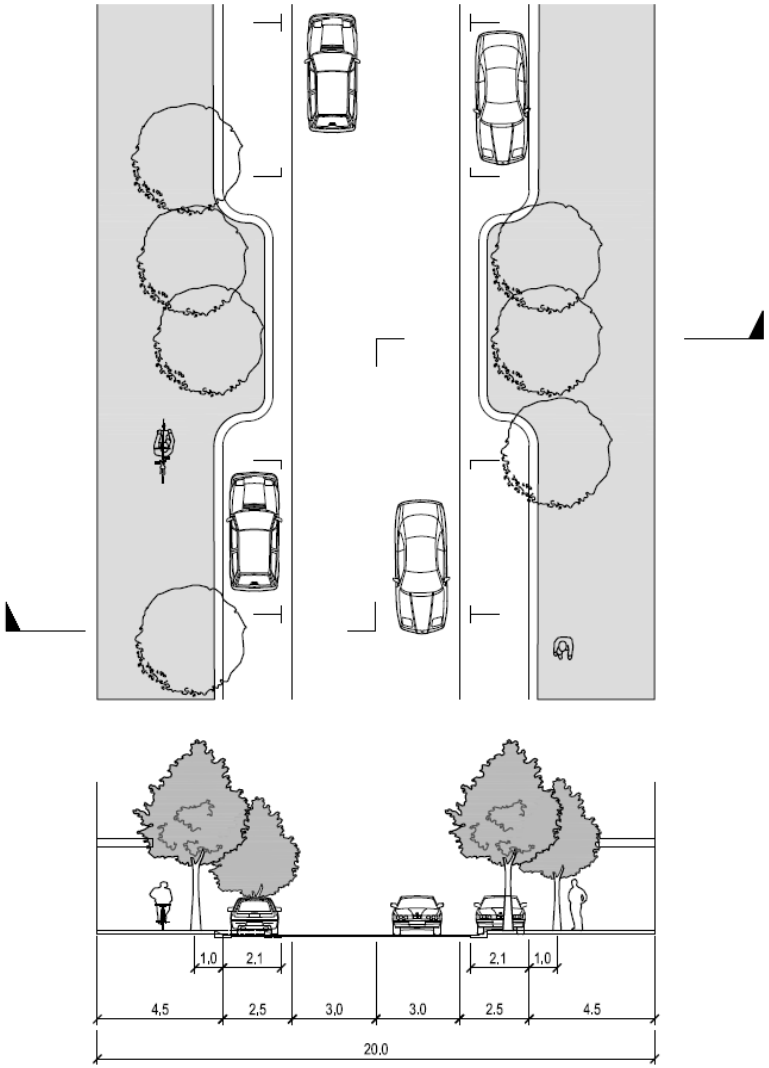
1. Pathway not required if speed environment is 30km/h or below unless part of a designated active transport route as shown on **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways**)) where local hierarchy pathway widths shall be a minimum of 2.5m and district or regional hierarchy pathways widths shall be a minimum 3.0m. These pathway widths will require adjustments to the cross section and widening of the verge.
2. On street parking one side only.



ACCESS STREET

Notes—

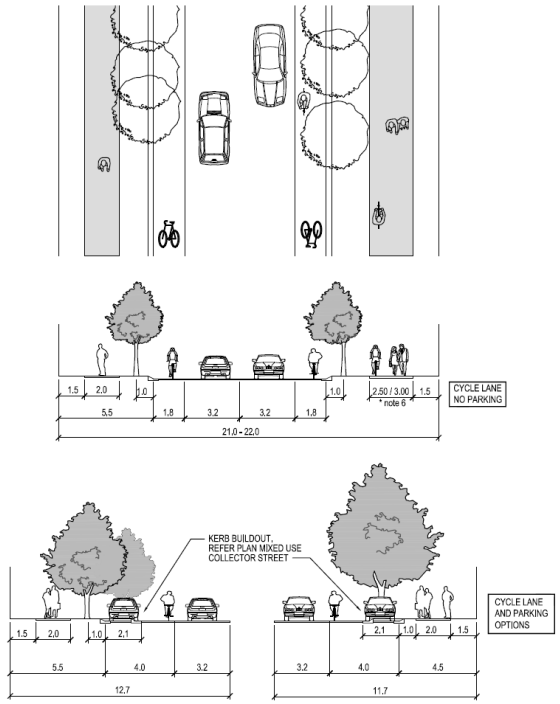
1. Pathway shall be a minimum width of 1.8m unless part of a designated route as shown on **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** where local hierarchy pathway width shall be a minimum 2.5m and district or regional hierarchy pathway width shall be a minimum 3.0m. The verge and overall cross section may require widening to suit. Asymmetric verge widths may be used.



MIXED USE ACCESS STREET

Note—

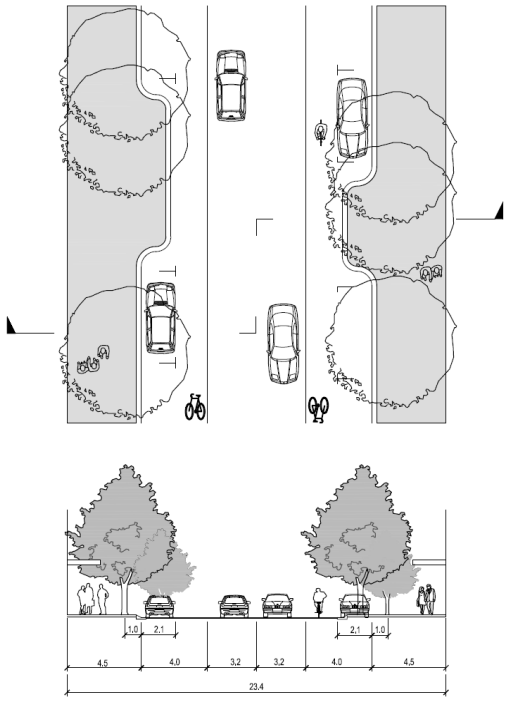
1. Verges to be paved full width on both sides of the street to allow for all weather use and concentrations of pedestrians and cyclists.



NEIGHBOURHOOD COLLECTOR STREET

Notes—

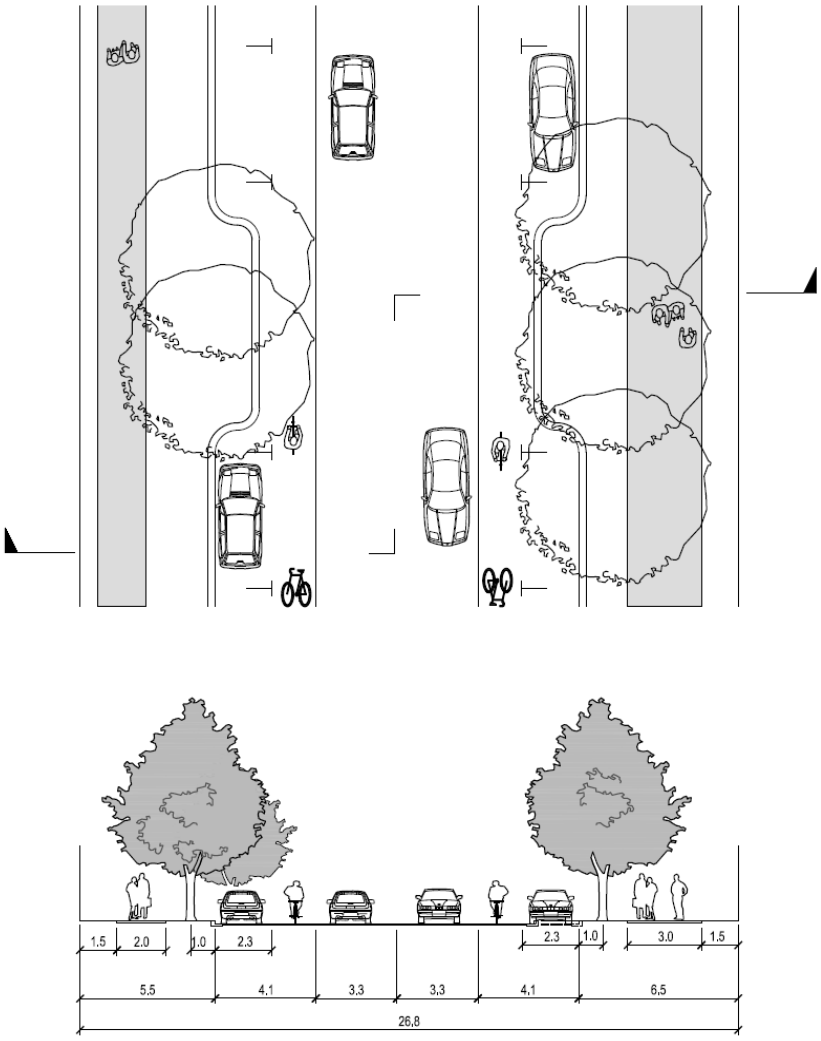
1. Multiple cross sections are available depending on the combination of features in the street including on-street parking, cycle lanes, street trees, a designated cycle route and indented bus stops as explained in the following notes.
2. Cycle lanes may not be required if the street is not part of a designated cycle route as shown on Figure **9.4.8B(ii) (2031 Strategic Network of Pedestrian and Cycle Links (On Road Cycleways))**.
3. Where parking is required, additional width is to be added to one or both sides of the cross section depending on parking demand determined by frontage activity.
4. Where Council and TransLink agree that there is no likelihood that a street will become a future bus route and the street is not part of a designated cycle route, the carriageway width can be reduced to a minimum 8.0m to cater for on-street parking on one side.
5. Indented bus stops, associated infrastructure and required pathways can be accommodated by using a combination of local street reserve widening, cycle lane width and parking lane width where provided and shall comply with, *Road Planning and Design Manual* or *Austroads Guide to Road Design*.
6. Indented bus stop tapers may contain driveways. However consider sight lines in the location of any streetscaping.
7. Pathways to be a minimum width of 2.0m unless part of a designated cycle route as shown on **Figure 9.4.8B(i) (2031 Strategic Network of Pedestrian and Cycle Links (Pathways))** where local hierarchy shared pathway width shall be a minimum of 2.5m and district or regional hierarchy shared pathway width shall be a minimum of 3.0m. Asymmetric verge widths may be used.
8. The wider shared pathway shall be located on the side that best serves the expected demand and network connections.



MIXED USE COLLECTOR STREET

Note—

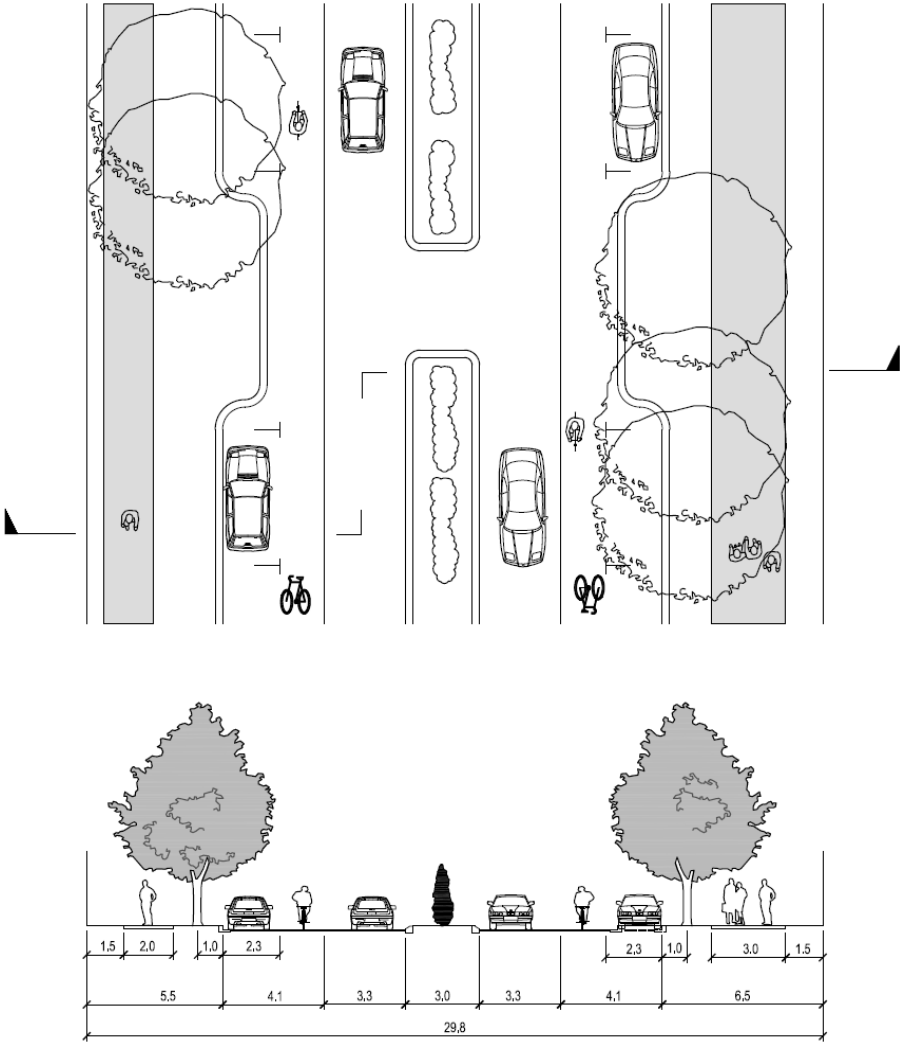
Verges to be paved full width on both sides of the street to allow for all weather use and concentrations of pedestrians and cyclists.



DISTRICT COLLECTOR STREET

Notes—

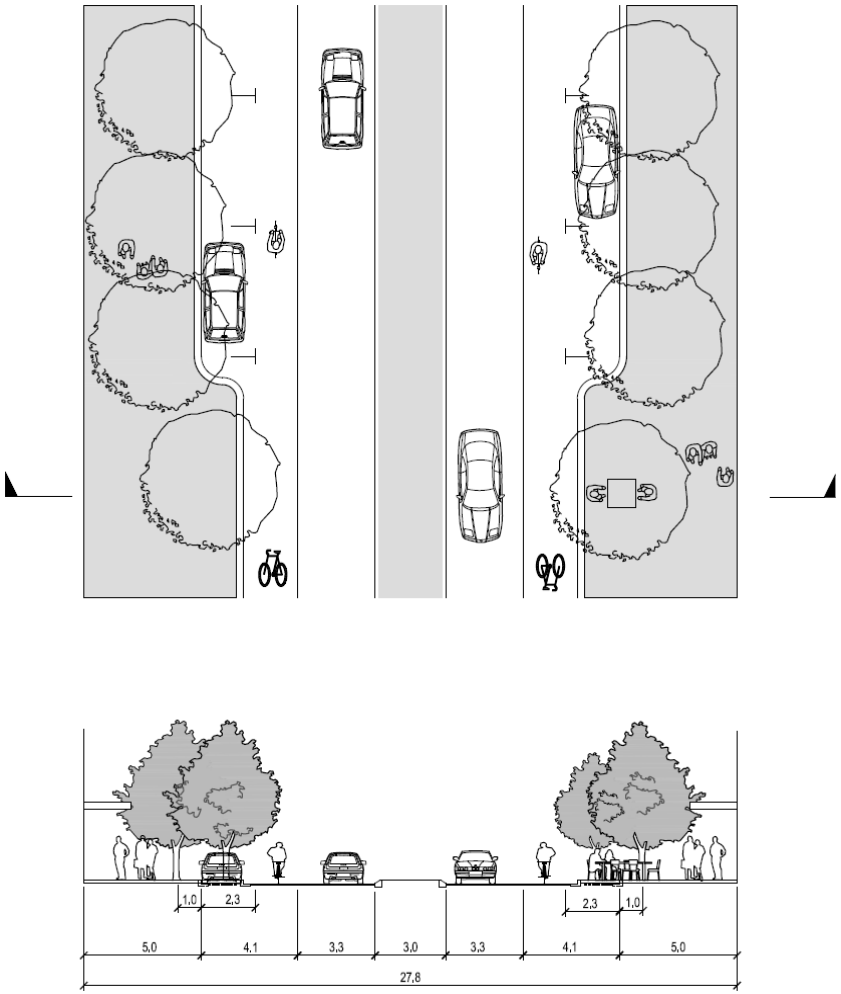
1. Pathways to be provided on both sides of the street with a minimum width 2.0m shared pathway on one verge and 3.0m on the opposite.
2. The wider shared pathway shall be located on the side that best serves the expected demand and network connections.
3. On bus routes, indented bus stops to be provided as required by the *Road Planning and Design Manual* or *Austroads Guide to Road Design*, Indented bus stops may require local widening of the reserve to provide clearances to required pathways. Asymmetric verge widths may be used.



DISTRICT COLLECTOR STREET (Median)

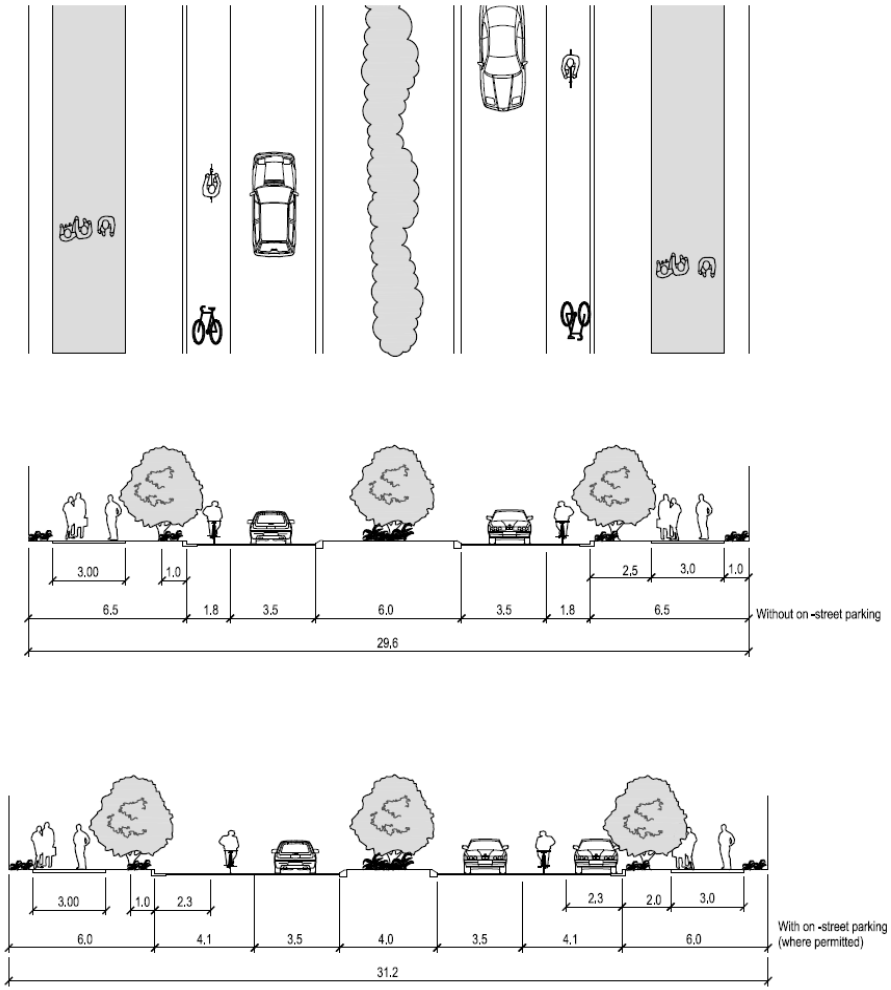
Notes—

1. Pathways to be provided on both sides of the street with a minimum width 2.0m shared pathway on one verge and 3.0m on the opposite.
2. The wider shared pathway shall be located on the side that best serves the expected demand and network connections.
3. On bus routes, indented bus stops to be provided as required by the *Road Planning and Design Manual* or *Austroads Guide to Road Design*, Indented bus stops may require local widening of the reserve to provide clearances to required pathways. Asymmetric verge widths may be used.



DISTRICT MAIN STREET (Median)

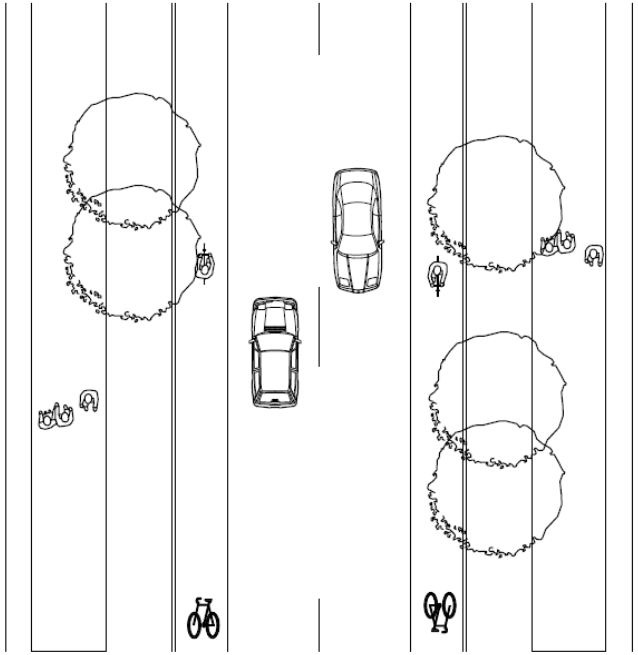
Note—
Verges to be paved full width on both sides of the street to allow for all weather use and concentrations of pedestrians and cyclists.

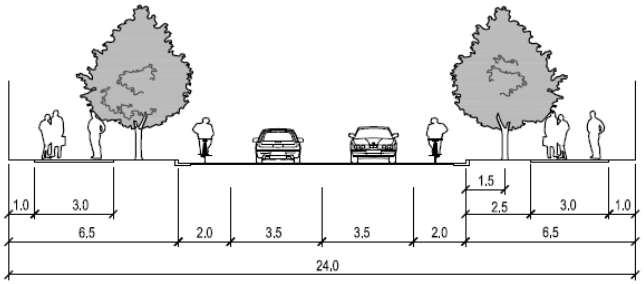


CONTROLLED DISTRIBUTOR ROAD (Preferred)

Notes—
1. Distributor Road is the desired Sub-Arterial Road cross section. Controlled Distributor Roads are generally existing sub-arterial roads through urban areas with possibly some parking and direct access existing for historical reasons. The Controlled Distributor Road cross section illustrates preferred combinations of the minimum elements each of which should be achieved wherever possible.
2. Shared pathway to be 3.0m minimum each side of road.
3. Median kerb to be semi-mountable with plantings 1.2m minimum clearance from rear of kerb.

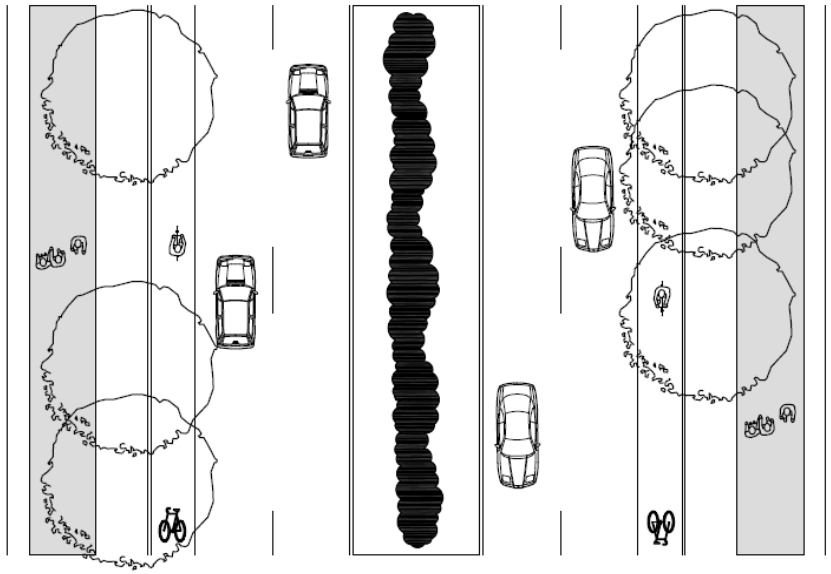
Schedule 6

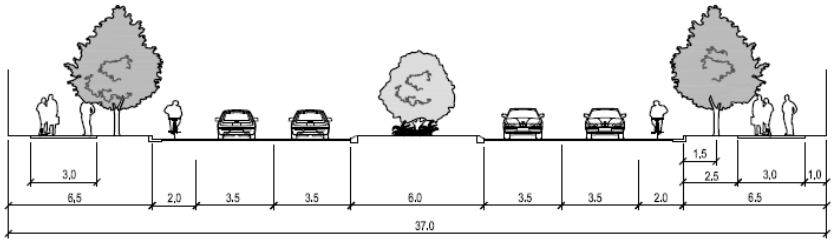




CONTROLLED DISTRIBUTOR ROAD (2 lane)

Note—
Shared pathway to be 3.0m minimum each side of road.

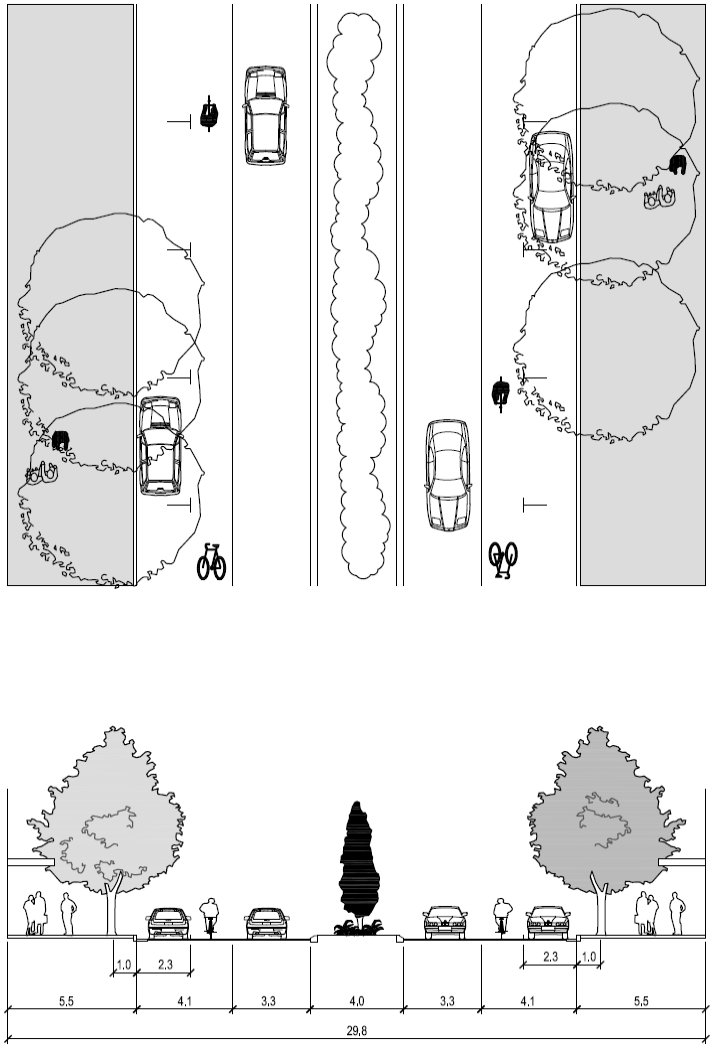




DISTRIBUTOR ROAD (4 lane)

Note—
Shared pathway to be 3.0m minimum each side of road.

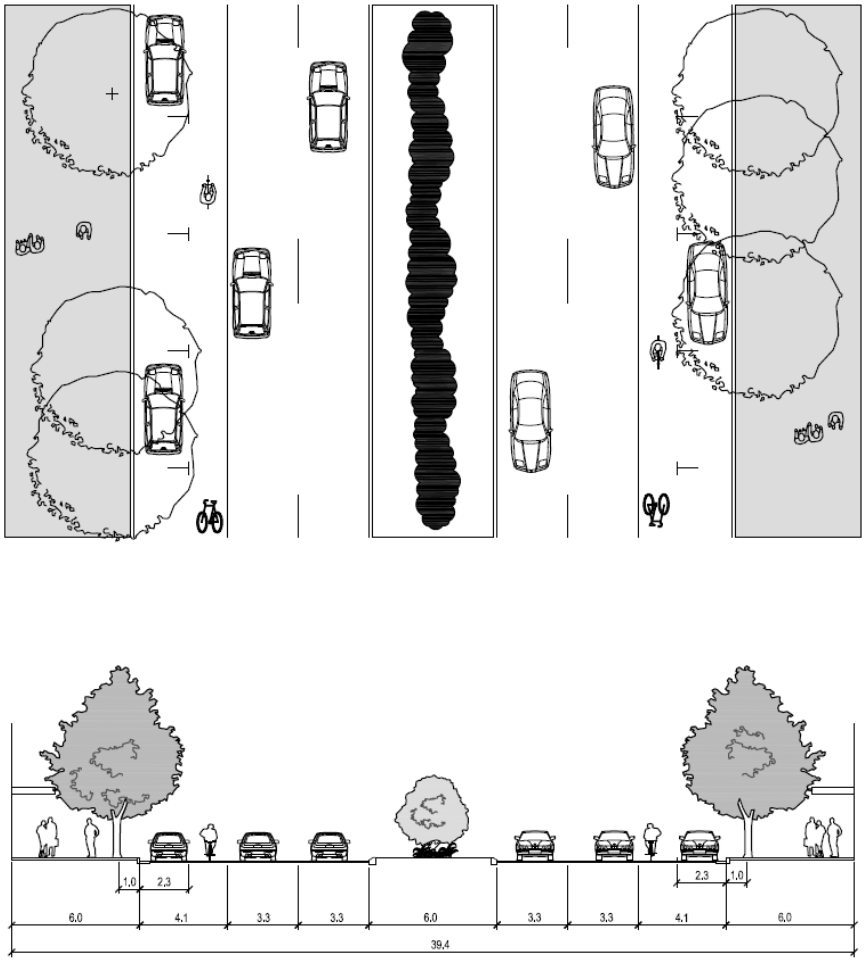
Schedule 6



SUB-ARTERIAL MAIN STREET (Preferred)

Notes—

1. The Sub-Arterial Main Street cross section generally exists where sub-arterial roads pass through town and village centres. The Sub-Arterial cross section illustrates preferred combinations of the minimum elements each of which should be achieved wherever possible.
2. Verges to be paved full width on both sides of the street to allow for all weather use and concentrations of pedestrians and cyclists.



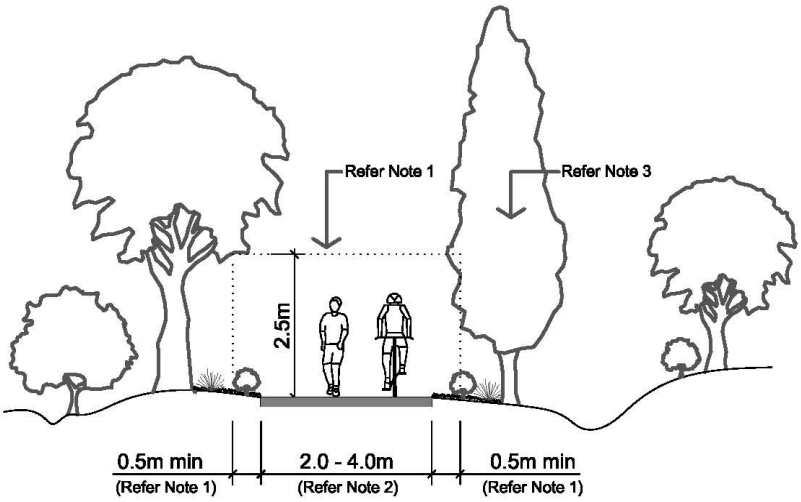
ARTERIAL MAIN STREET

Notes—

1. The Arterial Main Street cross section generally applies where a 4 lane divided Arterial Road passes through commercial precincts. Many established Arterial Main Streets will have cross sections which vary from that shown.
2. Verges to be paved full width on both sides of the street to allow for all weather use and concentrations of pedestrians and cyclists.
3. On-road parking bays may be indented and must be “paired” to allow vehicles to park with a forward motion.

Schedule 6

Appendix SC6.17B Active transport infrastructure guidelines standard treatments



Notes:

1. Clear operating space extends 0.5m beyond the edge both sides of the pathway and at least 2.5m above the pathway (although if catering for horse riders the clear operating space shall be at least 3.0m high).

   Existing small shrubs and groundcover less than 0.5m high and of a non-irritative form (eg. non-prickly stemmed) can remain within 0.5m of the pathway provided they do not protrude over the pathway edge.

   Before removing trees or limbs greater than 0.1m diameter Council's Parks Superintendent shall be consulted. All tree and root pruning shall be carried out in accordance with Council's tree clearing requirements.

2. Refer Table below for Minimum Pathway Widths.

   Concrete pathways 2.5m wide and greater in width should be given a colour treatment to reduce glare and to blend with the surrounding environment.

   Pathways shall be elevated above localised water flows with field inlet pits and drainage pipes installed as required to prevent pathways being submerged during and after rainfall.

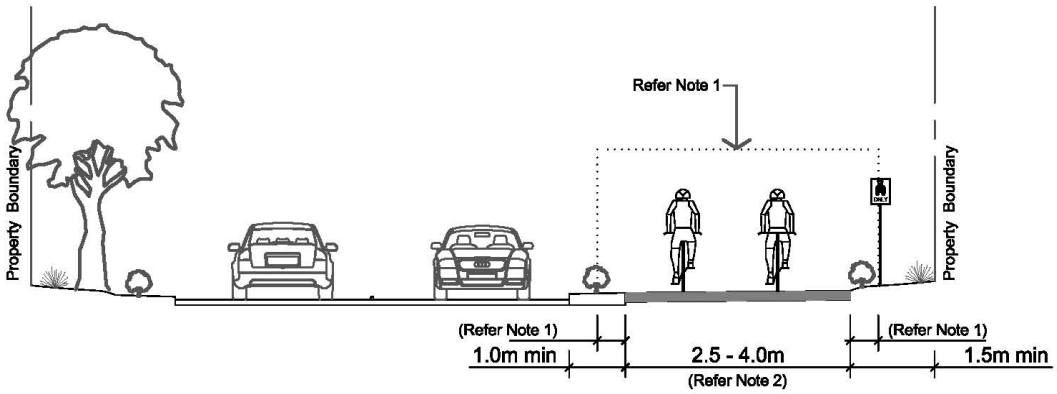
3. Shade trees shall be provided along the pathway corridor to provide shade to pathway users. Where possible trees should be planted in a staggered fashion either side of the pathway.

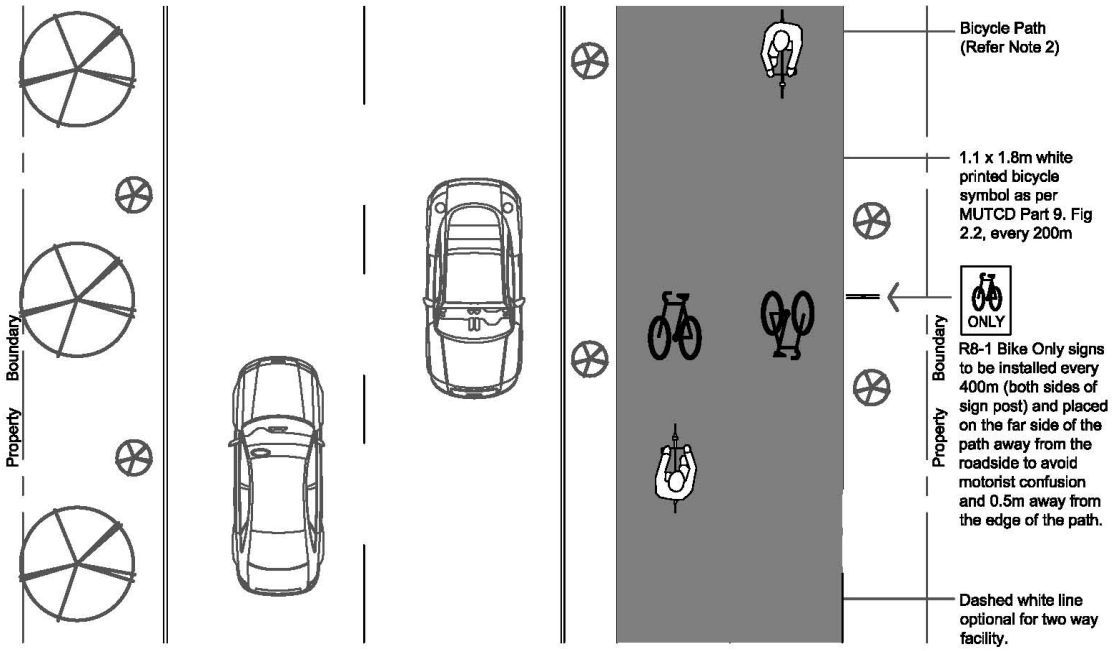
Minimum Pathway Witdths			
Application:	Local Access	Commuter	Recreational
Constrained Width	2.0m	2.5m	2.0m
Nominal Width	2.5m	3.0m	2.5m
Preferred Width	3.0m	3.5m	3.0m

Pathway widths outside of those listed above will be considered under special circumstances on a case by case basis depending on the merits, as agreed by Council

A4	Sunshine Coast Council	ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES STANDARD TREATMENTS	STANDARD TREATMENT Off Road Pathway Outside Road Reserves	26/07/12 Scale: NTS Drawing Sheet No. ST001

Schedule 6





Notes:

1. Clear operating space extends 0.5m beyond the edge both sides of the cycleway and at least 2.5m above the cycleway.

   Small shrubs and groundcover less than 0.5m high and of a non-irritative form (eg. non-prickly stemmed) can be placed within 0.5m of the cycleway provided they do not protrude over the cycleway edge.

   Before removing trees or limbs greater than 0.1m diameter Council's Parks Superintendent shall be consulted. All tree and root pruning shall be carried out in accordance with Council's tree clearing requirements.

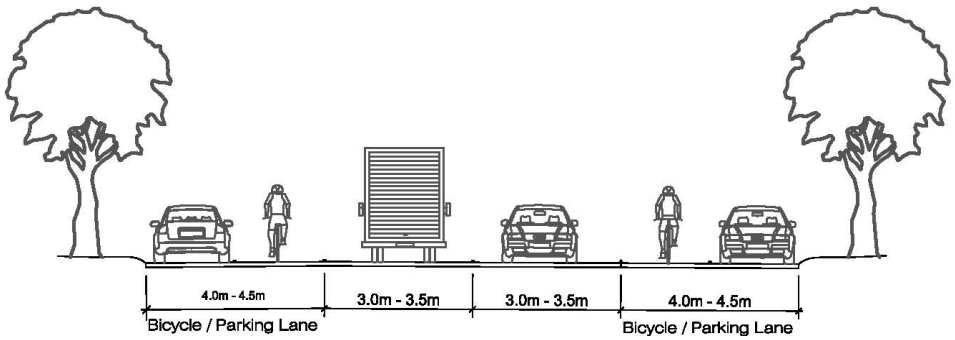
2. If cycle traffic is high, a greater width path of 3.0m to 4.0m is desirable.

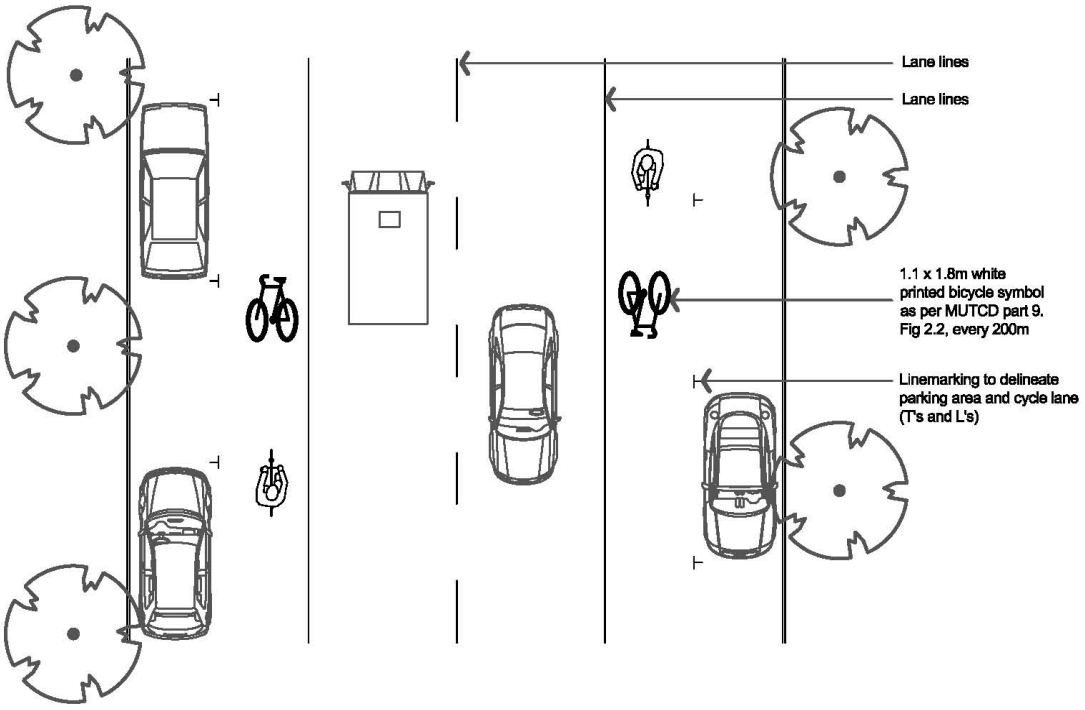
   Concrete cycleways should be given a colour treatment to reduce glare and to blend with the surrounding environment.

3. Shade trees shall be provided along the cycleway corridor to provide shade to users. Where possible in wide verges, trees should be planted in a staggered fashion either side of the cycleway while maintaining clearences.

A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT Off Road Exclusive Cycleway	26/07/12 Scale: NTS Drawing Sheet No. **ST002**

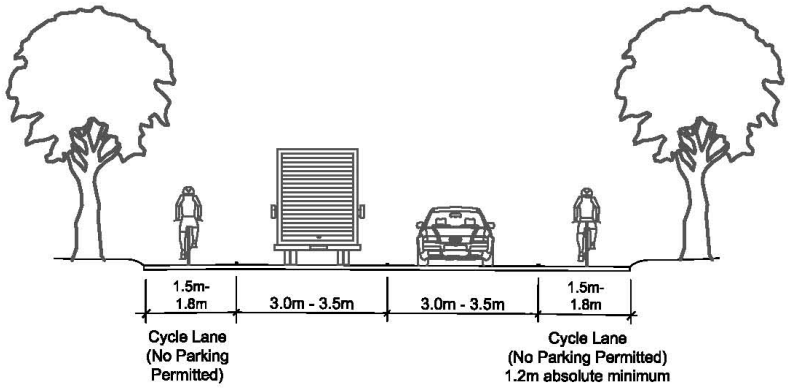
Schedule 6

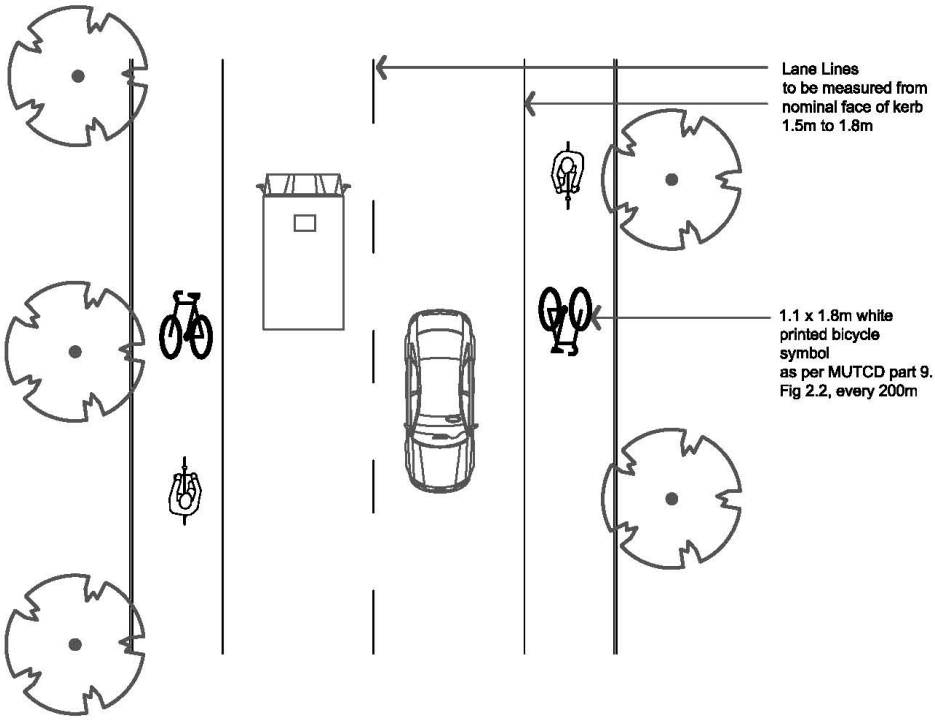




A4	Sunshine Coast Council	ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES STANDARD TREATMENTS	STANDARD TREATMENT On Road Bicycle / Parallel Car Parking Lane (Full Linemarking)	26/07/12 Scale: NTS Drawing Sheet No. ST004

Schedule 6

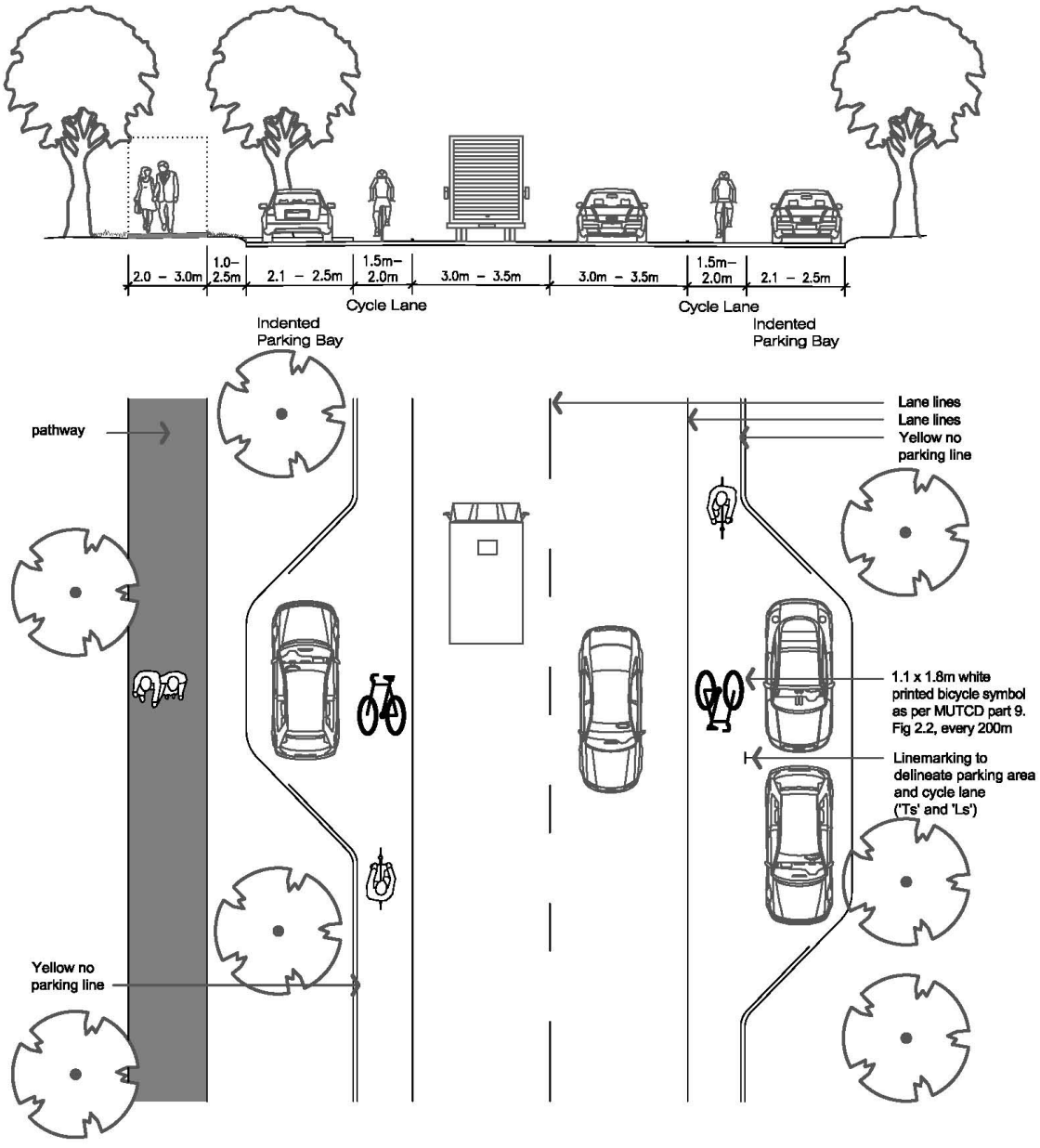




NOTE 1. Yellow "no stopping" line to be used if there is potential for conflict and parking within cycle lane

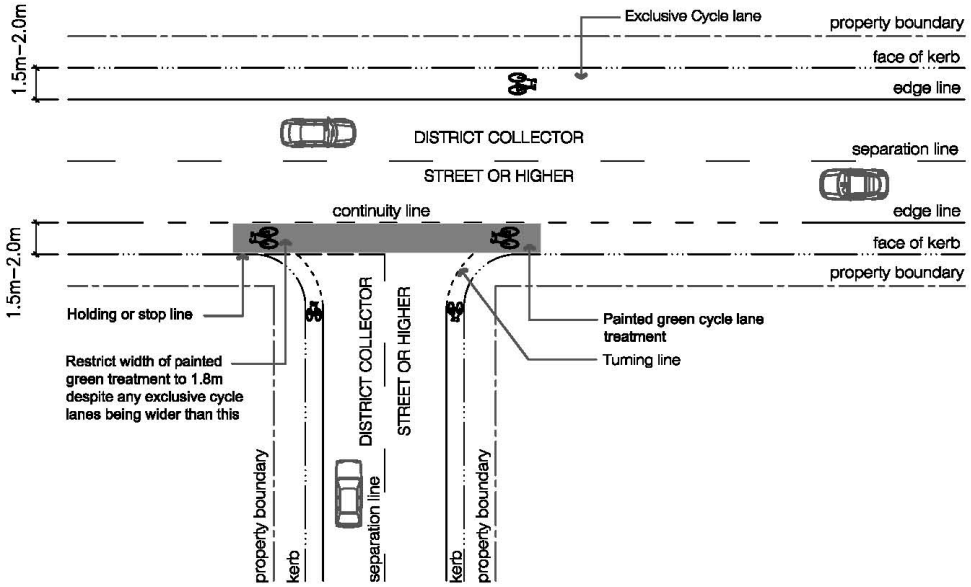
A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT On Road Dedicated Cycle Lane (Parking Not Permitted)	26/07/12 Scale: NTS Drawing Sheet No. **ST005**

Schedule 6



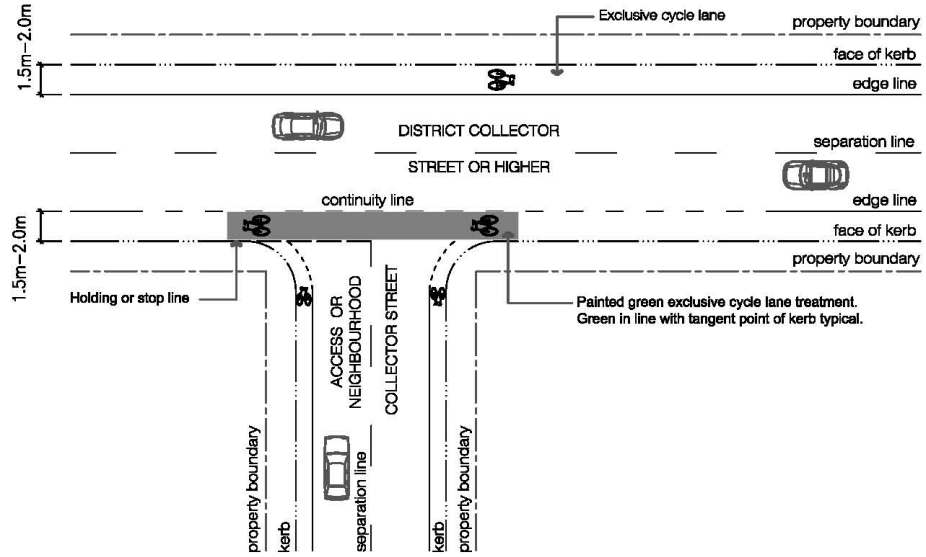
A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT On Road Cycle Lane / Indented Parking Bays	26/07/12 Scale: NTS Drawing Sheet No. **ST007**

Schedule 6



'T' Intersection with dedicated cycle lanes on the major and minor road

On Road Bicycle Lane treatments



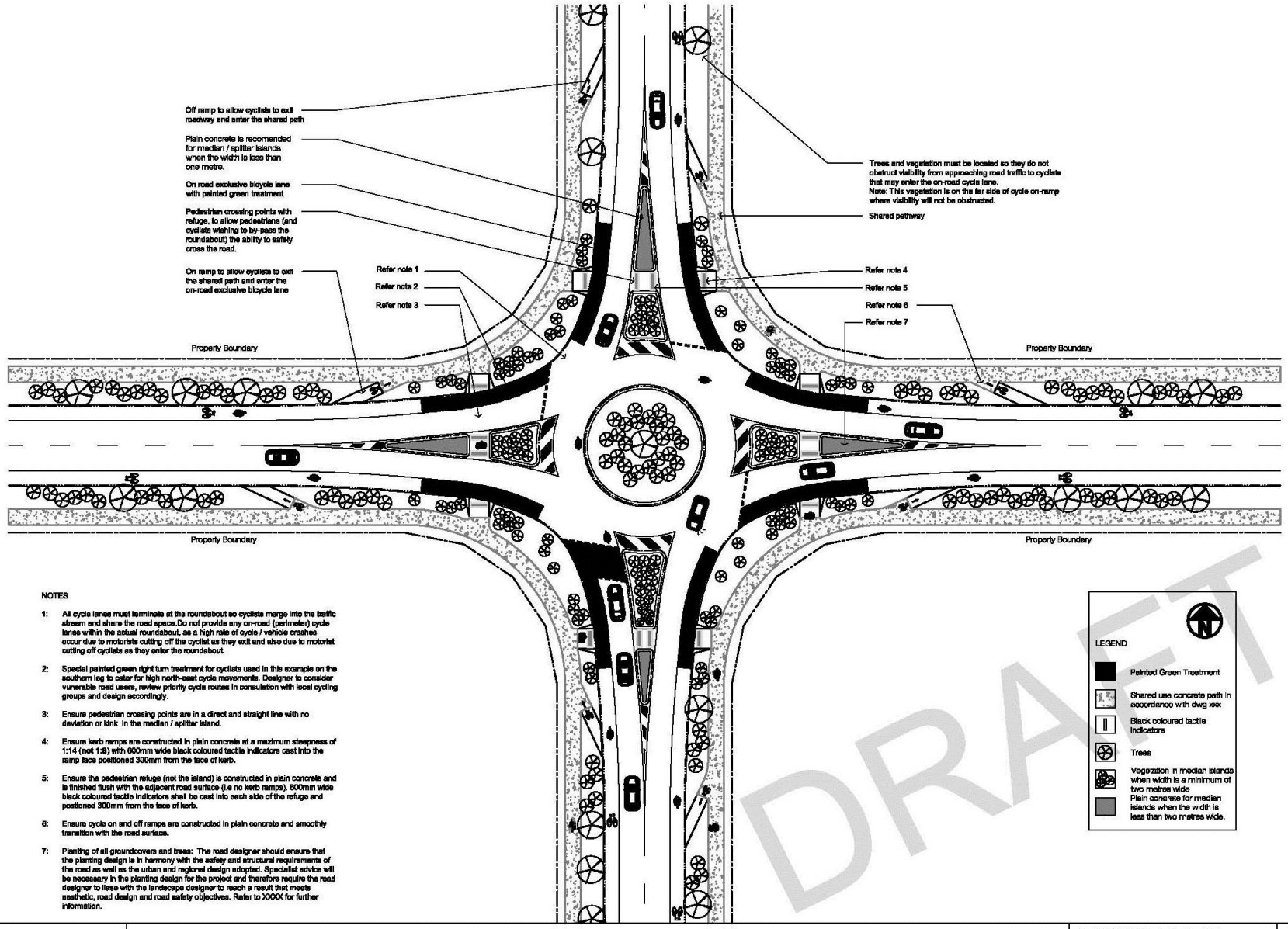
'T' Intersection with dedicated cycle lanes on the major road only

NOTES:

1. Holding line/stop line to be set back a minimum of 1.5m towards property boundary for dedicated cycle lanes. (ie. cycle lanes with no parking)
2. All bicycle symbols on roadway to be white, 1.1m x 1.8m this per MUTCD part 9, fig 2.2 symbols to be spaced at a max of 200m.

A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT On Road Dedicated Cycle Lane Treatment at a "T" Intersection	26/07/12 Scale: NTS Drawing Sheet No. **ST013**

Schedule 6



NOTES

1: All cycle lanes must terminate at the roundabout so cyclists merge into the traffic stream and share the road space.Do not provide any on-road (perimeter) cycle lanes within the actual roundabout, as a high rate of cycle / vehicle crashes occur due to motorists cutting off the cyclist as they exit and also due to motorist cutting off cyclists as they enter the roundabout.

2: Special painted green right turn treatment for cyclists used in this example on the southern leg to cater for high north-east cycle movements. Designer to consider vunerable road users, review priority cycle routes in consulation with local cycling groups and design accordingly.

3: Ensure pedestrian crossing points are in a direct and straight line with no deviation or kink in the median / splitter island.

4: Ensure kerb ramps are constructed in plain concrete at a mazimum steepness of 1:14 (not 1:8) with 600mm wide black coloured tactile indicators cast into the ramp face positioned 300mm from the face of kerb.

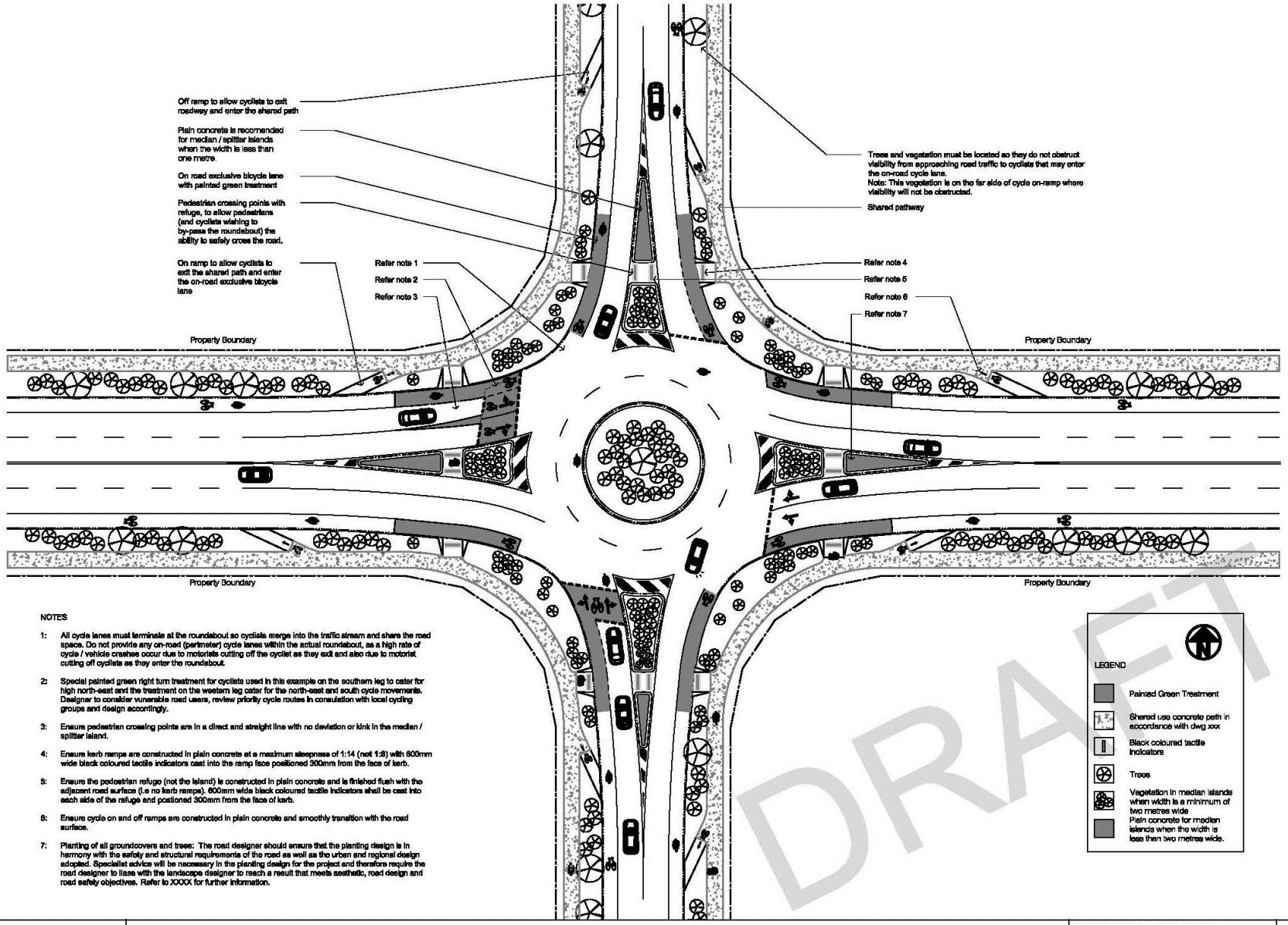
5: Ensure the pedestrian refuge (not the island) is constructed in plain concrete and is finished flush with the adjacent road surface (i.e no kerb ramps). 600mm wide black coloured tactile indicators shall be cast into each side of the refuge and positioned 300mm from the face of kerb.

6: Ensure cycle on and off ramps are constructed in plain concrete and smoothly transition with the road surface.

7: Planting of all groundcovers and trees: The road designer should ensure that the planting design is in harmony with the safety and structural requirements of the road as well as the urban and regional design adopted. Specialist advice will be necessary in the planting design for the project and therefore require the road designer to liase with the landscape designer to reach a result that meets aesthetic, road design and road safety objectives. Refer to XXXX for further information.

A3	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT Roundabout - Single Lane	18/04/11 Scale: NTS Drawing Sheet No. **ST015**

Schedule 6



NOTES

1: All cycle lanes must terminate at the roundabout so cyclists merge into the traffic stream and share the road space. Do not provide any on-road (perimeter) cycle lanes within the actual roundabout, as a high rate of cycle / vehicle crashes occur due to motorists cutting off the cyclist as they exit and also due to motorist cutting off cyclists as they enter the roundabout.

2: Special painted green right turn treatment for cyclists used in this example on the southern leg to cater for high north-east and the treatment on the western leg cater for the north-east and south cycle movements. Designer to consider vunerable road users, review priority cycle routes in consultation with local cycling groups and design accordingly.

3: Ensure pedestrian crossing points are in a direct and straight line with no deviation or kink in the median / splitter island.

4: Ensure kerb ramps are constructed in plain concrete at a maximum steepness of 1:14 (not 1:8) with 600mm wide black coloured tactile indicators cast into the ramp face positioned 300mm from the face of kerb.

5: Ensure the pedestrian refuge (not the island) is constructed in plain concrete and is finished flush with the adjacent road surface (i.e no kerb ramps). 600mm wide black coloured tactile indicators shall be cast into each side of the refuge and positioned 300mm from the face of kerb.

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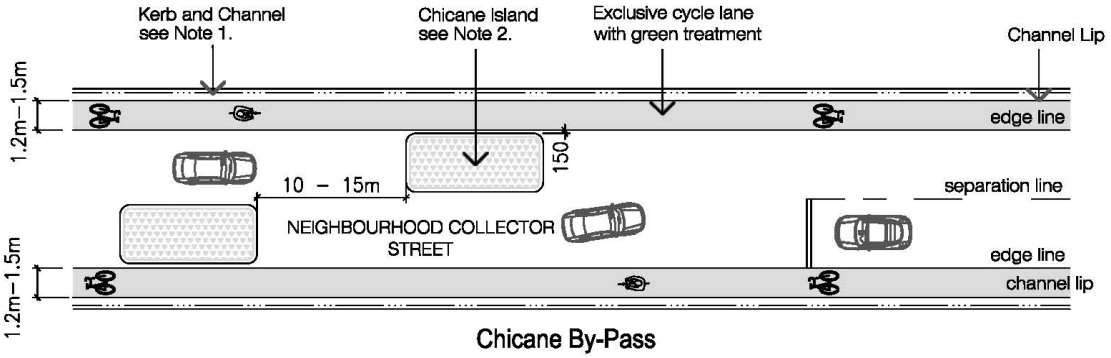
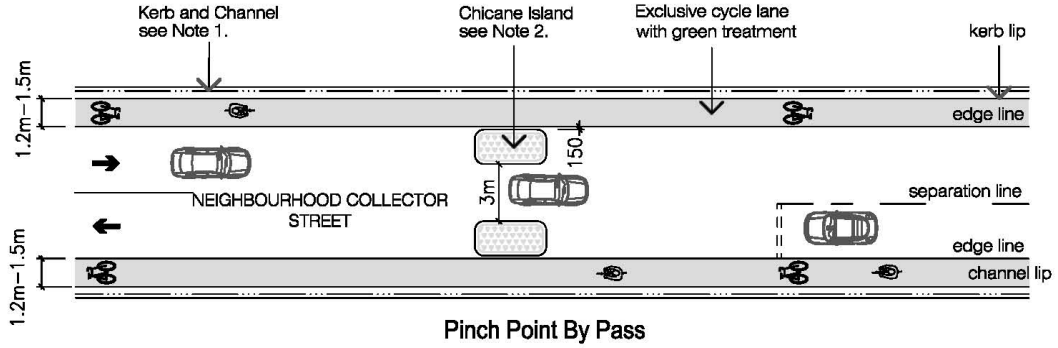
A3	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT Roundabout - Multi Lane	18/04/11 Scale: NTS Drawing Sheet No. **DS016**

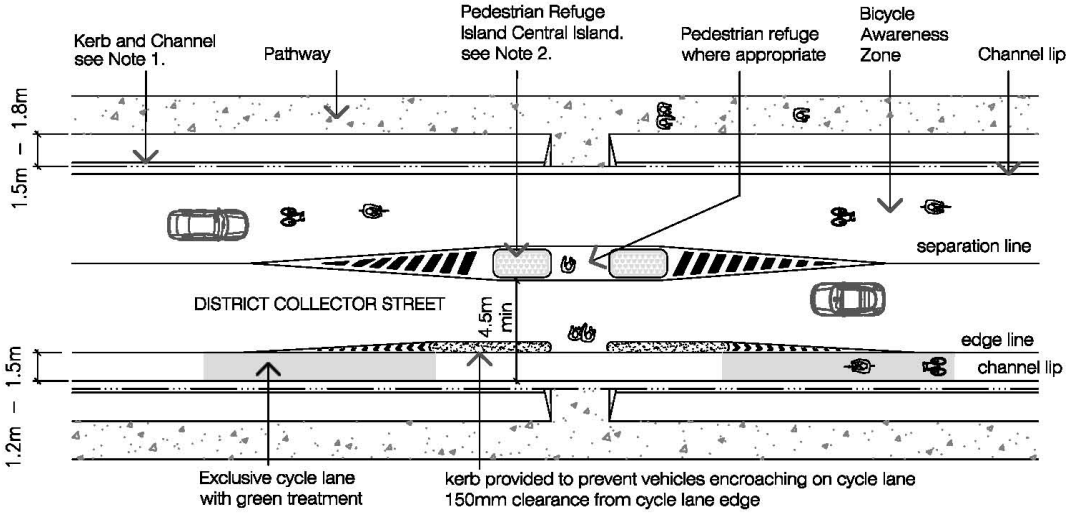
Schedule 6



Chicane By-Pass



Pinch Point By Pass

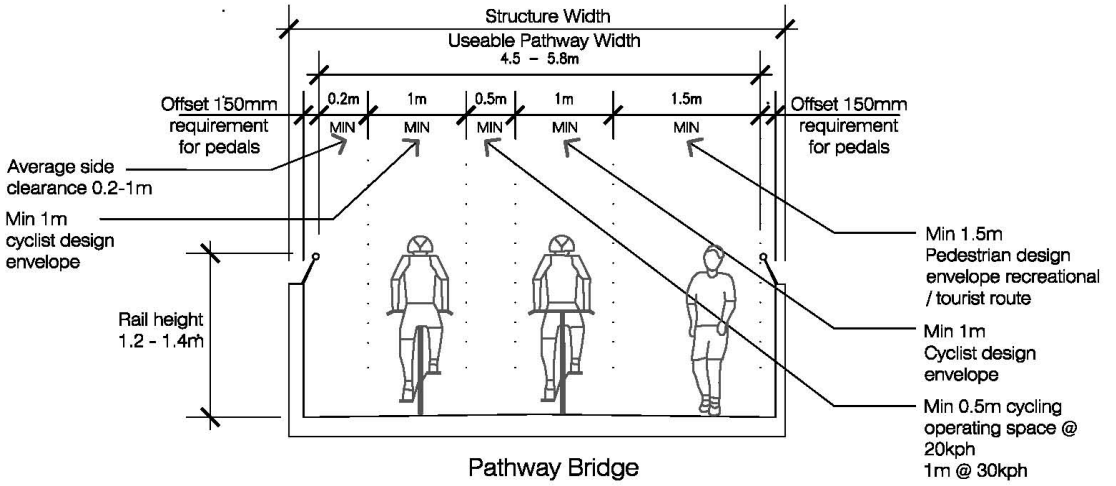


Pedestrian Refuge and Cyclist Separation Island through Pinch Point

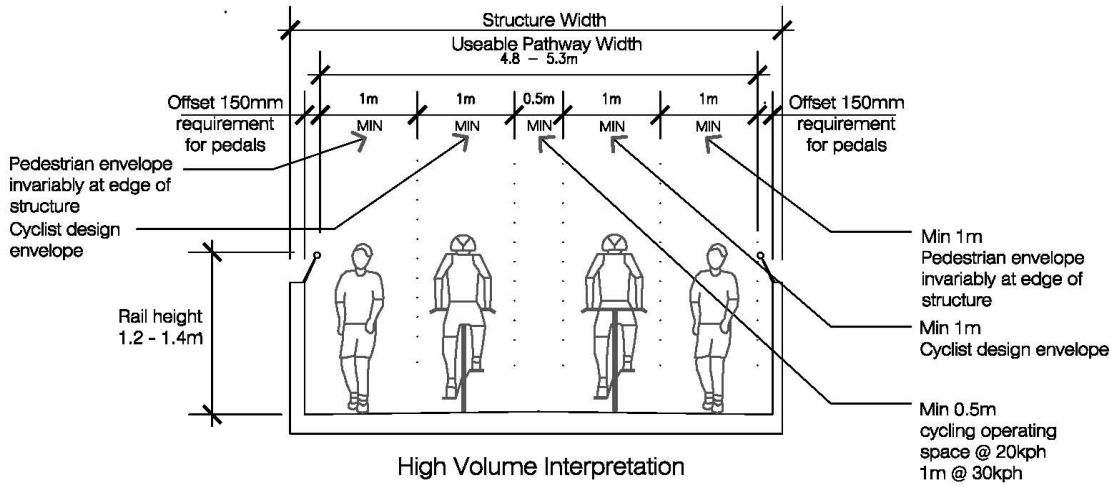
NOTES
1: Kerb and Channel is unusable for cyclists. Cycle lane width therefore measured from lip of channel.
2: Chicane island - Max height of any visual object 600mm measured from pavement surface.
150mm clearance from cycle lane edge
3: Green pavement treatments to be determined on a case by case basis in consultation with council.

A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT Intergrated 'Bicycle Friendly' LATM Options	26/07/12 Scale: NTS Drawing Sheet No. **ST017**

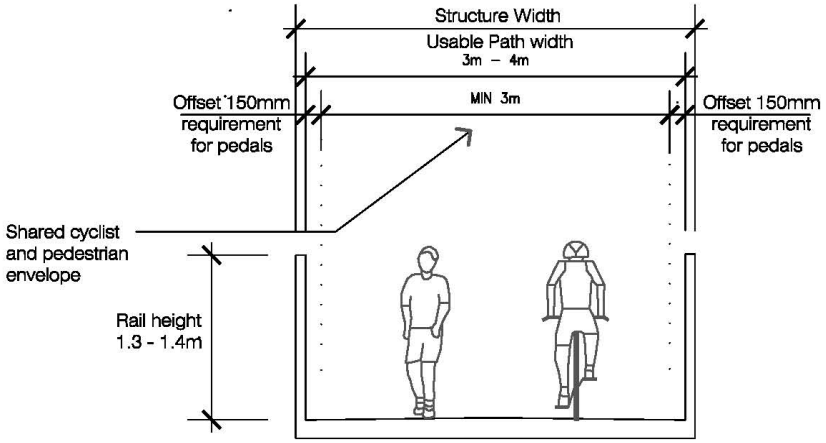
Schedule 6



Pathway Bridge



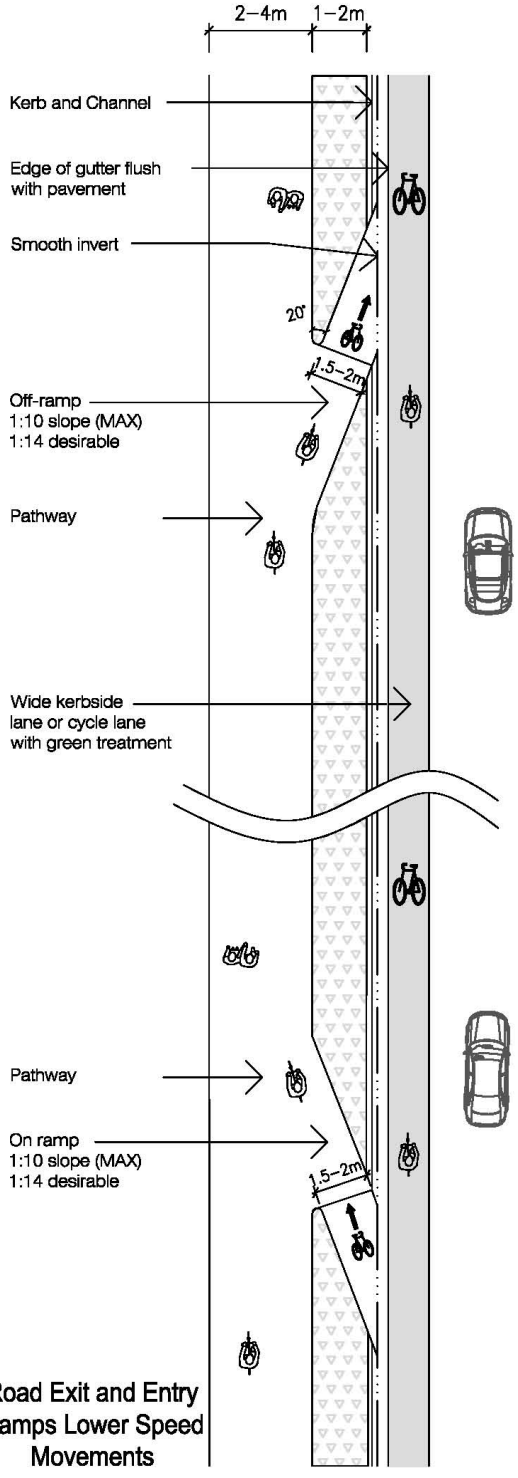
High Volume Interpretation



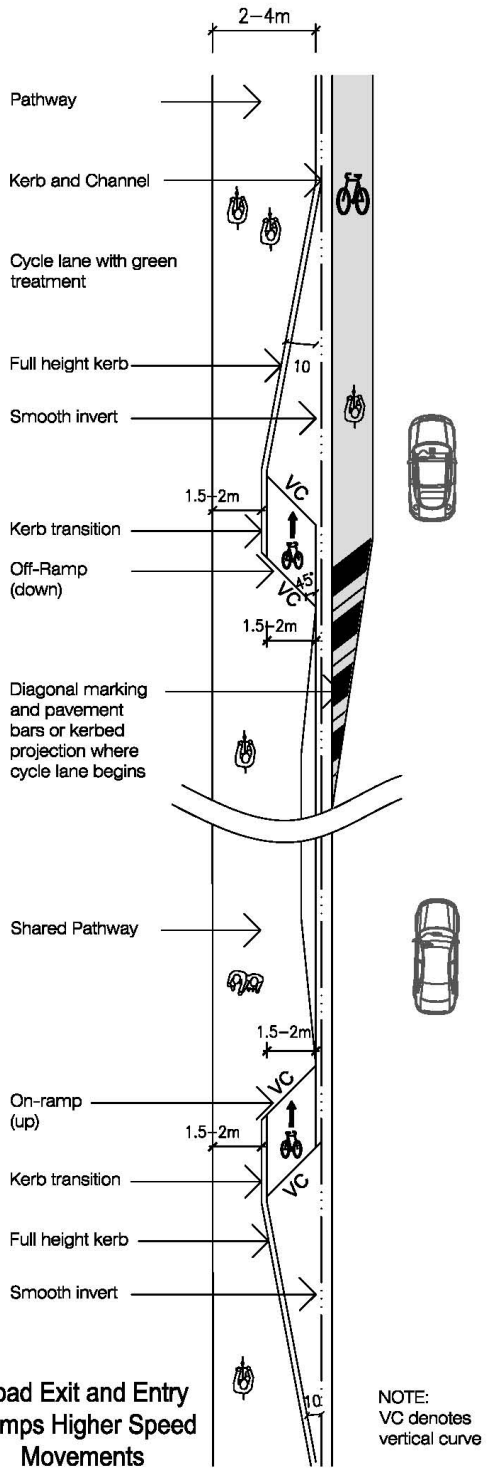
Boardwalk

A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT For Bridge and Boardwalks Shared with Pedestrian / Cycle Use	26/07/12 Scale: NTS Drawing Sheet No. **ST018**

Schedule 6



Road Exit and Entry Ramps Lower Speed Movements



Road Exit and Entry Ramps Higher Speed Movements

NOTE:
VC denotes vertical curve

A4	Sunshine Coast Council	**ACTIVE TRANSPORT INFRASTRUCTURE GUIDELINES** STANDARD TREATMENTS	STANDARD TREATMENT Road Exit and Entry Ramps for Cyclists	26/07/12 Scale: NTS Drawing Sheet No. **ST019**

Schedule 6

SC6.18 Planning scheme policy for waste management code

SC6.18.1 Purpose

The purpose of this planning scheme policy is to:-

(a) provide general advice about achieving outcomes in the **Waste management code**;

(b) state standards identified in the **Waste management code** for waste storage and servicing; and

(c) provide guidelines about the preparation of a waste management plan.

SC6.18.2 Application

This planning scheme policy applies to development which requires assessment against the **Waste management code**.

SC6.18.3 General advice for waste management code outcomes

The following is general advice about the achievement of outcomes stated in the **Waste management code**:-

(a) in determining compliance with the **Waste management code** in terms of waste minimisation, waste storage and waste servicing, Council may require submission of a waste management plan for certain types of development;

(b) in particular, Council may require submission of a waste management plan for development involving the following:-

  (i) a residential use with more than 10 dwellings;

  (ii) a business use with a total use area greater than 500m²;

  (iii) an environmentally relevant activity (as defined by Schedule 1 of the *Environmental Protection Regulation 2008*);

  (iv) construction or demolition of a building, other than construction of a dwelling house, or Class 10 building; and

  (v) another use or activity where identified as having significant waste management requirements;

(c) Council may also consider the following matters in assessing the appropriateness of waste minimisation, waste storage and waste servicing arrangements:-

  (i) the type of waste generated by the development;

  (ii) the amount of waste likely to be generated by the development having regard to **Table SC6.18A (Indicative waste and recycling generation rates for particular uses)**;

  (iii) the minimum waste storage area requirements required to accommodate the waste management needs of the development having regard to **Table SC6.18B (Minimum waste receptacle storage requirements)**;

  (iv) the types of waste storage bins best suited to the needs of the development;

  (v) the preferred location of waste storage areas and bin wash down areas;

  (vi) the distance waste needs to be moved to a waste storage area and/or collection area;

  (vii) whether the collection service will be kerbside or on private property;

  (viii) whether a central waste storage area will be provided prior to relocation of the bin to the collection point;

  (ix) the presence or absence of service staff or on site management;

  (x) the mechanism or pathway used to move bins to the waste storage area; and

(xi) safe vehicle and pedestrian access to bins; and

(d) a waste management plan is a document prepared by a competent person in accordance with **Section SC6.18.6 (Guidelines for the preparation of waste management plans)**.

Table SC6.18A Indicative waste and recycling generation rates for particular uses

Use	Waste generation rate	Recycling generation rate
Short-term accommodation where for a backpackers	40L / occupant / week	20 litres / occupant / week
Rooming accommodation where for a boarding house	40L / occupant / week	20 litres / occupant / week
Short-term accommodation where for a motel and not including a public restaurant	5L / bed / day 10L / 1.5m² / of dining area / day	1L / bed / day
Entertainment/catering use and retail business use where for:-		
(a) a butcher	80L / 100m² floor area / day	40L
(b) a delicatessen	80L / 100m² floor area / day	40L
(c) a fish shop	80L / 100m² floor area / day	40L
(d) a greengrocer	240L / 100m² floor area / day	120L / 100m² / day
(e) a hairdresser	80L / 100m² floor area / day	40L
(f) a restaurant	10L / 1.5m² floor area / day	2L / 1.5m² floor area / day
(g) a supermarket	240L / 100m² floor area / day	240L / 100m² / day
(h) a takeaway	80L / 100m² floor area / day	40L
Entertainment/catering use where for a hotel	5L / bed / day 50L / 100m² / bar area / day 10L / 1.5m² of dining area / day	50L / 100m² / of bar and dining areas / day
Entertainment/catering use where for a licensed club	50L / 100m² / bar area / day 10L / 1.5m² / of dining area / day	50L / 100m² / of bar and dining areas / day
A retail business use where for:-		
(a) a shop or shops having a gross leasable floor area not exceeding 100m²;	50L / 100m² / floor area / day	25L / 100m² / floor area / day
(b) a shop of shops having a gross leasable floor area 100m² or greater.	50L / 100m² / floor area / day	50L / 100m² / floor area / day
A retail business use where for a showroom	40L / 100m² / floor area / day	10L / 100m² / floor area / day
A commercial business use where for an office	10L / 100m² / day	10L / 100m² / day

Table SC6.18B Minimum waste receptacle storage requirements

Use	Minimum requirement
Dual occupancy	An area or areas capable of accommodating 3 x 240 litre waste storage bins per dwelling.
Short-term accommodation, Multiple dwelling, Relocatable home park, Residential care facility and Retirement facility.	An area or areas capable of accommodating 2 x 240 litre waste storage bins per 2 dwellings; or An area or areas capable of accommodating bulk storage bins with an equivalent volume of 120 litres per site for waste and 120 litres per site for recycling.
Tourist park	An area or areas capable of accommodating 2 x 240 litre waste storage bins per 4 cabins or caravan sites; or An area or areas capable of accommodating bulk storage bins with an equivalent volume of 60 litres per site for waste and 60 litres per site for recycling.
Food and drink outlet	An area or areas capable of accommodating 2 x 240 litre waste storage bins.
All other uses	Determined as part of assessment of proposal.

SC6.18.4 Standards for waste storage outcomes

For the purposes of Acceptable Outcome AO2 in **Table 9.4.10.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Waste management code** the following are the standards identified in the code for waste storage areas:-

Waste container storage areas generally

(a) waste container storage areas are to be attractively designed to minimise their visual impact on the streetscape and surrounding areas;

(b) waste and waste storage bins are not to be placed where they may impede safe use of any exit, exit corridor, doorway or stairway, under stairways or near any existing or potential heat source;

(c) waste storage bins are to be made of non-combustible materials;

(d) waste oil containers are to be stored within bunded areas and bins must be washed within the bunded area;

(e) a waste wash down area is to be provided for the regular cleaning of waste storage containers, which:-

  (i) is located such that waste containers can be easily moved to the waste wash down area and is not located adjacent to or underneath the eating or living areas of any unit or neighbouring property;

  (ii) has a floor graded to fall to a drainage point located within the wash down area;

  (iii) provides for drainage by means of a trapped gully connected to the sewer, and is designed such that rainfall and other surface water can not flow into the wash down; and

  (iv) has a hose cock is located in the vicinity of the wash down area.

Note—**Figure SC6.18A (Examples of waste container storage areas and facilities for mobile storage bins)** provides examples of well designed waste container storage areas and facilities.

Figure SC6.18A Examples of waste container storage areas and facilities for mobile storage bins

Roofed waste storage container area for 240 litre bin type.

Screened waste storage container area with bunded bin wash down area.

Bunded bin wash down area in further detail.

Streetscape screening to waste container storage area serviced via street.

Schedule 6

(f) waste chutes may be provided for both general waste and recyclables;

(g) any waste chute and associated accessories are to:-

(i) be cylindrical with a diameter not less then 450mm;

(ii) have a bottom edge which finishes at least 25mm below the level of the ceiling in the waste room with a maximum of 300mm between the bottom edge (and any extension thereof) and the top of the waste container;

(iii) as far as practicable, be vertical throughout the chute length up to the level of the highest hopper;

(iv) discharge centrally above the waste container or compactor in the waste storage room;

(v) be continued in full bore above the roof of the building, but not less than 600mm above the level of the highest hopper;

(vi) be fully supported at each floor level and contained in fire rated shafts in compliance with the appropriate standards;

(vii) provide for access at appropriate levels to assist in clearing obstructions and cleaning with a nylon brush or similar appliance on a pulley system;

(viii) be ventilated in a manner that ensures air does not flow from the chute through service openings, and the flow of air in the chute does not impede the downward movement of waste;

(ix) where the chute is not continued to the full height of the building, incorporate a vent formed of non-combustible material having a minimum diameter of 150mm carried to a point of at least 2.0 metres above the eaves of the building or the eaves of any building within 10.0 metres;

(x) incorporate a shutter fitted for closing off the chute in the case of fire or when the waste container is withdrawn that is:-

(A) self-closing and constructed of galvanised steel sheet or other approved metal;
(B) assembled with bolts, hinges or rollers of non-corrosive material so that it can be dismounted and re-assembled instantly if necessary;
(C) be fitted with a fusible link for automatic operation in the case of a fire in the waste container or waste room, which is selected to operate at a temperature at least 5 degrees Celsius above the operating temperature of the automatic fire control system installed;
(D) be constructed of materials which are non-combustible and non-corrosive or otherwise coated / treated with a non-corrosive compound and of adequate strength for their purpose;
(E) have a chute interior and chute branch and joints with smooth, impervious, and non-corrosive surfaces that provide uninterrupted flow for the passage of waste and are insect and vermin proof; and
(F) be part of a whole of waste disposal system, including all chutes, rooms, compartments and equipment that is designed and constructed so that the use and operation of the system does not at any time give rise to transmission of vibration to the structure of the premises, or odour in excess of 1 odour unit beyond the disposal and storage points.

<u>Waste disposal points</u>

(h) hoppers for disposal of waste into waste chutes are to:-

(i) be provided on each residential floor and be located in a freely ventilated position in the open air (e.g. a sheltered balcony or in a dedicated waste disposal room);

(ii) be easily accessed by the occupants of each unit;

(iii) be separate from any habitable room or place used in connection with food preparation or living areas;

(iv) be designed and installed so as to:-

(A) close off the service opening in the chute when the device is open for loading;
(B) be between 1.0 metre and 1.5 metres above floor level;
(C) automatically return to the closed position after use;
(D) permit free flow into the chute;

(E) not project into the chute; and
(F) allow easy cleaning of the device and the connection between the service opening and the chute.

(v) have the largest dimension of the service opening (the diagonal of a rectangular opening) not exceeding 0.75 diameter of the chute with which the hopper is connected;

(vi) have a surround on the wall around that hopper that is at least 300mm wide and made of glazed tiling or other impervious material with can be easily cleaned;

(vii) have a floor adjacent to the hopper that is paved with hard impervious materials with a smooth finished surface; and

(viii) if located within a waste disposal room be ventilated and finished with an impervious material covered at all angles.

Waste container storage rooms

(i) waste container storage rooms are to be provided for the storage of waste in standard containers at the bottom of each waste chute;

(j) a waste container storage room are to:-

(i) be located at vehicle access level, preferably away from the main entrance to the building;

(ii) not be located adjacent to or within any habitable room or place used in connection with food preparation or living areas;

(iii) be of sufficient size to fully contain the number of waste containers required to service the development;

(iv) provide for waste containers to be easily accessed for direct disposal of bulky items to the waste container;

(v) provide for unobstructed access for removal of waste containers to the service point and for the positioning of the containers correctly in relation to the waste chute;

(vi) be the service point or be located within 40 metres of the service point;

(vii) be designed and constructed so that:-

(A) the doors are close fitting, selfclosing and not less than 820mm wide;
(B) walls, doors and roof of each waste room are lined with non-combustible and impervious material with a smooth finish and a fire resistance rating of one hour;
(C) the junctions of the walls with the floors are covered with the covering formed to prevent damage to walls by containers;
(D) door frames are metal, hardwood or metal clad softwood, situated in an external wall;
(E) door frames are rebated with a lock capable of being activated from within the room without a key at all times;
(F) a hose cock and an adequate length of hand hose of a minimum internal diameter of 12mm are provided immediately outside the room;
(G) unless refrigerated to below 4 degrees Celsius, the room has an approved mechanical exhaust system for ventilation or permanent, unobstructed natural ventilation openings direct to the external air not less than one-twentieth (1/20th) of the floor area with one half of such openings situated at or near the floor level and one half at or near the ceiling level;
(H) automatic or other system for control of fire in the waste room meets Australian Standards on sprinkler installation;
(I) the waste room is fly and vermin proof;
(J) the floor of the waste room is graded to fall to a drain located outside and adjacent to the waste room as close as practicable to the doorway and drainage is by means of a trapped gully connected to the sewer with gullies positioned to avoid the track of waste container wheels;
(K) rainfall and other surface water cannot flow into the waste room;
(L) artificial lighting is provided;
(M) refrigerated rooms are fitted with an approved alarm device, located outside, but controllable only from within the room with all conduits concealed in the floor, walls or ceiling;

(N) all equipment in a fixed position is located clear of walls and floors and is supported on suitable plinths or impervious legs; and

(O) any container storage and drainage racks are made of galvanised metal or other durable, impervious materials; and

(viii) be well ventilated and have “hazardous waste” and “no smoking” signs installed; and

(k) a waste wash down area is to be provided for the regular cleaning of waste containers, which:-

(i) is located such that waste containers can be easily moved to the waste wash down area and is not located adjacent to or underneath the eating or living areas of any unit or neighbouring property;

(ii) has a floor graded to fall to a drainage point located within the wash down area;

(iii) provides for drainage by means of a trapped gully connected to the sewer, and is designed such that rainfall and other surface water cannot flow into the wash down; and

(iv) has a hose cock is located in the vicinity of the wash down area.

Note—**Figure SC6.18B (Example of waste container storage room)** provides an example of a well-designed waste container storage room.

Figure SC6.18B Example of waste container storage room

Waste container storage room with wash down area.

Note—Council may require or accept specialised equipment in some circumstances, such as compaction equipment to minimise storage areas. Compaction equipment may be accepted for the following wastes:-
(a) mixed waste (other than glass);
(b) cardboard or paper;
(c) plastic or aluminium containers;
(d) putrescible waste - provided a specialised refrigerated compactor is used.

Plans for the installation of compactors must be submitted for the approval of Council’s Manager Waste and Resources Management.

SC6.18.5 Standards for waste servicing outcomes

For the purposes of Acceptable Outcomes AO4.1, AO4.2, AO4.3 in **Table 9.4.10.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Waste management code** the following are the standards identified in the code for waste servicing:-

(a) within the development site, vehicle servicing areas are to:-

(i) be capable of carrying the wheel load of 7 tonnes per axle;

(ii) provide turning circles designed in accordance with AUSTROADS: design single unit truck/bus (12.5m) template; and

(iii) allow vehicles to move in a forward direction at all times or be able to enter and exit the development in a forward direction or include a turning bowl or a “T” or “Y” shaped manoeuvring area which allows the service vehicle to make a turn within 3 manoeuvres; and

(b) for bin collection from within a building or structure:-

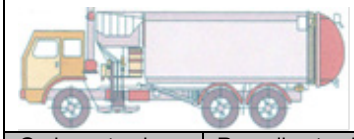
(i) height clearance is to be sufficient to allow for safe travel and lifting for vehicles and bins in accordance with **Table SC6.18C (Bulk or skip bin dimensions)** and **Table SC6.18D (Waste vehicle specifications)**; and

(ii) the grade of access/egress ramps are not to exceed 1:8.

Table SC6.18C Bulk or skip bin dimensions

	Skip	Skip	Skip	Skip	Skip
Capacity	1. 1m³	1.5m³	2.0m³	3.0m³	4.5m³
Height	1465mm	910mm	865mm	1225mm	1570mm
Depth	1070mm	905mm	1400mm	1505mm	1605mm
Width	1360mm	1810mm	1830mm	1805mm	1805mm

Table SC6.18D Waste vehicle specifications

	Side loading collection vehicle		Front loading collection vehicle
			
	Garbage truck	Recycling truck	Front loading collection vehicle
Length overall	8.70m	9.90m	9.90m
Front overhang	1.42m	0.85m	1.42m
Wheelbase	5.00m	5.30m	5.84m
Rear overhang	2.30m	2.65m	2.64m
Turning circle (curb to curb)	16.40m	18.70m	22.10m
Turning circle (wall to wall)	N/A	N/A	23.66m
Front of vehicle to collection arm	18.14m	19.20m	N/A
Maximum reach of side arm	2.70m	3.30m	N/A
Travel height	2.00m	1.70M	3.64
Clearance height for loading	4.00M	3.80M	6.10m

SC6.18.6 Guidelines for the preparation of waste management plans

A waste management plan should be based on the template provided in **Appendix SC6.18A (Waste management plan template)** and should properly address, describe or include the following:-

(a) estimated volumes of waste to be generated;

(b) estimated volumes of recyclables;

(c) estimated volumes of garden/organic waste;

(d) the method to be used for disposal of garden/organic waste;

(e) initiatives to minimise waste by waste reduction, reuse or recycling;

(f) the description of the procedures involved in the storage of waste and recycling bins and the collection of bins by the contractor and who is responsible for each transfer of waste both within the complex and external to the complex;

(g) a description of the design details of waste storage and recycling areas, including the method of preventing stormwater pollution – to be highlighted on plan drawings;

(h) plans showing the location and details of the waste storage areas; design to incorporate sufficient space for storage for waste, recyclables, garden waste and any special wastes as determined e.g. bulk cardboard;

(i) a description of the type of containers proposed to store the waste; and

(j) a detailed description of the proposed access arrangement for waste collection vehicles is to be highlighted on plan drawings ensuring that waste vehicles can access and depart from the waste collection area in a forward direction.

Appendix SC6.18A Waste management plan template

Project:
Site address:
Name of applicant:
Address of applicant:
Phone: Fax:
Email:
Describe buildings and other structures currently on the site:
Describe proposed use/development:
I confirm that the details provided on this form are the intentions for managing waste relating to this use/development. Signature of applicant: Date:
SPACE
Number of units:
Estimated waste generation:
Estimated recycling generation:
Describe equipment and system to be used for managing waste:
Describe equipment and system to be used for managing recyclables:

Describe equipment and system to be used for managing garden organics (if applicable):
Space allocated (highlight on plan drawings):
ACCESS
Describe arrangements for access by residents to waste facilities (highlight on plan drawings):
Describe arrangements for access by collection contractors to waste facilities (highlight on plan drawings):
Is minimum height met for service vehicles to access waste area (3.8m for residential use)?
AMENITY
Describe how noise generated from residents using bins, collection contractors emptying bins and waste falling through and out of the bottom of refuse chute has been minimised:
Describe the ventilation of waste storage areas (highlight on plan drawings):
Describe facilities for washing bins and waste storage areas (highlight on plan drawings):

Describe features for preventing ingress of vermin into waste storage areas:
Describe measures taken to ensure waste storage areas are aesthetically consistent with the rest of the development:
MANAGEMENT
Identify each stage of waste transfer between resident's units and loading into the collection vehicle and who is responsible for each transfer:
Describe arrangements for clearing of waste storage areas and equipment:
Describe arrangements for ensuring bins are stickered and residents are aware of how to use the waste management system correctly:

Details of waste management – demolition phase

Materials on-site			Destination		
			Reuse and recycling		Disposal
Type of materials	Est. Vol. (m^3)	Est. Wt. (t)	ON-SITE Specify proposed reuse or on-site recycling methods	OFF-SITE Specify contractor and recycling outlet	Specify contractor and landfill site
Excavated Materials					
Garden Organics					
Bricks					
Tiles					
Concrete					
Timber – please specify					
Plasterboard					
Metals					
Asbestos					
Other waste e.g. ceramic tiles, paints, PVC tubing, cardboard, fittings					

Details of waste management –construction phase

Materials on-site			Destination		
			Reuse and recycling		Disposal
Type of materials	Est. Vol. (m^3)	Est. Wt. (t)	ON-SITE Specify proposed reuse or on-site recycling methods	OFF-SITE Specify contractor and recycling outlet	Specify contractor and landfill site
Excavated Materials					
Garden Organics					
Bricks					
Tiles					
Concrete					
Timber – please specify					
Plasterboard					
Metals					
Asbestos					
Other waste e.g. ceramic tiles, paints, PVC tubing, cardboard, fittings					

Details of waste management – use of premises phase

Materials	Volume	Proposed on-site storage or treatment	Destination
Type of waste expected to be generated	Expected quantities per week	(e.g. waste storage, compaction & recycling, composting)	(Compost, recycle or landfill) Specify contractor
Recyclables			
Paper			
Cardboard			
Glass			
Aluminium cans			
Plastic bottles			
Other;			
Non-Recyclables			
Foodscraps			
Plastic			
Garden organics			
Other			

Details of waste management – ongoing management

This section will enable you to describe how you intend to ensure ongoing management of waste on-site (e.g. lease conditions, care-taker/manager on-site). You must prepare and submit with this Waste Management Plan a summary of relevant and appropriate waste management issues. The summary is to inform residents and tenants of the onsite waste management arrangements and must be no longer than one page.

Describe how you intend to ensure ongoing management of waste on-site (e.g. lease conditions, caretaker/on-site manager):

SC6.19 Planning scheme policy for Palmview Structure Plan

SC6.19.1 Preliminary

Purpose

(1) The purpose of this planning scheme policy is to:-

(a) state standards identified in the **Palmview structure plan area code**;

(b) provide guidelines and advice about satisfying assessment benchmarks for assessable development and requirements for accepted development in the **Palmview Structure Plan**; and

(c) state the additional information which the Council may request in respect of a development application.

Application

(2) This planning scheme policy applies to a development application for a variation approval or a development application for assessable development in the Master Planned Area.

(3) The provisions of the **Planning scheme policy for Palmview Structure Plan** prevail over the provisions of any other planning scheme policy to the extent of any inconsistency.

Relationship to Palmview Structure Plan

(4) This planning scheme policy is to be read in conjunction with the **Palmview Structure Plan**.

Interpretation

(5) Terms used in this planning scheme policy that are also used in the **Palmview Structure Plan** have the meaning given in the **Palmview Structure Plan**.

SC6.19.2 Ecological and landscape protection outcomes

Preliminary

(1) This section applies to the following ecological and landscape protection outcomes:-

(a) the ecological and landscape protection outcomes in Performance Outcomes PO4 to PO15 in **Section 10.3.4.3 (Performance Outcomes and Acceptable Outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code**; and

(b) the non-urban open space infrastructure network outcomes in Performance Outcomes PO40 to PO44 in **Section 10.3.4.21 (Performance Outcomes and Acceptable Outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**.

General advice for ecological and landscape protection outcomes

(2) The following is general advice about satisfying the ecological and landscape protection outcomes:-

(a) The ecological and landscape protection outcomes seek to ensure that the development of the Master Planned Area occurs in a manner that:-

(i) appropriately recognises and responds to physical constraints;
(ii) provides for the protection and rehabilitation of a significant part of the Master Planned Area for environmental and landscape protection purposes; and
(iii) otherwise exhibits best practice approaches to ecological and landscape protection.

(b) The ecological and landscape protection outcomes are primarily intended to be satisfied by the following:-

(i) avoiding development for urban purposes, other than the limited infrastructure specified on the structure plan maps, occurring:-
  (A) on flood prone land identified as being unsuitable to be filled for urban purposes; and
  (B) in an Ecologically important area;

(ii) achieving a minimum of 483.4 hectares of land for ecological protection and rehabilitation purposes to improve the extent and capability of natural systems to absorb the impacts associated with large scale urban development and increasing population pressure through the following:-
  (A) the establishment of the non-urban open space infrastructure network specifically identified on **Other Plans Map OPM P12 (Palmview master planned area non-urban open space infrastructure network)** in **Schedule 2 (Mapping)**;
  (B) the implementation of **Appendix SC6.19A (Palmview master planned area ecological and landscape protection and rehabilitation plan)**;
  (C) the implementation of a Local Ecological and Landscape Protection and Rehabilitation Plan which:-
    1. outlines how **Appendix SC6.19A (Palmview master planned area ecological and landscape protection and rehabilitation plan)** is to be achieved;
    2. is to be assessed against the requirements which may include the matters in **Section 10 (Requirements for local ecological protection and rehabilitation plan)** of **Appendix SC6.19A (Palmview master planned area ecological and landscape protection and rehabilitation plan)** specified in a variation approval or another applicable development approval; and
    3. has been approved by the Council;
  (D) where the provision of infrastructure required to service development in the Master Planned Area adversely impacts on an Ecologically important area, the implementation of a Environmental Offset Plan which:-
    1. outlines how the ecological and landscape protection outcomes for environmental offsets are to be achieved;
    2. is to be assessed against the requirements specified in a variaiton approval or another applicable development approval which may include the matters in **Table SC6.19H (Assessment requirements for documents)**; and
    3. has been approved by the Council.

Editor's note–A variation approval or an applicable development application approved under the Act may include a development condition requiring the approval of a document.

Editor's note–Under section 319 (Compliance assessment of documents or works) of the Act compliance assessment of a document under chapter 6, part 10 of the SP Act continues to apply where a variation approval (being a preliminary approval to which the SP Act, section 242 applied) or another applicable development approval under the SP Act requires compliance assessment of the documents.

Guidelines and advice for the ecological and landscape protection outcomes

(3) The **Palmview master planned area ecological and landscape protection and rehabilitation plan (Appendix SC6.19A)** provides for the following:-

  (a) guidelines about satisfying the ecological and landscape protection outcomes; and

  (b) advice about the requirements for Local Ecological and Landscape Protection and Rehabilitation Plans to be required in a variation approval or another applicable development approval.

Advice for environmental offset outcomes

(4) For the purposes of Performance Outcome PO6 in **Section 10.3.4.3 (Performance Outcomes and Acceptable Outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code**, the following is advice about satisfying the assessment benchmarks in the code for the environmental offset outcomes:-

  (a) the Structure Plan Maps identify which infrastructure corridors cross Ecologically important areas and the approximate location of the crossings;

(b) a environmental offset is required to be provided under the **Palmview structure plan area code** in circumstances where infrastructure required to service the Master Planned Area adversely impacts upon:-

(i) an Ecologically important area (either within the Master Planned Area or external to the Master Planned Area); or
(ii) the ability to achieve a minimum of 483.4 hectares of land for ecological protection and rehabilitation purposes;

(c) infrastructure is to be considered to adversely impact upon an Ecologically important area where one or more of the following occurs or is likely to occur:-

(i) the clearing of native remnant or regrowth vegetation or habitat;
(ii) the restriction of fauna movement or other impact upon a habitat corridor;
(iii) water quality or a natural hydrological condition is affected; and
(iv) the functioning of the Ecologically important area is otherwise impacted upon.

Advice for Environmental transition area outcomes

(5) For the purposes of Performance Outcome PO9 in **Section 10.3.4.3 (Performance Outcomes and Acceptable Outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code**, the following is advice about satisfying the standards in the code for the Environmental transition area outcomes:-

(a) the ecological and landscape protection outcomes provide for limited low impact activities and embellishments to occur within the Environmental transition area where they can be demonstrated to be compatible with the primary ecological function of the area;

(b) a environmental offset is not required in respect of development of the environmental transition area where the development satisfies the standards in the code for the environmental transition area outcomes;

(c) further guidance in respect to stormwater infrastructure is specified in the **Planning scheme policy for development works**; and

(d) further guidance in respect to recreation parks is specified in **Section SC6.19.9 (Urban Open Space Infrastructure Network Outcomes)**.

Standards and advice for the Scenic amenity and highway acoustic buffer outcomes

(6) For the purposes of Performance Outcome PO10(f) in **Section 10.3.4.3 (Performance Outcomes and Acceptable Outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code**, the following are the standards in the code for the Scenic amenity and highway acoustic buffer outcomes:-

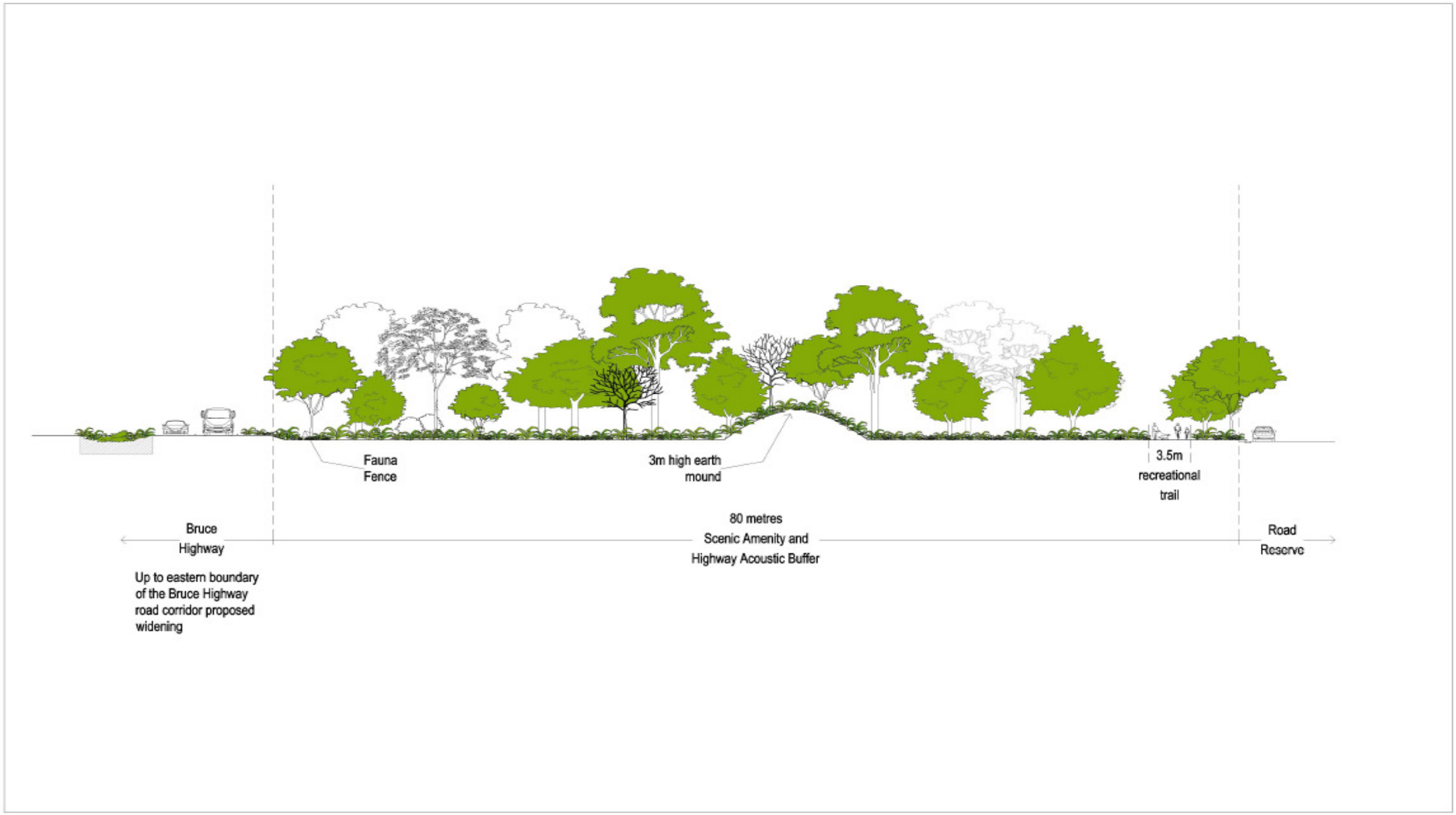
(a) the Scenic amenity and highway acoustic buffer is developed in accordance with the typical cross section specified in **Figure SC6.19A (Scenic amenity and highway acoustic buffer typical cross section)**.

(7) For the purposes of Performance Outcome PO10 in **Section 10.3.4.3 (Performance Outcomes and Acceptable Outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code**, the following is advice about satisfying the assessment benchmarks in the code for the Scenic amenity and highway acoustic buffer outcomes:-

(a) the Palmview Master Planned Area forms an important part of the distinctive green space or intra-urban break between Caloundra and Maroochydore and is visually significant in relation to views of the Mooloolah River floodplain landscape from the Bruce Highway; and

(b) the **Palmview Structure Plan** provides for an 80 metre wide semi-vegetated buffer (measured from the eastern boundary of the Bruce Highway Road Corridor proposed widening) to be established along the full length of the Palmview Master Planned Area boundary to the Bruce Highway.

Figure SC6.19A Scenic amenity and highway acoustic buffer typical cross section



Schedule 6

SC6.19.3 Neighbourhood design, housing and density outcomes

Preliminary

(1) This section applies to the neighbourhood design, housing and density outcomes in Performance Outcomes PO26 to PO33 in **Section 10.3.4.3 (Performance Outcomes and Acceptable Outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code** (neighbourhood design, housing and density outcomes).

General advice for neighbourhood design, housing and density outcomes

(2) The following is general advice about satisfying the neighbourhood design, housing and density outcomes:-

(a) the urban structure and land use pattern of the Palmview Master Planned Area is based on the establishment of a number of neighbourhoods which:-

(i) aggregate to comprise the broader Palmview community and support the function of the Palmview District Activity Centre; and
(ii) are generally defined by a walkable catchment being a five minute walk (400 metres) from an activity centre.

(b) the neighbourhood design, housing and density outcomes of the **Palmview structure plan area code** seek to ensure that development within the Palmview Master Planned Area creates a number of neighbourhoods that:-

(i) support sustainable urban development through maximising land efficiency;
(ii) encourage alternative travel options to car based travel by promoting the attractiveness of walking, cycling and public transport and providing maximum choice for the end user;
(iii) promote good access and connectivity between new neighbourhoods while providing clear connection to surrounding development;
(iv) establish main street activity centres that promote walkable neighbourhoods and provision of employment;
(v) achieve lot and dwelling diversity particularly around activity centres and public transport;
(vi) protect areas of environmental value and incorporate cultural, environmental and key landscape features;
(vii) promote community health through the provision of a variety of public open spaces and the promotion of active transport modes;
(viii) promote perimeter block development that establishes an active interface between building frontage and streets to improve personal safety through increased surveillance and activity;
(ix) foster a sense of community and strengthen local identity and sense of place while catering to a range of differing lifestyles;
(x) promote environmentally sustainable urban water management; and
(xi) are complete integrated communities rather than a series of housing estates.

(c) the neighbourhood design, housing and density outcomes are primarily intended to be satisfied through the application of best practice neighbourhood design implemented through a variation approval or the approval of another applicable development application;

(d) development should be designed through an integrated design approach that iteratively considers each component or network of a neighbourhood;

(e) development should provide neighbourhoods that are arranged to take account of the following:-

(i) elements of the major movement networks (i.e. spacing of sub-arterial roads and trunk collector roads);
(ii) the District Activity Centre;
(iii) precinct boundaries or transitions;
(iv) school sites;
(v) elements that are shared by more than one neighbourhood (i.e. schools and district parks); and
(vi) adjoining master plan boundaries.

(f) development should comply with the design outcomes for neighbourhood design specified in **Table SC6.19A (Neighbourhood design outcomes**).

Table SC6.19A Neighbourhood design outcomes

Column 1 Neighbourhood Element	Column 2 Design Outcomes
Neighbourhood Area	• Each neighbourhood is generally defined by a five minute walk (400 metres) from the neighbourhood centre. • Each neighbourhood has individual points of difference to strengthen identity. • A robust urban and neighbourhood structure is established that can accommodate a range of uses and which is flexible enough to change over time.
Movement Networks	• Street environments prioritise and encourage pedestrian and cycle movement throughout a connected walkable neighbourhood. • A highly permeable and integrated grid-based movement network of streets, pedestrian and cycle paths that maximise access to public transport is established. • The street network is focussed on the Local Activity Centres whilst providing for strong links between the Local Activity Centres and the District Activity Centre. • The layout of streets enables development to front all streets and public spaces. • Culs-de-sac are not provided, or where provided, no more than 10% of dwellings have frontage to a cul-de-sac. • There are efficient external connections, specifically for bicycles and pedestrians.
Activity Centres	• An activity centre is provided as a community focus for each neighbourhood. • Activity centres are located central to the walkable neighbourhood catchments, adjacent to principal movement arteries served by public transport. • Activity centres include a mix of compatible uses that provide for a variety of daily needs, community facilities and urban open space, such as a small square that reinforces a sense of community identity. • Transition between centre uses and residential uses occurs at mid-block property boundaries rather than at a street frontage so that similar forms of development front each other across a street. • All streets are fronted by development or public spaces to maintain street activity. • All off street vehicle parking areas are located to the rear of sites and do not have direct street frontage.
Residential Density	• A range of densities and variety of housing types are provided. • The concentration of housing density increases with proximity to activity centres. • The diversity and density of housing provided supports public transport use. • A wide range of lot sizes and building forms allow greater housing and lifestyle choice. • Residential developments involving gated communities, such as a retirement facility, are designed to ensure that the connectivity of road, public transport, bicycle and pedestrian networks are not compromised and that perimeter fences do not prevent surveillance of and integration with adjoining urban and non-urban open spaces and other public spaces. • Perimeter block development is provided in the District Activity Centre and adjacent to Local Activity Centres to promote a sense of enclosure and active streetscape while providing for casual surveillance.
Community Facilities	• Community uses and facilities are located in or adjacent to Activity Centre or major urban open space areas at locations that are highly accessible and easily identifiable. • Community uses and facilities are designed to have versatility and adaptability for a variety of functions over time. • Land for community uses and facilities may be located adjacent to open space where joint use of the facility with the space is envisaged.
Schools	• Strong, direct connections are provided from schools to the walking and cycling network in the surrounding neighbourhood areas. • The transport infrastructure in neighbourhoods around schools is to have sufficient capacity to service anticipated trip generation and to avoid any

Column 1 Neighbourhood Element	Column 2 Design Outcomes
	adverse impacts on surrounding land uses, the external transport network and public safety.
Employment Areas	• Employment areas are generally located in walking distance to public transport stops and an activity centre. • Open space areas for workers and visitors to the area are provided.
Block Sizes, Site Areas and Lot Orientation	• A range of block and lot sizes are provided that allow for a diversity in form and density of residential uses and for other uses to be accommodated in the area. • The layout of streets and lots provide for perimeter blocks of buildings fronting streets and create a relatively continuous street frontage. • Lots are oriented to front all streets, major roads, parkland and natural areas to provide good streetscape amenity and surveillance and to contribute to security and deterrence of crime. • Smaller lots are to predominate near activity centres and near public transport stops, to allow for pedestrian connectivity.
Public Open Spaces	• A wide range and diversity of public open spaces is provided. • At least one local park is provided per neighbourhood. • Most dwellings are within 500 metres of a park. • Regional wide and district parks are located on the edge of neighbourhoods to enable sharing amongst two or three neighbourhoods. • Parks are overlooked by development rather than backed onto by development to maximise casual surveillance of the park.

SC6.19.4 Sub-tropical and sustainable design outcomes

Preliminary

(1) This section applies to the sub-tropical and sustainable design outcomes in Performance Outcomes PO34 to PO35 in **Section 10.3.4.3 (Performance outcomes and acceptable outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code** (sub-tropical and sustainable design outcomes).

General advice for sub-tropical and sustainable design outcomes

(2) The following is general advice about satisfying the sub-tropical and sustainable design outcomes:-

(a) the sub-tropical and sustainable design outcomes seek to ensure that neighbourhoods within the Palmview Master Planned Area:-

(i) have a distinctive relationship to site and landscape;
(ii) are characterised by parks and open spaces;
(iii) have sub-tropical streetscapes;
(iv) create sites for subtropical buildings;
(v) have a sub-tropical landscape; and
(vi) have walkable journeys that are comfortable;

(b) the sub-tropical and sustainable design outcomes also seek to ensure that development within the Master Planned Area is designed and operated to minimise the production of greenhouse gas emissions; and

(c) the sub-tropical and sustainable design outcomes are primarily intended to be satisfied by the application of best practice sub-tropical and sustainable design at all levels of the development approval process.

Advice for sub-tropical design outcomes

(3) The following is advice about satisfying Performance Outcome PO34(c) in **Section 10.3.4.3 (Performance outcomes and acceptable outcomes for the whole of the Master Planned Area)** of the **Palmview structure plan area code**:-

(a) development should comply with the design outcomes for sub-tropical design specified in **Table SC6.19B (Sub-tropical design outcomes)**.

Table SC6.19B Sub-tropical design outcomes

Column 1 Design principle	Column 2 Design outcomes
Ensuring a strong presence of nature and water	• Preserve and enhance the sub-tropical character of the region by designing developments in response to the climate while integrating and connecting to the surrounding landscape and other natural elements. • Incorporate significant native vegetation and large shade trees in private and public spaces, along pedestrian and cycle routes and in transport corridors. • Promote public access to any natural or artificial waterways by incorporating their existence into the design for pedestrian and cycle connectivity and recreational activity.
Creating an open and permeable built environment	• Promote an outdoor lifestyle with strong connection between indoor and outdoor living. • Promote an outdoor lifestyle for medium density development and to encourage outdoor recreation oriented lifestyles, development should ensure a diversity of open space is integrated into the urban fabric, connected through the pedestrian and cycle network. • Reflect proximity of the surrounding natural vegetation and open space by creating permeable urban environments and built form that promotes green access and constant engagement with the natural environment. • Support a sub-tropical lifestyle by promoting an open and permeable built form with a climate based outcome by using passive solar design principles such as orientation and solar access, window and awning size and orientation, materials and finishes, ventilation, insulation, thermal mass, natural light, awnings and pedestrian cover.
Incorporating local interpretations of sub-tropical architecture and landscape design	• Promote integration with the natural environment through shaded outdoor dining, entertainment and recreation, for both private and public locations, by incorporating appropriately sized balconies, decks, patios, colonnades, awnings, active streets, open space and green streets into the built form and urban fabric. • Provide for a seamless transition between internal and external areas including integration with street activity through appropriate street planting and integration of vegetation with the built form. • Incorporate deep soil planting within town centre locations to reflect the densely landscaped panorama and fauna habitation of the Sunshine Coast. • Incorporate the harvesting of rain water to support surrounding vegetation and building inhabitants. • Consider local character and design and recognise how contemporary design and appropriate building materials contribute to the sub-tropical environment's character and diversity. The built form should utilise appropriate materials and colours that diminish detrimental impact of heat gain and reflection and promote durability and serviceability for the subtropical climate.

SC6.19.5 Particular precinct outcomes

Preliminary

(1) This section applies to the performance outcomes in the following:-

(a) **Section 10.3.4.9 (Performance outcomes and acceptable outcomes for the District Activity Centre Precinct)** of the **Palmview structure plan area code**; and

(b) **Section 10.3.4.13 (Performance outcomes and acceptable outcomes for the Local Employment Area Precinct)** of the **Palmview structure plan area code**.

General advice for particular precinct outcomes

(2) The precinct-based outcomes of the **Palmview Structure Plan** seek to ensure that the Master Planned Area is developed with an appropriate land use pattern that is functionally efficient, effectively integrated with transport and other infrastructure networks and provides for the creation of interesting, attractive, sustainable and desirable places to live, work and recreate.

(3) The precinct-based outcomes provide a land use and development intent for each precinct and identify specific built form criteria.

(4) Whilst these criteria are generally self-explanatory and do not require further guidance, it is recognised that in respect to certain performance outcomes for the District Activity Centre Precinct and the Local Employment Area Precinct some additional detail is warranted.

Advice for district activity centre precinct outcomes (main street)

(5) The following is general advice about satisfying Performance Outcome PO8 in **Section 10.3.4.9 (Performance outcomes and acceptable outcomes for the District Activity Centre Precinct)** of the **Palmview structure plan area code**:-

(a) development provides for the main street in the District Activity Centre to:-

(i) be shared between pedestrians, cyclists, public transport and private vehicles; and
(ii) comply with the design objectives specified in **Table SC6.19C (Design outcomes for the main street)**.

Table SC6.19C Design outcomes for the main street

Design principle	Design outcomes	Potential treatments/features to achieve outcome
Create a safe environment for users	Lower traffic speed	• Provide pedestrian priority crossing at entry point intersections. • Create a gateway feature on entry to the main street. • Provide clear signage indicating entry into the main street. • Use pavement surface materials and colour which clearly distinguish the main street from regular road surface. • Use multiple materials rather than a large expanse of one material. • Incorporate traffic calming devices. • Restrict vehicle volumes. • Plant street trees. • Incorporate lighting sufficient to ensure the safety of pedestrians and cyclists and motor vehicles.
	Minimise the physical and visual impact of cars on people and the environment and design for equal priority amongst street users	• Use coloured and textural surface contrasts. • Bring active frontage such as pavement dining to road edge in appropriate locations.
	Enhance amenity	• Provide clear entry and exit statements to reinforce the main street and enhance visual amenity of street environment. • Use alternative pavement surface texture to delineate the main street and enhance street amenity.
	Reduce linear territory ownership created by street cross-sectional elements to promote the main street and equality of all end users	• Use landscaping, parking bays, seating areas and bollards to define the vehicular path without creating significant barriers to pedestrian movement or restricting driver visibility of pedestrian activity.
	Reduce proliferation of signs and posts	• Provide for pavement marking to delineate parking bays – remove standard signage to reduce visual clutter. • No basement access or driveway cross-over to occur along the main street. • Rear lane access only for sites fronting the main street to reduce pedestrian conflict and need for signage.
Incorporate environmental infrastructure	Implement sustainable best practice measures to deal with stormwater runoff and WSUD	• Design fall of carriage way and footpath to direct water runoff for collection at grates and / or pits visually integrated into street design. • Reduce potential for pooling of water at

Design principle	Design outcomes	Potential treatments/features to achieve outcome
		collection points and velocity of flow to ensure pedestrian and vehicular movement is not unduly affected. • Select hard and soft landscapes that will not be unduly affected by the water quantity and movement and to assist with water control and dispersement. • Consider the special needs of cyclists and disabled access with respect to material selection and gradients when designing street environment in response to stormwater and WSUD.
Create a high quality of visual and physical amenity to the main street	Provide shaded pedestrian friendly street environment	• Create an attractive streetscape that contributes to the local sense of place, community safety and security. • Extend the town centre park into the main street environment. • Maximise landscaping along both sides of the street. • Retain existing vegetation wherever possible. • Space trees at maximum 8m centres to ensure mature canopies establish to provide shade and enclose the street and ensure the trees are staggered with street lighting. • Provide landscaping which reinforces the local context and street orientation. • Enhance the character and amenity of the town centre and main street with attractive, practical and hardy landscaping which retains significant vegetation. • Maximise tree cover along footpaths, streets and in public areas and evoke the landscape character of the Sunshine Coast.
	Create a lively community street and memorable town centre that is fully inclusive of all and safe to play, socialise and travel in	• Design space to encourage intended end user activities. • Include social interaction opportunities that aren't reliant of retail / commercial function. • Contribute to overall pedestrian connectivity by creating a series of connected community spaces. • Use the main street landscaped environment to contribute to the creation of a vibrant public space. • Maximise pedestrian activity through reduction in restrictions of conventional street environments such as kerbs, signage and high speed traffic. • Design the street and adjacent spaces as a lively community place that attracts high volumes of pedestrian activity. • Provide active frontages[1] to built form promoting high interaction with pedestrians and street activity.

Advice for local employment area precinct outcomes

(6) For the purposes of Performance Outcome PO1(b) in **Section 10.3.4.13 (Performance outcomes and acceptable outcomes for the Local Employment Area Precinct)** of the **Palmview structure plan area code**, the following development may be considered to be low impact industry uses and complementary business and commercial uses in the Local Employment Area Precinct:-

[1] **'Active frontage'** means a part of a building which forms a close relationship with the street and contains a visually permeable facade such as a shopfront, retail store, cafe, outdoor dining, personal service and other high pedestrian generating use at street level.

(a) development for small to medium size service trades outlets and domestic services outlets, including hire outlets, servicing both business and households;

(b) development for business and commercial equipment repairs and services outlets (covering computers, office machines, communications equipment, office furniture and fittings, shop fittings);

(c) development for small scale manufacturing establishments; and

(d) development for incubator business opportunities that contribute to a start-up economy on the Sunshine Coast.

SC6.19.6 Road transport infrastructure network outcomes

Preliminary

(1) This section applies to the road transport infrastructure network outcomes in Performance Outcomes PO11 to PO13 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**.

General advice for road transport infrastructure network outcomes

(2) The following is general advice about satisfying the road transport infrastructure network outcomes:-

(a) the road transport infrastructure network outcomes seek to ensure that the Master Planned Area is developed with a highly interconnected and permeable road network that:-

(i) supports high levels of bicycle and pedestrian use and prioritises these modes;
(ii) supports high levels of access to public transport; and
(iii) effectively services the area;

(b) **Other Plans Map OPM P8 (Palmview Master Planned Area road transport infrastructure network)** in **Schedule 2 (Mapping)** identifies conceptually the higher order elements of the road transport infrastructure network planned for the Master Planned Area;

(c) **Figure SC6.19B (Specification of transport infrastructure)** identifies the location and extent of the types of sub-arterial road and district collector street servicing the Master Planned Area);

(d) **Other Plans Map OPM P7 (Palmview Master Planned Area development and transport infrastructure network sequencing)** in **Schedule 2 (Mapping)**, **Figure SC6.19B (Specification of transport infrastructure)** and the applicable infrastructure agreement specifically identify the sequence of the higher order elements of the road transport infrastructure network planned for the Master Planned Area;

(e) road transport infrastructure is required to be provided throughout the Master Planned Area in accordance with **Other Plans Map OPM P7 (Palmview Master Planned Area development and transport infrastructure network sequencing)**, **Other Plans Map OPM P8 (Palmview Master Planned Area road transport infrastructure network)** and the requirements of the applicable infrastructure agreement;

(f) the road transport infrastructure network is a key structural element that provides a framework for the following:-

(i) the pattern of land use;
(ii) the arrangement of neighbourhoods; and
(iii) the configuration and alignment of local streets and other infrastructure networks;

(g) the road transport infrastructure network outcomes are primarily intended to be satisfied by the following:-
(i) development providing the major road transport infrastructure in accordance with the applicable infrastructure agreement;
(ii) development ensuring that the road transport infrastructure to be provided is in accordance with the road transport infrastructure network and the standards for the road transport infrastructure network as specified in the **Palmview structure plan area code**; and

(iii) the detailed design and construction of the road transport infrastructure network incorporating appropriate urban design, landscape and environmental features and treatments.

Standards for road transport infrastructure network outcomes

(3) For the purposes of Performance Outcome PO11(b) in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following are the standards identified in the code for the road transport infrastructure network:-

(a) development accords with the development and transport infrastructure network sequencing specified on **Other Plans Map OPM P7 (Palmview Master Planned Area development and transport infrastructure network sequencing)** in particular the specified triggers for vehicle trips and Equivalent Dwellings, which is to be worked out as follows:

Equivalent dwelling or ED means the measure of the demand for the number of vehicle trips equivalent to that generated by a Dwelling calculated for the relevant development type in **Table SC6.19D (Applicable uses under the Structure Plan)** using the demand generation rates specified in **Table SC6.19E (Demand generation rate for development types)**.

(b) development provides for major roads which comply with the design characteristics specified in **Table SC6.19F (Road transport infrastructure network - summary of design characteristics)**;

(c) development provides for roads which comply with the typical cross sections for each road type specified in **Figures SC6.19C** to **SC6.19J**;

(d) development provides for roads which comply with the following:-

(i) cross sections and reserve widths vary to suit intersections, public transport priority treatments, turning lanes, bus stops, pedestrian crossing treatments, sewer pit requirements, lighting and other requirements;
(ii) verge areas are paved and landscaped in accordance with the typical cross sections in **Figures SC6.19C** to **SC6.19J**;
(iii) where medians are provided, street lighting is accommodated within the median;
(iv) where provided, on road cycle lanes are incorporated into the road carriageway and continued through intersections with right turn cycle lanes provided along with advance storage boxes at controlled intersections;
(v) where parking lanes are incorporated, the kerb is built out into the parking lanes to create landscaped kerb build-outs at regular intervals without impinging on cycle lanes;
(vi) channelised intersections (signalised where required) are provided where possible with the use of roundabouts minimised on higher order roads;
(vii) legible directional and informational signage is to be supplied as necessary;
(viii) landscaping and stormwater treatment on verge areas and medians does not inhibit direct pedestrian access to on street parking or pedestrian movement across streets;
(ix) landscaping includes appropriate root barrier protection to kerbs and adjacent services;
(x) medians contain pedestrian refuge areas;
(xi) stormwater treatments (i.e. median swales) where applicable, are not to impact on the location or functioning of pedestrian refuge areas; and
(xii) additional landscaping is provided consistent with the sub-tropical landscape character desired for the Master Planned Area;

(e) development provides for an infrastructure element within a major road corridor to comply with **Table SC6.19G (Minimum widths of infrastructure elements within road corridors)**; and

(f) development provides for a road to be designed and constructed in accordance with the **Planning scheme policy for the transport and parking code** and the **Planning scheme policy for development works**.

Table SC6.19D Applicable uses under the Structure Plan

Column 1 Development category	Column 2 Development type	Column 3 Uses under Structure Plan
Residential development	Attached dwelling	• Dual occupancy • Dwelling unit • Multiple dwelling • Residential care • Short term accommodation • Rooming accommodation • Caretakers accommodation • Community residence
	Detached dwelling	• Dwelling house
	Retirement dwelling	• Retirement facility
	Other uses	• Other uses not listed will be determined at the time of the Application
Non-residential development	Commercial	• Office • Health care service • Car wash • Sales office • Veterinary services
	Community purpose	• Community use • Place of worship • Educational establishment • Child care centre • Emergency services • Community care centre • Outdoor sport and recreation
	Industry	• Low impact industry • Service industry • Bulk landscape supplies • Research and technology industry • Warehouse • Utility installation
	Retail and entertainment	• Food and drink outlet • Nightclub entertainment facility • Shop • Shopping centre • Showroom • Hotel • Theatre • Club • Indoor sport and recreation • Garden centre • Function facility • Adult store • Service station • Hardware and trade supplies • Market
	Other uses	• Other uses not listed will be determined at the time of the Application

Table SC6.19E Demand generation rate for development types

Column 1 Development category	Column 2 Development type	Column 3 Unit of measure	Column 4 Trips per unit of measure	Column 5 Equivalent Dwelling per unit of measure
Residential development	Detached dwellings	Per dwelling	9	1
	Attached dwellings	Per dwelling	6	0.67
	Retirement dwellings	Per dwelling	5	0.56
Non-residential development	Commercial	100m^2 GFA	10	1.11
	Community purpose other than an Educational Establishment	100m^2 GFA	10	1.11
	Community purpose for an Educational Establishment	Per student and staff	1.46	0.16
	Industry	100m^2 GFA	5	0.56
	Retail and entertainment	100m^2 GFA	121	13.44

Table SC6.19F Road transport infrastructure network – summary of design characteristics

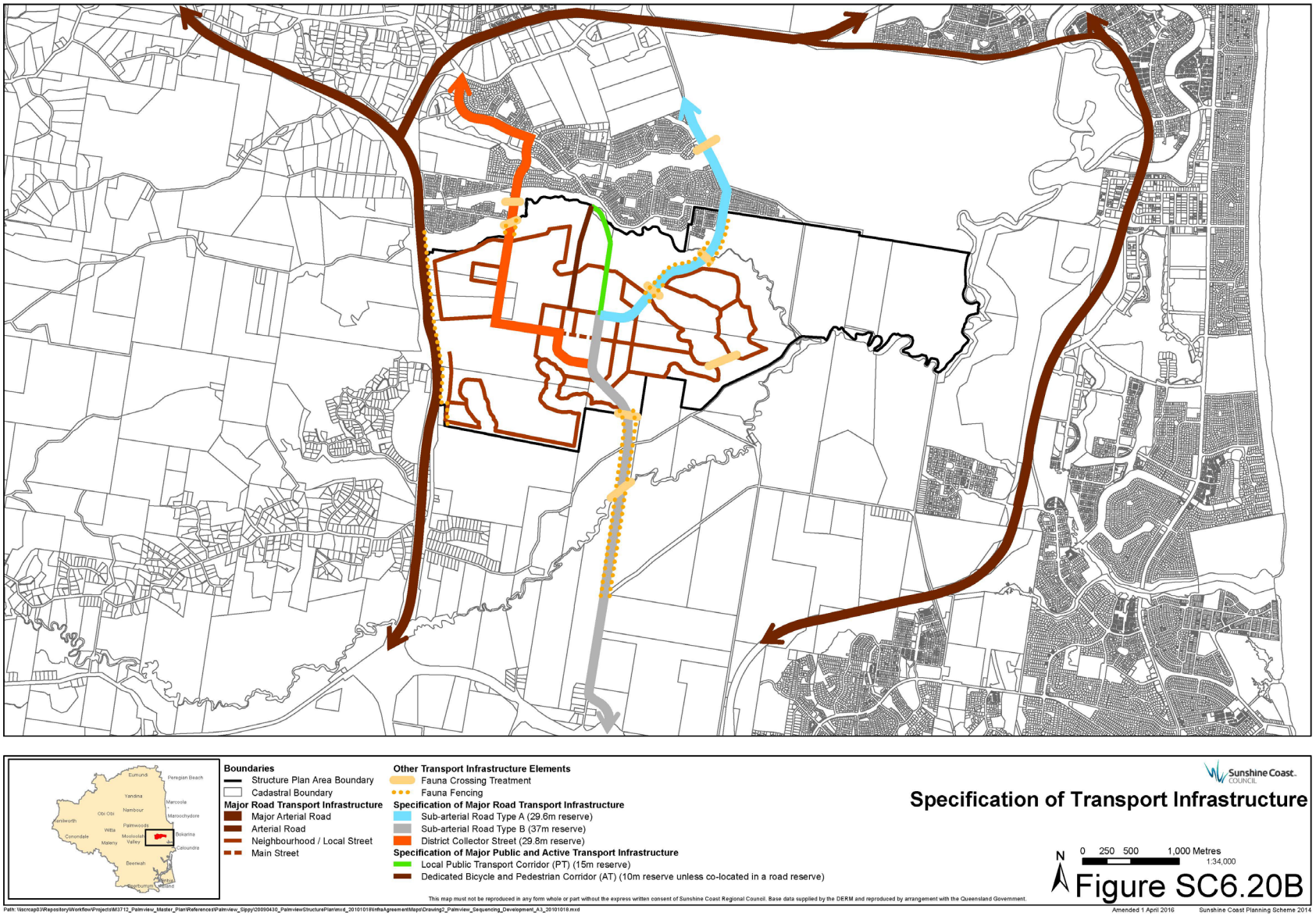
Road type	Minimum road reserve width	Typical features and treatments	Cross-section reference
Sub-arterial Road "Type A"	29.6 metres	• Two general movement lanes (one in each direction). • On-road dedicated cycle lane each side. • Landscaped median (where required by the applicable infrastructure agreement). • Indented bus bays. • Dual use path (3.0m minimum width) in each verge. • Direct property access to major development only. • Intersection spacing to be 300m minimum. • No on-road car parking generally, but if provided to be in indented parking bays with corresponding increase in minimum road reserve width. • Fauna fencing, crossings, and other structural/non-structural treatments as required.	**Figure SC6.19C, SC20.D and SC6.19E (Sub-arterial road type A typical cross section)**
Sub-arterial Road "Type B" (Note: this road is proposed to be constructed in two stages, as shown on the referenced cross-sections)	37.0 metres	• Four general movement lanes (two in each direction). • On-road dedicated cycle lane each side. • Landscaped median. • Dual use path (3.0m minimum width):- o in each verge for the section of road within the Palmview Structure Plan area boundary; and o in one verge only for the section of road outside the Palmview Structure Plan Area boundary; • Direct property access to major development only. • Intersection spacing to be 300m minimum. • No on-road car parking generally, but if provided to be in indented parking bays with corresponding increase in minimum road reserve width.	**Figure SC6.19F, SC6.19G and SC6.H (Sub-arterial road type B typical cross section)**

Road type	Minimum road reserve width	Typical features and treatments	Cross-section reference
		• Fauna fencing, crossings, and other structural/non-structural treatments as required.	
District Collector Street	29.6 metres	• Two general movement lanes (one in each direction). • On-street dedicated cycle lane each side. • Landscaped median. • Indented bus bays. • Dual use path (3.0m minimum width) in one verge and footpath (2.0m minimum width) in other verge. • Direct property access to major development only, or alternatively restricted to "left in/left out". • Intersection spacing to be 100m minimum. • Indented parking bays. • Fauna fencing, crossings, and other structural/non-structural treatments as required.	**Figure SC6.19I and SC6.19J (District Collector Street typical cross section)**

Table SC6.19G Minimum widths of infrastructure elements within road corridors

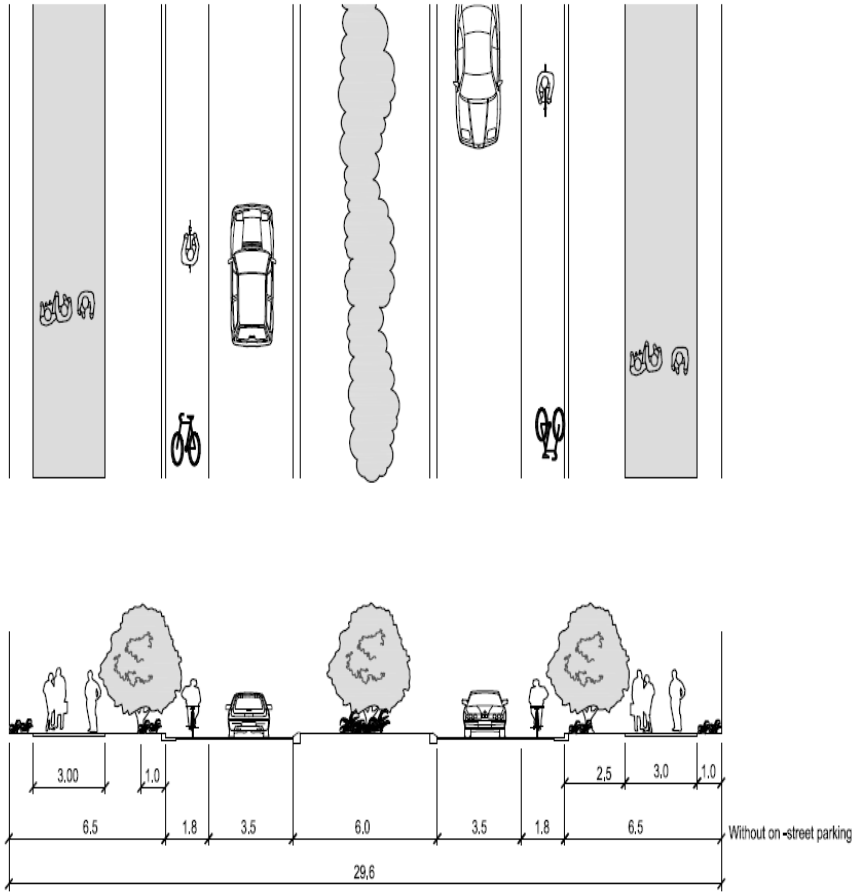
Infrastructure element	Minimum width
Roads (general traffic lanes)	3.5 metres on sub-arterial roads 3.3 metres on district collector streets
Parking lanes	2.3 metres
Dual use paths	3.0 metres
Footpaths	2.0 metres
Recreation paths	3.0 metres
Cycle lanes	1.8 metres on district collector streets 2.0 metres on sub-arterial roads
Median	6.0 metres on sub-arterial roads 3.0 metres on district collector streets
Verge	6.5 metres on sub-arterial roads 5.5 metres on district collector streets

Figure SC6.19B Specification of transport infrastructure



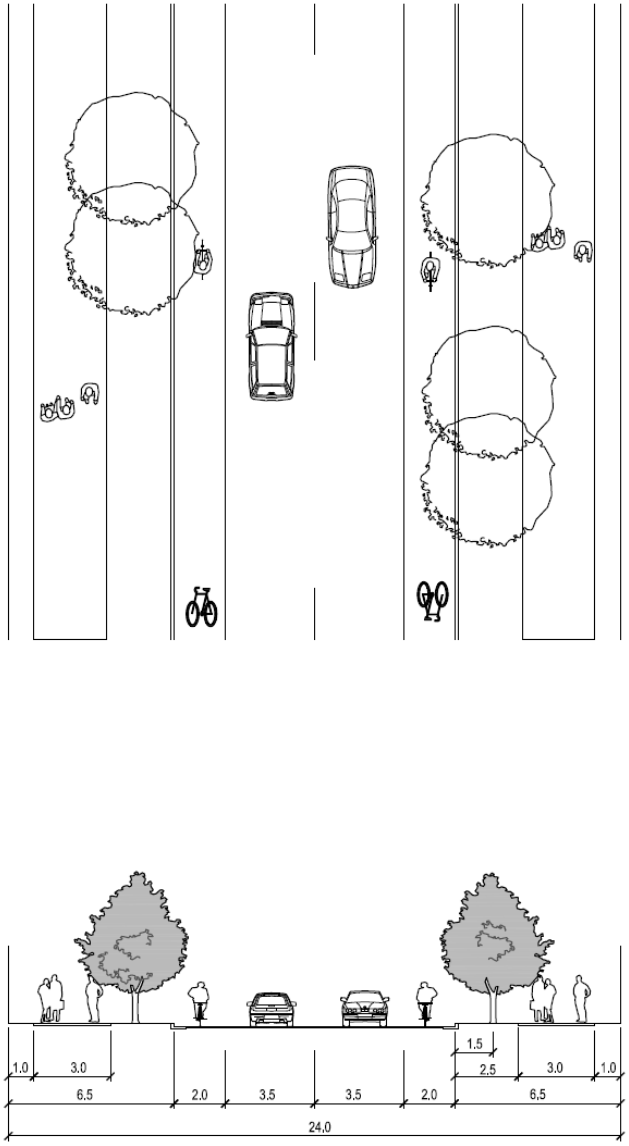
Schedule 6

Figure SC6.19C Sub-arterial Road Type A with centre median



Claymore Road Link

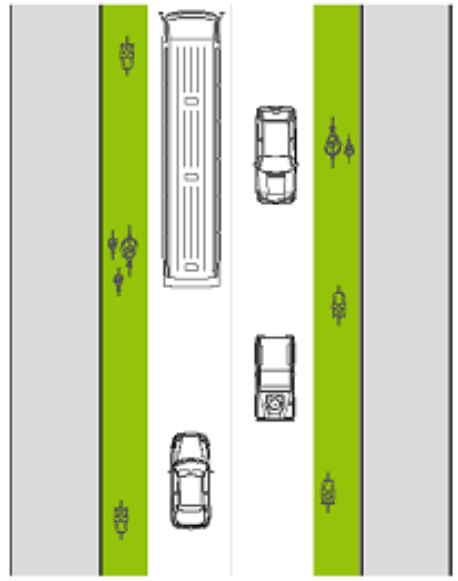
Figure SC6.19D Sub-arterial Road Type A with no centre median

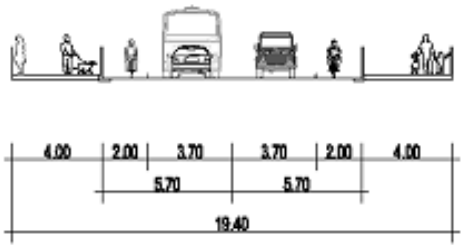


Claymore Road Link

Schedule 6

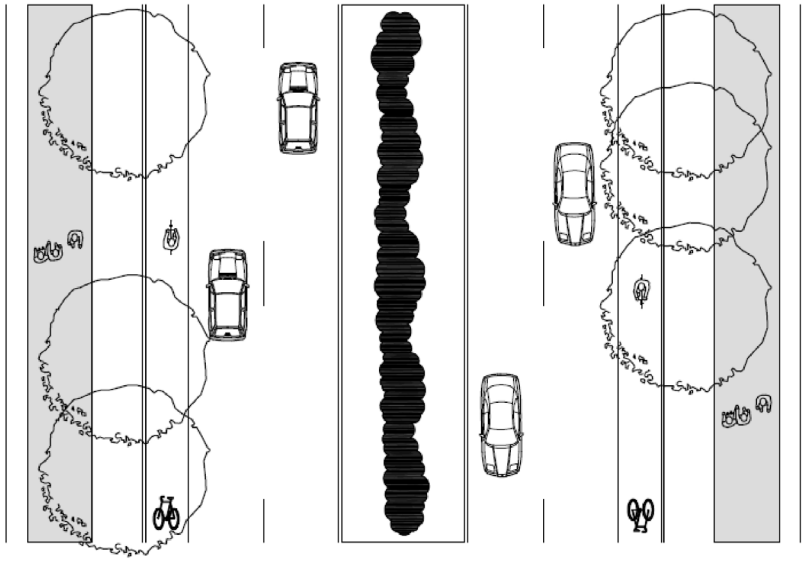
Figure SC6.19E Sub-arterial Road Type A bridge

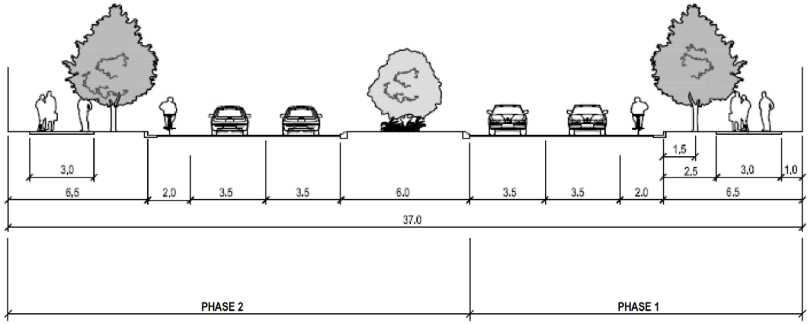




Claymore Road Bridge

Figure SC6.19F Sub-arterial Road Type B with kerb and channel

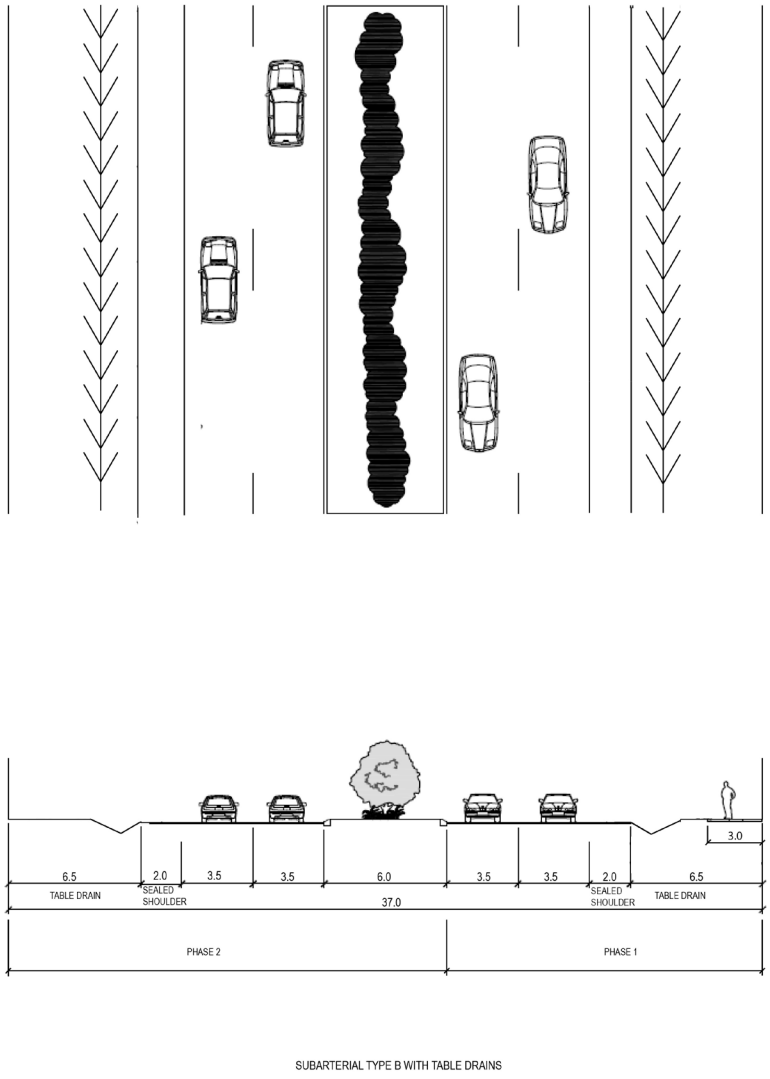




Southern Road Link

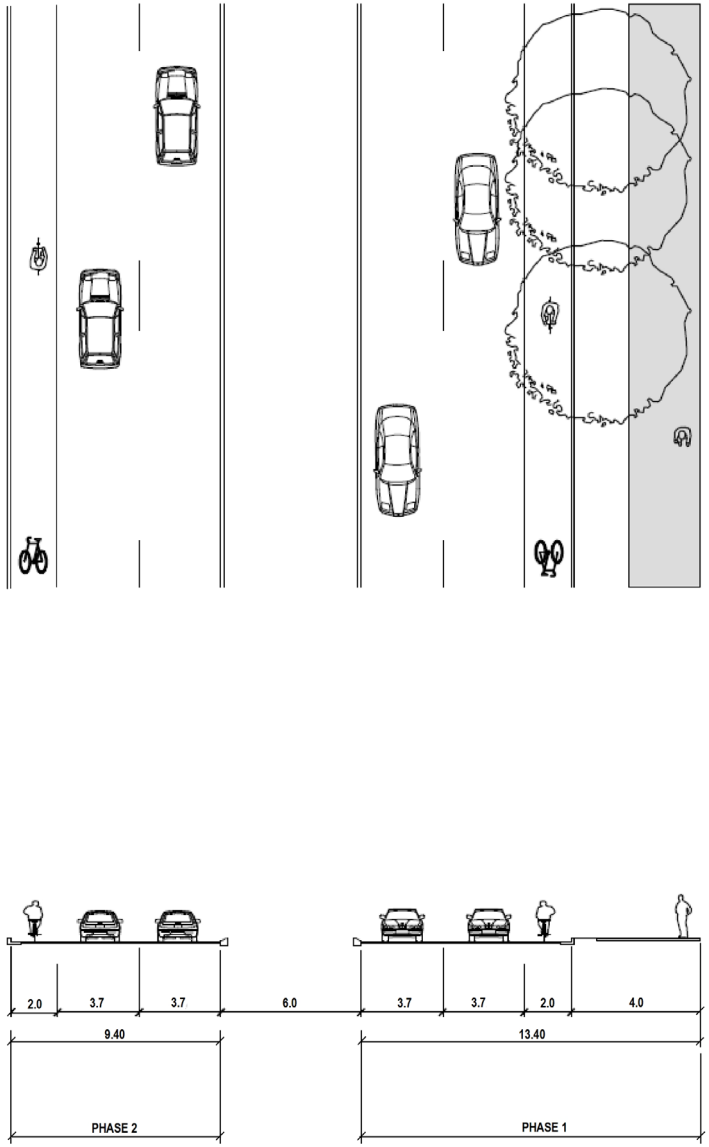
Schedule 6

Figure SC6.19G Sub-arterial Road Type B with table drains



Southern Road Link

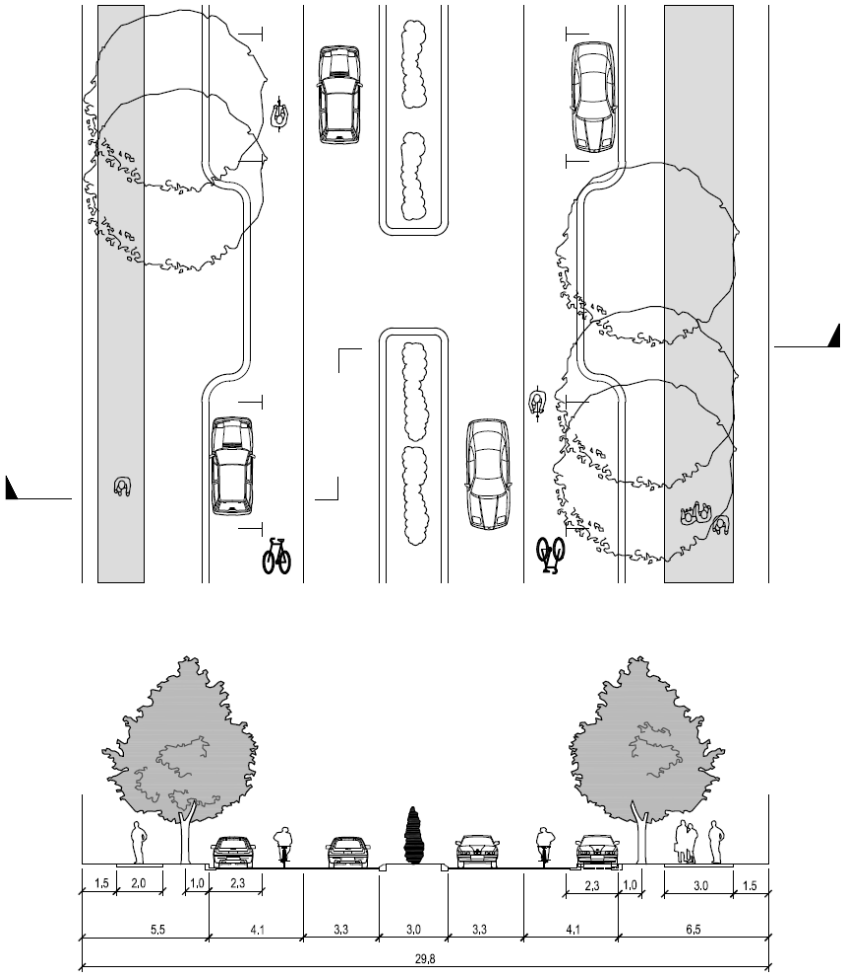
Figure SC6.19H Sub-arterial Road Type B bridge



Southern Road Link Bridge

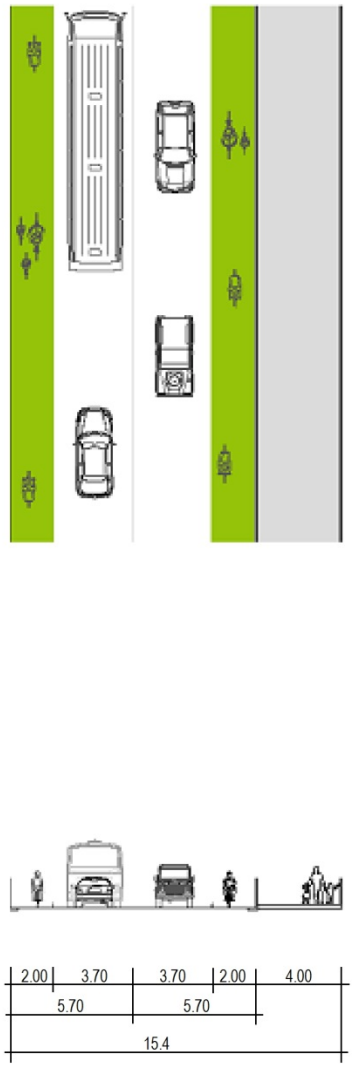
Schedule 6

Figure SC6.19I District Collector Street



District Collector Street

Figure SC6.19J District Collector Street Bridge



Springhill Drive Bridge

Schedule 6

Standards, guidelines and advice for fauna movement outcomes

(4) For the purposes of Performance Outcome PO11(b) in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following are the standards identified in the code for the fauna movement outcomes incorporated as part of the road transport infrastructure network:-

(a) development provides the fauna fencing in association with the road and public transport corridors in accordance with the specifications in **Figure SC6.19K (Typical fauna fence design)**; and

(b) development provides for the other fauna movement measures specified in **Table SC6.19H (Other fauna movement measures)**.

(5) For the purposes of Performance Outcome PO11(b) in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following are guidelines about satisfying the standards in the code for the fauna movement outcomes:-

(a) *Fauna Sensitive Road Design – Volume 1 - Past and Existing Practices* (Queensland Department of Main Roads, 2000);

(b) *Fauna Sensitive Road Design Manual – Volume 2– Preferred Practices* (Queensland Department of Transport and Main Roads, 2010);

(c) *Fish Passage in Streams – Guidelines for Design of Stream Crossings* (Queensland Department of Primary Industries and Fisheries, 1998); and

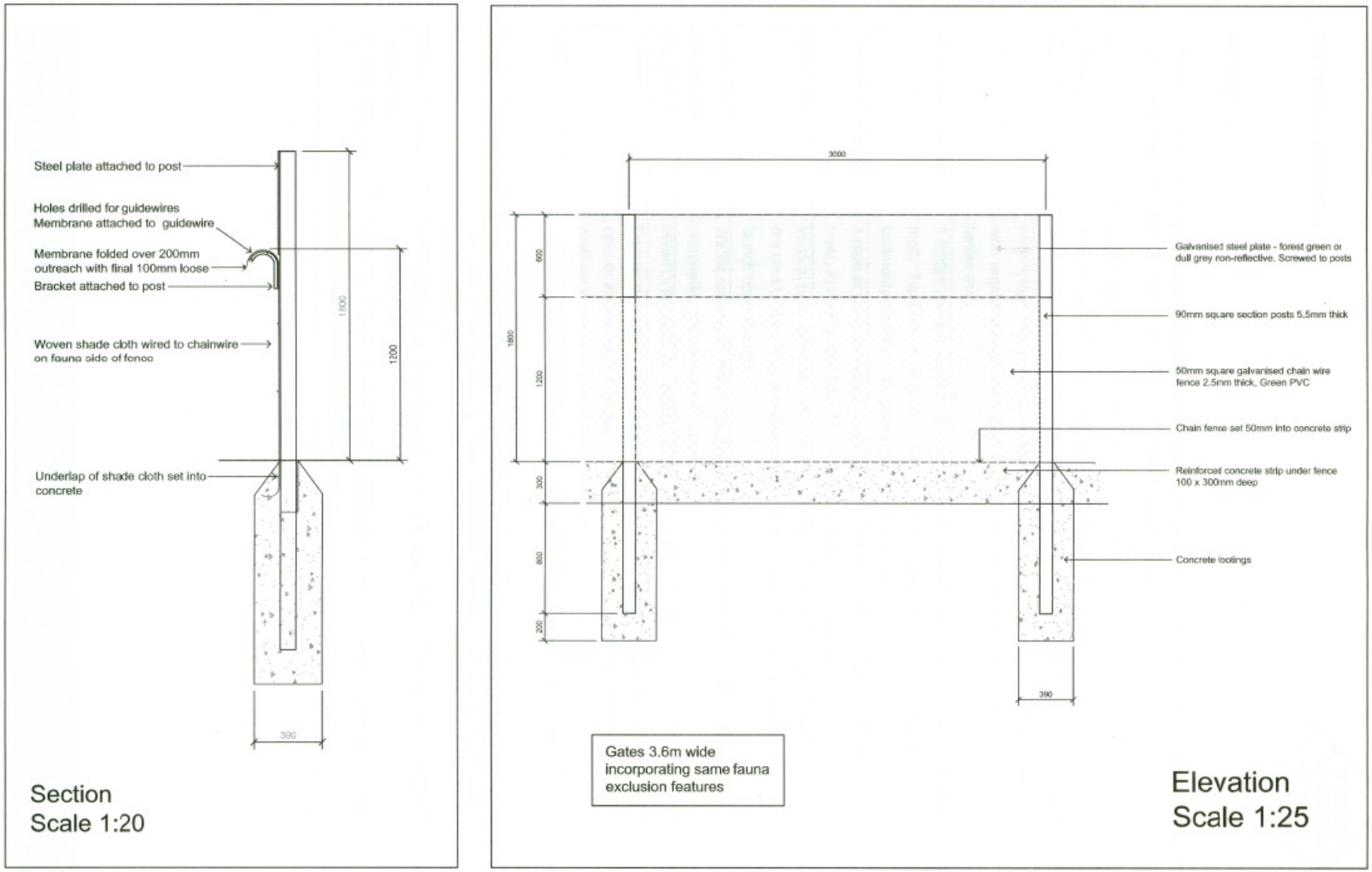
(d) *Breaking the Barriers – Engineering Solutions to Ecological Problems (Symposium)* (Environment Institute of Australia and New Zealand, 2009).

(6) For the purposes of Performance Outcome PO11(b) in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following is advice about satisfying the standards in the code for the fauna movement outcomes:-

(a) the design of fauna protection measures should reflect landscape context, site conditions and the species being targeted; and

(b) an applicant should consult with the Council to determine the most appropriate measures to be implemented.

Figure SC6.19K Typical fauna fence design



Schedule 6

Table SC6.19H Other fauna movement measures

Measure	Descriptions
OVERPASS	PERMITS PASSAGE OF ANIMALS ABOVE THE ROAD
Land Bridge	Also known as a green bridge, eco-duct or wildlife bridge. Typically a 30 metre wide bridge that spans across the road. The bridge has soil over it, and is planted with vegetation and landscaped with habitat features (e.g. logs, rocks, small water bodies etc.).
Overpass (small roads)	A bridge above a major road, likely to allow human/stock access across the road. Typically of a narrow design and not hour-glass shape. An overpass is commonly a minor road, possibly unsealed or single lane configuration.
Canopy/Rope Bridge	A rope or pole suspended above traffic, either from vertical poles or roadside trees. Primarily established for arboreal and scansorial species.
Glider Pole	Vertical poles positioned in the centre median, on the road verge, or traversing the land bridge. They provide species that glide intermediary landing pads and launch opportunities.
Local Traffic Management	Traffic calming to reduce the speed or volume of traffic via signage, crosswalks, chicanes, road closures etc.
UNDERPASS	PERMITS PASSAGE OF ANIMALS BELOW THE ROAD
Culvert	Frequently square, rectangular or semi-circle in shape. Usually pre-cast concrete cells or arches made of steel. They may specifically be built for wildlife passage or stormwater or flood conveyance purposes or a combination of both.
Tunnel	Also known as eco-pipe. Commonly round pipes of reasonably small diameter (i.e. less than 1.5 metres)
Bridge	A structure that raises traffic above surrounding land or maintains the grade of the road. Often facilitating water underneath, movement of local traffic or assisting wildlife passage.
NON-STRUCTURAL MITIGATION	INCORPORATES MORE SENSITIVE ROAD DESIGN THAT ASSISTS 'NATURAL' PERMEABILITY
Corridor Plantings	Strips of vegetation, comprising of similar species either side of the road. Often crossing the road providing corridor movements for animals.

SC6.19.7 Public transport infrastructure network outcomes

Preliminary

(1) This section applies to the public transport infrastructure network outcomes in Performance Outcomes PO14 to PO18 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**.

General advice for public transport infrastructure network outcomes

(2) The following is general advice about satisfying the public transport infrastructure network outcomes:-

(a) the public transport infrastructure network outcomes seek to ensure that the Palmview Master Planned Area is able to be provided with a high quality public transport service connecting major employment, retail, business, education, recreation, sporting, cultural and health facilities;

(b) **Other Plans Map OPM P9 (Palmview Master Planned Area public transport infrastructure network)** in **Schedule 2 (Mapping)** conceptually identifies the principal elements of the public transport infrastructure network, including the following:-

(i) the local public transport corridor;
(ii) local bus services; and
(iii) bus stops and transit stations;

(c) increasing the proportion of public transport trips both within the Master Planned Area and to locations outside of the Master Planned Area will not only serve to improve the sustainability of the Palmview community but will also contribute to a healthier community;

(d) public transport services are intended to be bus-based and form part of Translink's Sunshine Coast Network Plan. The higher order road network has been carefully designed to support the efficient circulation of buses and to provide for priority movement along identified key routes;

(e) there is also a high level of functional integration between the public transport and bicycle and pedestrian infrastructure networks (including end of trip facilities) and it is intended that these networks be developed in unison to support the development of the Master Planned Area as a transit oriented community;

(f) the requirements for public transport infrastructure are to be complemented with a broader strategy for the provision and use of public transport services and are to deliver a 'seed' program for public transport during the first phases of development has provided for in the applicable infrastructure agreement; and

(g) the public transport infrastructure network outcomes are primarily intended to be satisfied by the following:-

(i) development providing public transport infrastructure in accordance with the applicable infrastructure agreement;
(ii) development ensuring that the public transport infrastructure to be provided, and in particular the local public transport corridor, is in accordance with the public transport infrastructure network and the standards for the public transport infrastructure network as specified in the **Palmview structure plan area code**; and
(iii) the detailed design and construction of the public transport infrastructure network incorporating appropriate urban design, landscape and environmental features and treatments.

SC6.19.8 Bicycle and pedestrian infrastructure network outcomes

Preliminary

(1) This section applies to the bicycle and pedestrian infrastructure network outcomes in Performance Outcomes PO19 to PO23 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code** (bicycle and pedestrian infrastructure network outcomes).

General advice for bicycle and pedestrian infrastructure network outcomes

(2) The following is general advice about satisfying the bicycle and pedestrian infrastructure network outcomes:-

(a) the bicycle and pedestrian infrastructure network outcomes seek to create an urban environment that supports and promotes walking and cycling and those using mobility aids, and thereby reduce demand for private vehicle trips;

(b) **Other Plans Map OPM P10 (Palmview Master planned area bicycle and pedestrian infrastructure network)** in **Schedule 2 (Mapping)** identifies conceptually the higher order elements of the bicycle and pedestrian infrastructure network including transit lanes, on-road dedicated bicycle lanes, on-road shared bicycle/parking lanes, off-road shared pedestrian/bicycle paths and off-road dedicated bicycle paths, bridge structures and timber boardwalks;

(c) increasing the proportion of 'active' transport trips will not only serve to improve the sustainability of the Palmview urban community but will also contribute to a healthier community in the long term;

(d) the Master Planned Area is well suited to walking and cycling because of its relatively flat topography, its relatively compact urban form and its reasonably high level of access to major facilities such as the University of the Sunshine Coast and the Sunshine Coast University Hospital. There is also a high level of functional integration between the various infrastructure networks for the Palmview Master Planned Area that underpins and takes maximum advantage of these active transport modes;

(e) the environmental and landscape context at Palmview also provides excellent opportunities for recreation trails, with easy access to significant planned recreation trails along the Mooloolah River and Sippy Creek, providing opportunities to use these trails as key links within the active transport network;

(f) the bicycle and pedestrian infrastructure network is extensive and is intended to be treated as the priority movement network in the Master Planned Area; and

(g) the bicycle and pedestrian infrastructure network outcomes are primarily intended to be satisfied by the following:-

(i) development providing bicycle and pedestrian infrastructure in accordance with the applicable infrastructure agreement; and
(ii) development ensuring that the bicycle and pedestrian infrastructure to be provided is in accordance with the bicycle and pedestrian infrastructure network and the standards for the bicycle and pedestrian infrastructure network as specified in the **Palmview structure plan area code**.

Standards and guidelines for bicycle and pedestrian infrastructure network outcomes

(3) For the purposes of Performance Outcome PO19(b) in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following are the standards identified in the code for the bicycle and pedestrian infrastructure network:-

(a) development provides for bicycle and pedestrian infrastructure in road transport infrastructure and public transport infrastructure to be in accordance with the typical road cross sections contained in **Section SC6.19.6 (Road transport infrastructure network outcomes)**and the **Planning scheme policy for transport and parking.**

SC6.19.9 Urban open space infrastructure network outcomes

Preliminary

(1) This section applies to the urban open space infrastructure network outcomes in Performance Outcomes PO31 to PO39 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code** (urban open space infrastructure network outcomes).

General Advice for Urban Open Space Infrastructure Network Outcomes

(2) The following is general advice about satisfying the urban open space infrastructure network outcomes:-

(a) the urban open space outcomes seek to ensure that the Master Planned Area is provided with an appropriate range of local, district and regional urban open space areas;

(b) urban open space plays an important role in supporting the development of social capital and creating a healthy community and is particularly important in new and emerging communities in terms of strengthening social interaction and encouraging a sense of place, providing for recreation activities and contributing to the amenity of their urban form;

(c) the urban open space outcomes also seek to ensure the establishment of a legible, accessible, connected open space network while creating public open spaces that respond to each individual neighbourhood;

(d) **Other Plans Map OPM P11 (Palmview master planned area urban open space infrastructure network)** in **Schedule 2 (Mapping)** identifies conceptually the higher order elements of the urban open space infrastructure network planned for the **Palmview structure plan area code**;

(e) local recreation park components of the urban open space infrastructure network are intended to be located so as to ensure all residents and workers of the Master Planned Area are within 500 metre walking distance of a local recreation park; and

(f) the urban open space infrastructure network outcomes are primarily intended to be satisfied by the following:-

(i) development providing the urban open space infrastructure in accordance with the applicable infrastructure agreement; and
(ii) ensuring that detailed design and construction of urban open space has regard to the following:-
(A) functional characteristics, user needs (social and recreational), lifecycle costs and incorporates high quality urban and landscape design which complies with CPTED principles; and

(B) the standards identified for the non-urban open space infrastructure network in **Appendix SC6.19A (Palmview Master Planned Area ecological and landscape protection and rehabilitation plan)**.

Standards for the urban open space infrastructure network outcomes

(3) For the purposes of Performance Outcome PO31(b) in **Section 10.3.4.21 (Performance Outcomes and Acceptable Outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following are the standards identified in the code for the urban open space infrastructure network:-

(a) development provides for land for urban open space to be provided in one contiguous parcel which is regular in shape and fit-for-purpose;

(b) development provides for land for urban open space to be provided to the Council in freehold tenure;

(c) development ensures that urban open space is above the Q20 flood levels;

(d) development ensures that urban open space is free of hazards and constraints, including the following:-

(i) land listed on the Contaminated Land Register or Environmental Management Register;
(ii) land known or suspected as being contaminated;
(iii) land required for buffer or esplanade;
(iv) land required for or contains an above ground utility installation such as a sewerage pump station, transformer or high voltage power lines or lies within 50 metres of an easement;
(v) land required as an easement over sewerage/water lines or other underground utilities or services;
(vi) land required principally for drainage purposes;
(vii) land is required for stormwater treatment or detention;
(viii) land within a road reserve or subject to future proposed transport corridors;

(e) development ensures that local, district and regional level urban open space has direct access from a public road along one side for at least 50% of its perimeter; and

(f) development ensures that urban open space infrastructure is provided in accordance with the desired standards of service as stated in the following:-

(i) **Table SC6.19I (Provision of urban open space infrastructure network)** which states the provision rate of the urban open space infrastructure network; and
(ii) **Table SC6.19J (Urban open space infrastructure network attributes)** which states the attributes of the urban open space infrastructure network).

Table SC6.19I Provision of urban open space infrastructure network

Park type		Park characteristics		Park catchment	
Category	**Catchment**	**Minimum area**	**Minimum width**	**Catchment**	**Park provision**
Recreation parks	Local	1 ha	50m	500m (within 5 min. walk)	1 ha per 1,000 people
	District	5 ha	50m	5 km (within 30 min. walk, 20 min. cycle and 10 min. drive)	1.3 ha per 1,000 people
	Regional	20 ha	100m	30 km (public transport routes and cycleway and within 30 min. drive)	0.7 ha per 1,000 people
Sports parks	District	10 ha	150m	10 km (30 min. cycle, 10 min. drive)	1.5 ha per 1,000 people

Schedule 6

Table SC6.19J Urban open space infrastructure network attributes

Recreation park – Local

Description:

Primarily used by the community for informal recreation, social, cultural and leisure activities and which may provide for other complementary values (e.g. landscape amenity or biodiversity conservation). In community hubs they are visually and physically connected with the community and commercial activities to help activate the locality.

Size and topography

- Minimum of 1.0 ha.
- Where the topography is such that additional land is required to achieve the required facilities and setting, land area can be increased to accommodate these facilities.
- Minimum width 50m.
- Regular shape.

Access and location

- A short 5-10 minute walk or less than 500 metres from most residences.
- At least two sides or approximately 50% of perimeter to have road frontage.
- Key use areas meet disability access requirements.

Linkages

- Linked by quality recreation trail network or a pedestrian and bicycle network.
- Pathways networks located within open space not to conflict with primary park use.

Landscape and character

- Character reflective of local identity and heritage values/space.
- Retain existing trees at strategic locations. Plant new trees to contribute to broader amenity of the area.
- Where a park has been located to provide views, key viewpoints need to be protected.

Natural assets (vegetation)

- Planting to provide diversity of layers and qualities for wildlife needs – food sources, connection, protection and breeding.
- Planting style allowing for kick about cleared area.
- Protect and sustain Ecologically important areas / support local biodiversity consistent with primary function.

Safety and security

- The use of Crime Prevention through Environmental Design (CPTED) principles relevant to level of risk and nature of setting.
- Play spaces are located in safe areas (good surveillance).
- Safe access for pedestrians - lighting.
- Emergency vehicle access.

User benefits

- Open grassed area for passive recreation with shaded spaces for social interaction and provide visual amenity for external users.

Flood immunity

- Above Q20 (defined WSUD/flood event).
- Buildings are to be above Q100.
- Kick about and social spaces are well drained.

Activities

- Land use.
- Community Hubs.
- To meet the Desired Standards of Service of Social Infrastructure Strategy.

Recreation park – Town Park

Description

Primarily used by the community for informal recreation, social, cultural and leisure activities. Located in a community hub. A location for events, celebrations and community gatherings of a civic/ community nature.

Size and topography

- Minimum of 3 ha.
- Minimum width 100m.

Access and location

- At least one side or approximately 50% of perimeter to have road frontage.
- Key use areas meet disability access requirements.
- Co-located with retail/commercial spaces, community facilities, and/or schools to help activate the locality.

Safety and security

- The use of Crime Prevention through Environmental Design (CPTED) principles relevant to level of risk.
- Safe access.
- Emergency vehicle access.

User benefits

- Community meeting spaces for social, cultural and leisure activities and which may provide for other complementary values (e.g. Landscape amenity).
- Civic meeting and gathering space.

Linkages • Linked to quality recreation trail network or a pedestrian and bicycle network. • Central to key civic and community facilities. **Landscape and character** • Character reflective of local identity and heritage values/space. Designed and managed to support community and social adjoin activities.	**Flood immunity** • Land to be above Q20 (defined flood event). • Buildings are to be above Q100. • Grassed spaces are well drained. **Activities** • Provision of space for civic events/celebration. • Skate/youth facility. • Diverse range of recreational and social spaces. • Space for cultural and community events.
Recreation park – district	
Description Primarily used by the community for recreation, social, cultural and leisure activities and may provide for other complementary values (e.g. landscape amenity or biodiversity conservation). District recreation parks provide more diverse opportunities for recreation experiences and may support nature- based recreational experiences.	
Size and topography • 5 ha. • Where the topography is such that additional land is required to achieve the required facilities and setting, land area can be increased to accommodate these facilities. • Minimum width 50m. **Access and location** • 5 km from most residences. • Generally located in urban areas or areas of special interest and may adjoin other community facilities. • On or close to a distributor or arterial road and within walking distance to regular public transport. • At least one side or approximately 50% of perimeter to have road frontage. • Provision of off street car parking. **Linkages** • Located on a recreation trail or on a pedestrian and bicycle network. • May provide a trail head for urban and non-urban trails. • Pathways networks located within open space not to conflict with primary park uses. **Landscape and character** • Character reflective of local identity and heritage values. • Retain existing trees at strategic location and planting new trees to contribute to broader amenity of the area. • Kick about spaces to be retained for passive recreation opportunities and spaces to accommodate events. • Consider use of durable materials and more permanent features (e.g. walls). • Where a park has been located to provide views, key viewpoints need to be identified and planted with lower vegetation where replanting occurs.	**Natural assets (vegetation)** • 'Bushland' planting style while allowing for kick about cleared area, play spaces, event spaces and community garden areas. • Planting to provide diversity of layers and qualities for wildlife needs – food sources connection, protection and breeding. • Protect and sustain ecologically important areas/ support local biodiversity consistent with primary function. **Safety and security** • The use of Crime Prevention through Environmental Design (CPTED) principles relevant to level of risk and nature of setting. • Play spaces are located in safe areas. • Emergency vehicle access. • Pedestrian pathways to be lit. **User benefits** • District recreation parks provide a more diverse range of passive, social, cultural and recreational experiences through supporting land and infrastructure. **Flood immunity** • Land (minimum of 70%) to be above Q20 (defined flood event). • Buildings are to be above Q100. • Kick about and social spaces are well drained. • WSUD.

Recreation park – regional

Description

Primarily used by the community for informal recreation, social, cultural and leisure activities and which may provide for other complementary values (e.g. landscape amenity or conservation). Sunshine Coast wide recreation parks provide a wider range of experiences and opportunities that encourage longer stays for a diverse range of users.
Botanic Gardens are contained in this category.

Size and topography

- 20 ha.
- Minimum width 100m.

Access and location

- In urban areas <30 km most residences.
- On or close to arterial road with regular public transport to the site.
- At least two sides or approximately 50% of perimeter to have road frontage.
- Provision of dispersed onsite car parking essential to reduce visual impact.
- Located on a recreation trail.

Linkages

- Located on a recreation trail or on a pedestrian and bicycle network.
- Provides a trail head for urban and non-urban trails.
- Pathway networks located within open space not to conflict with primary park uses.
- Pedestrian pathways link activity areas.

Landscape and character

- Character reflective of local identity and heritage values.
- Retain existing trees at strategic locations and plant new trees to contribute to broader amenity of the area.
- Larger open spaces (e.g. kick about space) to be retained for passive recreation and social opportunities (e.g. major events).
- Consider use of durable materials and more permanent features (e.g. walls).
- Where a park has been located to provide views, key viewpoints need to be identified and planted with lower vegetation where replanting occurs.

Natural assets (vegetation)

- 'Bushland' planting style while allowing for kick about cleared area.
- Planting to provide diversity of layers and qualities for wildlife needs – food sources connection, protection and breeding.
- Protect and sustain ecologically important areas/ support local biodiversity consistent with primary function.

Safety and security

- The use of Crime Prevention through Environmental Design (CPTED) principles relevant to level of risk and nature of setting.
- Play spaces are located in safe areas.
- Emergency vehicle access.
- Safe light areas for night time use and pedestrian linkage.

User benefits

- Provides for a large range of outdoor and passive recreational experiences including play spaces, open space and informal kick about area, landscape and amenity and provides BBQ, shelters and major gathering spaces and opportunities for festivals and celebration.

Flood immunity

- Land to be above Q20 (defined flood event).
- Buildings are to be above Q100.
- Kick about and social spaces are well drained.

Recreational trails

Description

Recreation trails are provided for the primary purpose of recreational activities such as walking, horse riding and mountain biking. Recreation trails often traverse through a range of land tenures. These places have a different intent to the pedestrian and bicycle networks co-located with roads infrastructure, which exist primarily to expedite modes of movement.

Size and topography

- 12m wide corridor incorporating a 1.5 – 3m wide pathway.
- A variety of distances and circuits to be provided.
- Natural contours are to be followed to ensure even trail grades.
- Ensure local drainage is maintained along

Landscape and character

- Where space allows, without compromising the lands core function, the trail gently meanders to take advantage of natural and constructed features and provide an element of discovery.
- Desirable for 60% of trail to have access to shade from vegetation.
- Trails are to be interesting and routed through

water courses. • Poorly drained areas and areas with high erosion to be avoided. **Access and location** • Trails to connect to recreation parks, sports grounds, and traverse drainage reserves, appropriate environment reserves, Conservation/national parks to activate the open space network and create a sense of connection to and immersion in open space. • Trails to be located close to edges of parks to reduce impacts on park users. • Trail location to give consideration to the user and service vehicle access requirements for maintenance. **Provision** • Consider access for residents to be <500m from a recreation trail. **Linkages** • Trails are linked to community hubs (cafes, community facilities) parks, reserves and sports grounds, active transport networks and the non-urban trail networks.	different vegetation and landform. • Where determined, environmental and cultural features are outlined in interpretive information. • Recycled/sustainable construction materials preferred. Where not possible materials that are durable or can be reused are required. **Natural assets (vegetation)** • Taller trees for shading. • Planting to provide diversity of layers and qualities for wildlife needs – food sources connection, protection and breeding. • Trails constructed to so as not to impact on existing trees and reduce need for constant pruning. • Porous materials to be considered in suitable areas to improve water penetration and reduce sheet flow. **Safety and security** • The use of Crime Prevention through Environmental Design (CPTED) principles relevant to level of risk and nature of setting. • Trails are located a minimum of 5m from the constructed road. • Safety signage and fencing where necessary. **User benefits** • At planning stage determine what users (e.g. walking, cycling and equestrian) and level of accessibility. **Flood immunity** • The provision of appropriate drainage must be considered in the trail planning, design and construction process.
Sport grounds – district	
Description Facilities for formal sporting and active recreation activities including ovals, courts and circuits. They may also provide local recreation park facilities outside of formal sporting hours as well as recreation facilities for families attending sporting events. Contribute to amenity and local biodiversity by appropriate vegetation planting on boundaries.	
Size and topography • 10 ha. A number of sports may co-locate or adjoin district recreation parks creating a larger open space. • Principally a flat site with 5% gradient or less. • Minimum width 150m. **Access and location** • In urban areas <10 km. • Close to a collector road with on-site car parking provided. • At least two sides or approximately 50% of perimeter to have road frontage. • In higher density areas co-locate with community infrastructure where possible. • Located on public transport routes and stops.	**Natural assets (vegetation)** • Boundary area and corners of site substantially planted with locally native tree/shrub species. **Safety and security** • The use of Crime Prevention through Environmental Design (CPTED) principles relevant to level of risk and nature of setting. • Play spaces are located in safe areas. • Emergency vehicle access. • Perimeter fencing for safety of users. **User benefits** • District sports grounds provide community access to a variety of active formal sporting, cultural and recreation facilities. • Multi use and multi-function configuration

Linkages • Located on a recreation trail or on a pedestrian and bicycle network. • Connected to residential and school/community facilities. **Landscape and character** • Designed to reduce impact of flood lighting on adjacent areas. • Use of appropriate design and management principles (e.g. on-site water storage and treatment) to reduce nutrient flow and weed invasion from the site. • Designed to positively contribute to the amenity of surrounding areas. • Shade trees dividing fields, shaded car parking.	preferred. **Flood immunity** • Buildings and fenced areas above Q100. • Playing fields above Q20. • Wetland treatment areas above Q10. • Playing surfaces are well drained. **Activities** • Assessment of existing facilities within the district to inform preferred layout.

Standards for embellishments associated with urban open space infrastructure network

(4) For the purposes of Performance Outcome PO31(b) in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the standards identified in the code for the desired level of embellishments for each type of urban open space area are specified in **Table SC6.19K (Embellishment standards for urban open space infrastructure)**.

Table SC6.19K Embellishment standards for urban open space infrastructure

Embellishments	Local Recreation	District Recreation	Regional Recreation	District Sport	Town park
Earthworks (grading, levelling and grassing)	✓	✓	✓	✓	✓
Weed free	✓	✓	✓	✓	✓
Tree planting	✓	✓	✓	✓	✓
Signage (name / info)	✓	✓	✓	✓	✓
Interpretive signage		✓	✓		✓
Road access (external)		✓	✓	✓	✓
Vehicle access / road (internal / fire management)		✓	✓	✓	✓
Vehicle access (emergency vehicles)	✓	✓	✓	✓	✓
Public art			✓		✓
Car parking (on-site) - (10 formal spaces per ha plus additional on-street parking)		✓	✓	✓	
Vehicle barriers/ bollards	✓	✓	✓	✓	✓
Bicycle racks	✓	✓	✓	✓	✓
Footpath / bikeway (internal)		✓	✓	✓	✓
Footpath / bikeway (external linkage)		✓	✓	✓	✓
Flat, well drained play area	✓	✓	✓	✓	✓
Shade structures / shade sails	✓	✓	✓	✓	✓
Bench seating – 3 seats per ha	✓	✓	✓	✓	✓
Picnic table / shelters	✓	✓	✓	✓	✓
Barbecues		✓ (max 2 double BBQs)	✓ (max 4 double BBQs)		
Drinking fountains	✓	✓	✓	✓	✓
Toilet block - 8 stall unisex (including disabled)		✓ (1 block)	✓ (2 blocks)	✓ (1 block with change rooms)	✓ (1 block)
Skate park					✓
Play space / youth / fitness equipment with softfall and shade over equipment areas	✓	✓	✓	✓	✓
Lighting / security lighting pathways	✓	✓	✓	✓	✓

Embellishments	Local Recreation	District Recreation	Regional Recreation	District Sport	Town park
Plaza – hard stand area					✓
Sports field lighting and 3 phase power				✓	✓
Fenced dog park		✓	✓		
Landscaping / gardens	✓	✓	✓	✓	✓
Multi-purpose fields				✓	
Multi-purpose courts				✓	
Storage sheds				✓	
Clubhouse / change rooms				✓	
Kiosk				✓	✓
Spectator seating				✓	
Bus set down			✓	✓	✓
Rubbish bins	✓	✓	✓	✓	✓
Drainage	✓	✓	✓	✓	✓
Fencing	✓	✓	✓	✓	
Design	✓	✓	✓	✓	✓
Suitable building sites		✓	✓	✓	
Serviced site with water, sewer, stormwater and electricity	✓	✓	✓	✓	✓

Guidelines for minimising ongoing lifecycle and management costs of the urban open space infrastructure network

(5) For the purposes of Performance Outcome PO39 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**, the following are guidelines about satisfying the standards in the code for the minimising ongoing lifecycle and management costs of the urban open space infrastructure network:-

(a) development provides for the use of landscape features such as mounding and stone walls rather than the provision of generic play equipment in the urban open space infrastructure network;

(b) development provides for the use of native endemic species in landscaping and the reduction of areas of manicured lawns in the urban open space infrastructure network;

(c) development provides for the inclusion of solar lighting in the urban open space infrastructure network; and

(d) development provides for the use of recycled water in the urban open space infrastructure network.

SC6.19.10 Community facilities infrastructure network outcomes

Preliminary

(1) This section applies to the community facilities infrastructure network outcomes in Performance Outcomes PO45 to PO47 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code**.

General advice for community facilities infrastructure network outcomes

(2) The following is general advice about satisfying the community facilities infrastructure network outcomes:-

(a) the community facilities infrastructure network outcomes seek to ensure that the Master Planned Area is provided with an appropriate range of community facilities;

(b) community facilities and services, and access to those, play an important role in supporting the development of social capital and are particularly important in new and emerging communities that need to establish local connections and a sense of place;

(c) **Other Plans Map OPM P13 (Palmview Master Planned Area community facilities infrastructure network)** of the **Palmview Structure Plan** identifies conceptually the higher

order elements of the community facilities infrastructure network planned for the Master Planned Area;

(d) the community facilities infrastructure outcomes are primarily intended to be satisfied by:-

(i) development providing community facilities infrastructure in accordance with the applicable infrastructure agreement and **Table SC6.19L (Attributes of community facilities infrastructure)**; and

(ii) ensuring that the detailed design and construction of community facilities has regard to functional characteristics, user needs, whole of lifecycle costs and incorporates high quality urban and landscape design; and

(e) developers are encouraged to complement requirements for community facilities infrastructure with a broader strategy for developing social capital and work in partnership with the Council to deliver a tailored community development program.

Table SC6.19L Attributes of community facilities infrastructure

<table>
<tr><th colspan="2">Community Facilities – District</th></tr>
<tr><td colspan="2">Description
General community use facility providing meeting spaces for social, educational and recreational activities, health/ support services and information</td></tr>
<tr><td>Size
• 1 ha land.
• 1,500m^2 GFA.

Access and location
• At least one side or approximately 25% of perimeter to have road frontage.
• Access, site and buildings meet disability access requirements.
• Co-located with retail/commercial spaces, other community facilities, open space and/or schools to help activate the locality and create a vibrant civic gathering space.

Linkages
• Linked to public transport and pedestrian/bicycle networks.

Landscape and character
• Location and design responds to the surrounding natural and built environment and respect and celebrate local identity, character and heritage.
• Where a facility has been located to provide views, key viewpoints need to be protected.</td><td>Safety and security
• Crime Prevention through Environmental Design (CPTED) principles address access, site and building design.
• Setting, site and building design maximises casual surveillance.
• Emergency vehicle access.

User benefits
• Multi-function, flexible spaces that responds to the diverse and changing needs of the community and encourages participation, creativity, healthy lifestyles and community wellbeing.
• Encourages community networks and activity, pride and ownership.

Flood immunity
• Buildings are to be above Q100.</td></tr>
<tr><th colspan="2">Community Facilities – Local/meeting space</th></tr>
<tr><td colspan="2">Description
General community use facility providing meeting spaces for social, educational and recreational activities, health/ support services and information</td></tr>
<tr><td>Size
• 3,000m^2 land.
• 300-800m^2 GFA.

Access and location
• At least one side or approximately 25% of perimeter to have road frontage.
• Access, site and buildings meet disability access requirements.</td><td>Safety and security
• Crime Prevention through Environmental Design (CPTED) principles address access, site and building design.
• Setting, site and building design maximises casual surveillance.
• Emergency vehicle access.

User benefits</td></tr>
</table>

• Co-located with retail/commercial spaces, other community facilities, open space and/or schools to help activate the locality and create a vibrant civic gathering space. **Linkages** • Linked to public transport and pedestrian/bicycle networks. **Landscape and character** • Location and design responds to the surrounding natural and built environment and respect and celebrate local identity, character and heritage. • Where a facility has been located to provide views, key viewpoints need to be protected.	• Multi-function, flexible spaces that responds to the diverse and changing needs of the community and encourages participation, creativity, healthy lifestyles and community wellbeing. • Encourages community networks and activity, pride and ownership. **Flood immunity** • Buildings are to be above Q100.
Aquatic Facility – District (minor)	
Description An aquatic centre consisting of lap swimming, water play and other ancillary infrastructure to cater for the district.	
Size and topography • Minimum 10,000m² usable unconstrained area which includes: o requirements for car parking o emergency vehicle access o pedestrian pathways within the complex o equitable access designs o Landscape buffers o space for sustainable initiatives i.e. solar, backwash water recycling. o Waterspace approx. 500m^2 **Access and location** • Co-location with compatible uses such as other community infrastructure such as libraries, youth spaces, neighbourhood centres, active recreation facilities, skate parks, business centres, schools and shopping centres. **Linkages** • Linked to public transport and pedestrian/bicycle networks. **Amenity impact** • Aquatic facilities can create a level of noise that could be considered excessive in relation to adjoining sensitive land uses. Consideration needs to be given to the land uses sharing a boundary with a potential site and if the facility is likely to cause impacts that will not be able to be mitigated. **Landscape and character** • Location and design responds to the surrounding natural and built environment and respects local identity, character and heritage.	**Safety and security** • Crime Prevention through Environmental Design (CPTED) principles address access, site and building design. • Emergency vehicle access. **User benefits** • Facility caters for a wide range of compatible experiences and uses and contributes to a physically active and healthy community. **Flood immunity** • Site is above Q100.

Skate/youth facility – District	
Description Facilities for skate, bicycle and youth activity to cater for a range of skill and levels to encourage physical activities and social engagement. May include a variety of element s- plaza, bowl, half pipe and street.	
Size • 500-1,000m^2 active space. • Located within the Town park. **Access and location** • On or close to a distributor or arterial road within walking distance to regular public transport. • Linked to a pedestrian and cycle network. • Co-located with compatible community purposes/facilities. • At least 2 sides – 50% road frontage. • High level of visual surveillance (24 hours). **User benefit** • Variety of challenge and skill levels provided for. • An activity vibrant, physically and healthy.	**Safety and security** • The use of CPTED principles. • Emergency access to the site. • Well-designed facility. • Safe access to public toilets, seating and shade. **Flood immunity** • Site to be above Q20 and well drained. **Amenity impact** • Excessive noise levels require compatible adjoining land uses. • At least 80m from residential land. • Character and identity of park to be considered.

SC6.19.11 Energy infrastructure network outcomes

Preliminary

(1) This section applies to the energy infrastructure network outcomes in Performance Outcomes PO48 to PO49 in **Section 10.3.4.21 (Performance outcomes and acceptable outcomes for the Development of Infrastructure and Services)** of the **Palmview structure plan area code.**

General advice for energy infrastructure network outcomes

(2) The following is general advice about satisfying the energy infrastructure network outcomes:-

(a) the energy infrastructure outcomes of the **Palmview structure plan area code** seek to ensure that the Master Planned Area is provided with reliable sources of energy and that opportunities for sustainable energy generation are incorporated into new development so as to reduce reliance on the predominantly coal fired power grid;

(b) it is anticipated that an emphasis on energy conservation and the use of alternative sources of energy will result in the Master Planned Area achieving a significant reduction in carbon emissions compared with the efficiency of urban development in 2009;

(c) **Other Plans Map OPM P14 (Palmview Master Planned Area Electricity Infrastructure Network)** in **Schedule 2 (Mapping)** identifies conceptually the higher order elements of the electricity infrastructure network for the Master Planned Area;

(d) the energy infrastructure network outcomes are primarily intended to be satisfied by development providing electricity infrastructure in accordance with an applicable infrastructure agreement and the requirements of the relevant Electricity Supply Authority; and

(e) additional advice regarding the implementation of design measures to minimise energy use in new development is specified in **Section SC6.19.4 (Sub-tropical and sustainable design outcomes)**.

SC6.19.12 Information requirements

(1) **Table SC6.19M (Assessment requirements for documents)** specifies the documents which a variation approval or another applicable development approval may require to be prepared and submitted for approval by the Council.

(2) **Table SC6.19M (Assessment requirements for documents)** also specifies the anticipated timing for the approval of the documents.

(3) The Council may also require other supporting information in addition to that specified in **Table SC6.19M (Assessment requirements for documents)** depending on the nature of the variation approval or another applicable development application and the technical issues involved.

(4) Supporting information and documents should be prepared by a competent person with a disciplinary background relevant to the area of interest.

Editor's note–A variation approval or an applicable development application approved under the Act may include a development condition requiring the approval of a document.

Editor's note–Under section 319 (Compliance assessment of documents or works) of the Act compliance assessment of a document under chapter 6, part 10 of the SP Act continues to apply where a variation approval (being a preliminary approval to which the SP Act, section 242 applied) or another applicable development approval under the SP Act requires compliance assessment of the documents.

Table SC6.19M Assessment requirements for documents

Column 1 Description of the document	Column 2 Anticipated timing of approval	Column 2 Purpose of document	Column 3 Matters against which the document is to be assessed
Local Ecological and Landscape Protection and Rehabilitation Plan	Subsequent to the approval of a variation approval and prior to the lodgement of another applicable development application.	To demonstrate that development in the applicable area will provide for the protection and rehabilitation of ecologically important areas and landscape protection areas in accordance with the provisions of the **Palmview Structure Plan**, this planning scheme policy and **Appendix SC6.19A (Palmview Master Planned Area ecological protection and rehabilitation plan)**.	Refer to **Section 10 (Requirements for Local Ecological and Landscape Protection and Rehabilitation Plans)** in **Appendix SC6.19A (Palmview Master Planned Area Ecological and Landscape Protection and Rehabilitation Plan)**
Biodiversity Offset Plan	Subsequent to the approval of a variation approval and prior to the lodgement of another applicable development application.	To demonstrate how that the adverse impacts on ecologically important areas associated with providing infrastructure for the Master Planned Area are to be offset.	<u>Project and site description</u> • Provide a detailed description of the project including project proponent, proposed works schedule, including any temporary works, and timing. • Identify the potential environmental impacts of the project, including any temporary impacts, including impacts arising from vegetation clearing, changes in hydrology, destruction of habitat, impacts on fauna connectivity and movement. • Identify proposed mitigation measures to minimise the environmental impacts of the project. • Clearly identify the area the subject of the Biodiversity Offset Plan and calculate the total land area affected by the project. • Provide a description of the land affected by the project in terms of existing and potential environmental values, including but not limited to existing and potential values identified in the **Palmview Structure Plan** and/or the Palmview Master Planned Area Ecological and Landscape Protection Plan, in relation to vegetation communities, fauna, rehabilitation potential and habitat and faunal corridors. <u>Environmental offsets proposal</u>

Column 1 Description of the document	Column 2 Anticipated timing of approval	Column 2 Purpose of document	Column 3 Matters against which the document is to be assessed
			• Provide a detailed description of the proposed environmental offset package including a description of the proposed offset area, rationale for choosing environmental offsets, proposed timing and staging. • Describe how the environmental offset package meets the principles and requirements for environmental offsets detailed in this policy, in particular the requirement to achieve a 'net environmental benefit'. • Justify the selection of the proposed environmental offset site in terms of achieving "like for like or better" with respect to environmental values, vegetation, habitat, species, ecosystem, landscape, hydrology and physical area compared to the impact area. • Outline the relationship between the proposed offset area and the Master Planned Area. • Outline any proposed rehabilitation works to be undertaken as part of the proposal. • Identify the specific roles and responsibilities of all entities involved in the implementation of the Biodiversity Offset Plan. • Outline proposed short and long term tenure arrangements and demonstrate how long term security of tenure will be achieved under the Environmental Offset Plan. <u>Ongoing maintenance</u> • Provide details of the ongoing management and maintenance measures to be adopted as part of the Biodiversity Offset Plan. Ongoing maintenance measures are to address such issues as signage, fencing, access arrangements, site clean-up and waste removal, fire management, pest control, fauna management, replanting failure, erosion repair and watering. • Identify any potential risks to the long term viability of the environmental offset site such as bushfire and drought and how these risks are proposed to be addressed. <u>Monitoring and reporting</u> • Specify the indicators for monitoring the success of the environmental offset consistent with the objectives of this policy. • Identify how monitoring is to be reported to Council and the remedial action to be taken where failures are identified. <u>Additional requirements and conditions</u> • A financial bond may be required by Council as assurance for proposed offset activities.

Appendix SC6.19A Palmview master planned area ecological and landscape protection and rehabilitation plan

1. Short Title

This document may be cited as the Palmview Master Planned Area Ecological and Landscape Protection and Rehabilitation Plan (Plan).

2. Purpose

The purpose of the Plan is to provide for the following:-

(a) the guidelines about satisfying the ecological and landscape protection outcomes (Section 5-9); and

(b) the requirements for Local Ecological and Landscape Protections and Rehabilitation Plans to be required in a variation approval or other applicable development approval (Section 10).

3. Application

(1) The Plan applies to the non-urban open space infrastructure network specifically identified on **Other Plans Map OPMP12 (Palmview Master Planned Area Non-urban Open Space Infrastructure Network)** which includes Environmental protection areas, Environmental enhancement areas Types A and B, Environmental transition areas and the Scenic amenity and highway acoustic buffer.

(2) The non-urban open space infrastructure network comprises the landscape units identified on **Other Plans Map OPMP12 (Palmview Master Planned Area Non-urban Open Space Infrastructure Network)** which are based on the following:-

  (a) ecological functions and values;

  (b) existing condition;

  (c) short and long term land use; and

  (d) the rehabilitation outcomes for the areas in the non-urban open space infrastructure network.

(3) An application for a variation approval or another applicable development application should demonstrate compliance with the Plan.

(4) The Council may also require in a variation approval or another applicable development approval the preparation of a Local Ecological and Landscape Protection and Rehabilitation Plan for a particular area or landscape unit which is consistent with the Plan.

4. Interpretation

In this Plan:-

Resilience-based condition assessment means a vegetation condition assessment tool:-

(a) which measures the inherent ability of the components of a degraded ecosystem to recover and produces condition maps that inform the development of rehabilitation strategies;

(b) which comprises the following components:-

  (i) details of the assessment unit;
  (ii) a suite of vegetation condition attributes that act as surrogates or indicators of biodiversity values;
  (iii) benchmarks for each of the attributes for each regional ecosystem;
  (iv) an assessment methodology; and
  (v) a scoring system which provides a final condition score such as from 0 being no degradation and excellent resilience to 6 being extreme symptoms and nil resilience; and

(c) such as that outlined in *BioCondition, A Terrestrial Vegetation Condition Assessment Tool for Biodiversity in Queensland, Field Assessment Manual, Version 1.6* (T.J. Eyre, Al. Kelly, V. J Neldner. Prepared for the Queensland Government, Environmental Protection Agency, Queensland Parks and Wildlife Service, 2008).

Vegetation means native grasslands, sedgelands, heathlands, woodlands, forest and wetlands. It includes existing stands of vegetation and areas undergoing natural regeneration, a community of vegetation and a singular plant, shrub or tree.

5. Guidelines for the ecological and landscape protection outcomes

The ecological protection and rehabilitation outcomes of the **Palmview Structure Plan** are intended to achieve the following end result for the non-urban open space infrastructure network:-

(a) the retention and enhancement of all of the existing biodiversity;

(b) the improvement of the healthy functioning and resilience of ecosystems;

(c) the maintenance and enhancement of ecosystem services;

(d) the recreation of wildlife habitat and corridor linkages;

(e) the improvement of recovery of threatened communities and species;

(f) the improvement of condition of riparian vegetation and aquatic habitat;

(g) the improvement of soil conditioning and land and stream bank stability;

(h) the management of threatening processes including impacts from development, climate change, invasive species and edge effects; and

(i) the provision of a diverse range of environmental areas and environmental recreation opportunities and outdoor experiences for the community.

6. Guidelines for areas and landscape units of the non-urban open space infrastructure network

(1) Development should provide for the use of the area in the non-urban open space infrastructure network in accordance with **Table 10.3.4.3A (Outcomes for Non-urban Open Space Infrastructure Area)** in the **Palmview Structure Plan**.

(2) Development should achieve the ecological protection and rehabilitation outcomes and associated management requirements for the landscape units are identified in **Table 10.3.4.3B (Palmview ecological and landscape protection and rehabilitation landscape units)** in the **Palmview structure plan**.

7. Guidelines for environmental protection areas and environmental enhancement areas

(1) A disturbed or degraded area should be revegetated or regenerated using appropriate indigenous plant species specific to the vegetation community to return it to a representative and largely self sustainable condition.

(2) Regeneration is the staged removal of weeds and the management of impacts in a natural area to facilitate natural recruitment of indigenous species with minimal planting at the speed of natural processes. Where regeneration will return the area to a representative and largely self sustainable condition within the agreed maintenance period it is the preferred option.

(3) Only site specific to the specific vegetation community indigenous plant species should be used in a natural area. No hybrid or select plant should be used. Where possible local provenance stock should be used.

(4) The successful rehabilitation of an Environmental protection area occurs where:-

  (a) all areas are clear of non-indigenous species and demonstrate multi-aged recruitment of indigenous species (to vegetation community species); and

  (b) any random 1 metre square monitoring area demonstrates indigenous vegetation or multi-aged recruitment occupying at least 95% of the entire area, with bare areas less than 5%.

(5) The successful rehabilitation of an environmental enhancement area occurs where at the end of 5 years, any random 1 metre square monitoring area demonstrates the following:-

(a) 40 % ground coverage;

(b) 85 % projected foliage coverage in canopy;

(c) < 5% failure rate; and

(d) no environmental or declared weeds.

8. General guidelines

Fauna and flora translocation

(1) Any work involving the translocation of flora and fauna should be approved by the Council prior to the commencement of the works.

(2) All Federal and State government permits and approvals for the translocation of flora and fauna should be obtained and given to the Council prior to the commencement of the works.

(3) An accredited wildlife spotter should examine the site for presence of fauna and to supervise operations, where required.

Creating or improving movement pathways for native animals

(4) Site development should complement the management of a non-urban open space area and address the safe movement of native animals through the development site and direct native animals away from those parts of uses and development that potentially cause harm to them. Threats may arise from a variety of sources including machinery, swimming pools, deep sided drains, domestic animals, security fencing, road traffic, lighting and noise.

(5) Specific consideration should be given to fauna exclusion fencing, fauna "funnelling" fences or structures, underpasses, overpasses, culvert design, fish passage and other fauna sensitive design features, as appropriate.

Controlling domestic pets and stock

(6) Development should ensure that domestic pets, especially dogs and cats, and stock do not enter a non-urban open space area. Critical boundaries between wildlife habitat and movement corridors and residential, commercial or industrial areas should be identified and managed appropriately.

Controlling pest plants and animals

(7) Development should prevent the introduction or spread or distribution of pest animals on the site and integrate any management requirements for pest animals on the site with other natural resource management activities.

(8) No equipment or materials (including mulch, soil, etc.) should be brought into a non-urban open space areas unless reasonably believed to be weed seed free.

(9) All declared plants (Land Protection (Pest and Stock Route Management) Act 2002 (QLD), and Environmental Weeds as identified in **Section SC6.14.7.5 (Management of weeds)** of the **Planning scheme policy for development works** should be removed in a manner that prevents the regrowth of the declared and weed species, prevents damage to non-target species and retains indigenous vegetation and community and conservation values.

(10) No declared plants (*Land Protection (Pest and Stock Route Management) Act 2002 (QLD)* or Environmental Weeds as identified in **Section SC6.14.7.5 (Management of weeds)** of the **Planning scheme policy for development works** should be planted.

(11) No native vegetation should be removed or disturbed from a non-urban open space area without the prior approval of the Council;

Site clean up and waste management

(12) Hazards and wastes should be removed from the site, with particular attention paid to the future public access and open space areas. This includes any wastes as defined in the *Environmental Protection Act 1994*, machinery, fencing, and equipment left over from past land uses and items of rubbish and litter.

Machinery and access

(13) No machinery, equipment, materials or personnel should enter a non-urban open space area unless directly and currently undertaking works that are required to meet the conditions of a development approval.

(14) Trees should be protected from any damage from development.

(15) No overburden or spoil should be pushed or deposited into a non-urban open space area.

(16) Vehicle barriers and access gates should be installed on the boundaries of a non-urban open space area, where appropriate to prevent unauthorised vehicle access. The purpose of the fencing is to protect a non-urban open space area against possible unauthorised vehicle damage and prevent unauthorised vehicular access to walking or management tracks via public entrances.

Tree hazard assessment

(17) A qualified arborist should conduct a tree hazard assessment of all trees within a 10 metre distance or within striking distance of a potential or existing residential lot, infrastructure including a retained or constructed footpath or road and the edge of open space and any trees where any disturbance of the earth, drainage or storage of materials has occurred during development.

(18) The qualified arborist should provide a written report of assessments and resultant hazard mitigation work to make safe for a period of 5 years to the satisfaction of the Council.

Fire management plan

(19) Development should comply with a Fire Management Plan required in a variation approval or another applicable development approval which:-

(a) satisfies the following requirements:-

(i) address the whole of the proposed development site;
(ii) give consideration to the site's context within the broader area, particularly in relation to potential off-site sources of increased fire hazard;
(iii) identify the location and severity of potential bushfire hazard by means site-based assessment based on:-
(A) detailed data collected at the local level;
(B) factors such as vegetation type, slope, aspect, and fire history (if available);
(C) address on-and-off site hazard implications of the development, including those posed by any nearby bushland; and
(D) future land uses and ecosystem rehabilitation objectives;
(iv) recommend remedial measures such as specific features of the development design such as land use type, vehicular access, lot layout and house site location, proposed fire-fighting infrastructure such as water supply and fire maintenance trails, recommended standard of building construction, clearing and landscaping and advice to new residents;
(v) clearly state any impact of the chosen mitigation measures on the environmental values of the site and the measures taken to avoid or minimise this impact; and
(vi) consider the anticipated future bushfire hazard for the site that might arise as part of revegetation objectives, by allowing for the provision for future assessment in accordance with paragraph (iii); and

(b) has been approved by the Council.

Editor's note–A variation approval or an applicable development application approved under the Act may include a development condition requiring the approval of a document.

Editor's note–Under section 319 (Compliance assessment of documents or works) of the Act compliance assessment of a document under chapter 6, part 10 of the SP Act continues to apply where a variation approval (being a preliminary approval to which the SP Act, section 242 applied) or another applicable development approval under the SP Act requires compliance assessment of the documents.

9. Guidelines for management

(1) Development should ensure that an environmental protection area and environmental enhancement area is provided in a tenure that complies with a plan required in a variation approval or another applicable development approval and approved by the Council identifying the following:-

(a) the long-term security of tenure such as conservation estate, conservation covenant, nature refuge; and

(b) administrative and financial arrangements.

(2) Development should ensure that any third party contract arrangements relevant to the schedule of works in a Local Ecological and Landscape Protection and Rehabilitation Plan required in a variation approval or another applicable development approval are approved by the Council.

(3) Development should ensure that a non-urban open space infrastructure area is maintained in a manner that at least maintains and preferably enhances the condition of the ecological areas for a period of 12 months after the Council has determined that the non-urban open space area has been developed in accordance with the approved Local Ecological and Landscape Protection and Rehabilitation Plan (Conditions Met Inspection).

(4) Development should ensure that an Ecological Protection and Rehabilitation bond is to be provided to the Council to ensure completion of the approved Local Ecological and Landscape Protection and Rehabilitation Plan and the repair of a non-urban open space area if an activities resulting from construction and development were to impact on the identified non-urban open space areas.

10. Requirements for local ecological and landscape protection and rehabilitation plan

(1) A Local Ecological and Landscape Protection and Rehabilitation Plan should be prepared for a landscape unit identified on **Other Plans Map OPMP12 (Palmview Master Planned Area Non-Urban Open Space Infrastructure Network)**.

(2) A Local Ecological and Landscape Protection and Rehabilitation Plan should be prepared prior to the commencement of any ecological or landscape protection or rehabilitation work and in accordance with the timing in a variation approval or another applicable development application.

(3) A Local Ecological and Landscape Protection and Rehabilitation Plan should be prepared by a competent person.

(4) A Local Ecological and Landscape Protection and Rehabilitation Plan should be consistent with:-

(a) the ecological protection and rehabilitation outcomes and management requirements for the landscape units identified in **Table 10.3.4.3B (Palmview ecological and landscape protection and rehabilitation landscape units)** of the **Palmview Structure Plan**; and

(b) any approved Local Ecological and Landscape Protection and Rehabilitation Plan for a surrounding area.

(5) A Local Ecological and Landscape Protection and Rehabilitation Plan should incorporate the following:-

(a) site description details, and in particular:-

(i) a definition of the site boundaries of the ecological area by reference to a plan showing the land subject to the Local Ecological and Landscape Protection and Rehabilitation Plan;
(ii) a description of the site, including geology, soils, acid sulphate soils, topography and drainage (including surface and groundwater), vegetation communities, significant wildlife habitat and corridor factors; and
(iii) a description of land use including the following:-
(A) past land use and management and any implications for proposed ecological protection and rehabilitation activities; and
(B) any current and future aspects of adjacent land that are likely to impact on the long term sustainability of the land and proposed ecological protection and rehabilitation activities.

(b) a resilience based condition assessment of the land the subject of the Local Ecological and Landscape Protection and Rehabilitation Plan, including an established and well documented photo-monitoring program;

(c) the proposed rehabilitation technique to be utilised within each non-urban open space area and any resultant secondary management zones with reference to the specific ecological protection and rehabilitation outcomes in **Table 10.3.4.3B (Palmview ecological and landscape protection and rehabilitation landscape units)** of the **Palmview Structure Plan**, including the following:-

(i) soil management – the measures proposed to ensure an adequate quantity of topsoil is obtained for rehabilitation which should entail procedures for stripping and stockpiling (if suitable material is on site), soil amendment and fertiliser requirements and management of noxious plant seed material (if soil is infected);
(ii) drainage, erosion and sediment control – the requirements for managing drainage, erosion (in particular active erosion) and sediment during rehabilitation consistent with the overall drainage, erosion and sediment control plan for the site from development to construction and post-occupancy;
(iii) waterways and wetlands – requirements for the enhancement of waterways and wetlands including improving bed and bank stability, aquatic habitat, riparian habitat, restoring natural water flows and watercourse processes and restoring natural flushing action to waterways having regard to the hydraulic effect of planting densities with reference to Manning's roughness coefficient;
(iv) site preparation techniques – the procedures for preparing the rehabilitation of each non-urban open space area and subsequent secondary management zone to demonstrate that suitable measures are to be undertaken to ensure that the seed bed and planting soil is in a condition which is able to support the rehabilitation and that soil moisture preparation, aeration, weed removal and mulching is adequate;
(v) slashing regime – the frequency and timing of slashing to achieve ecological and water quality outcomes;
(vi) species selection and planting – the procedures for sourcing and selecting species for revegetation, identification of suitable suppliers, quantity and timing of plant deliveries, types of plant stock to be used, planting procedures and drawings and protection measures from fauna and human activities and the like;
(vii) creation of fauna habitat and corridors – the procedures for enhancement of wildlife habitat and corridors including any requirements for the retainment of existing habitat features, creating or improving existing movement pathways for native animals, the use of fauna friendly fences or fauna "funnelling" techniques and fauna translocation; and
(viii) threatened species - where threatened species are present, background information on the species describing the current conservation status, demonstrating how the rehabilitation techniques selected will protect, manage and enhance the species and its habitat on the land (including individuals on the land) and including management actions that are in keeping with species recovery plans or conservation plans;

(d) a schedule of works including project duration, timing, stages and key milestones which is to be revised at each stage of development with reasons given for any delay in the schedule;

(e) the organisational structure, roles and responsibilities and reporting requirements for the schedule of works, including any third party contract arrangements;

(f) the materials and resources required, including equipment, supplies, plant material and other materials and estimate labour days required to carry out works for each stage as identified in the schedule of works;

(g) the on-going maintenance measures to ensure non-urban open space areas are properly maintained over the establishment phase and in the long-term having regard to the long term ownership and in particular the measures relating to the following matters:-

(i) signage;
(ii) fencing;
(iii) access management;
(iv) site clean-up, removal and management of rubbish, wastes and pollutants;
(v) fire management, including firebreaks and fire management access tracks;
(vi) pest animal and weed control;
(vii) fauna management;
(viii) the slashing regime, including slashing frequency and timing;
(ix) replanting failure;
(x) erosion repair;
(xi) watering; and

(xii) any other relevant maintenance requirement;

(h) details of all approvals necessary to carry out the work outlined in the Local Ecological and Landscape Protection and Rehabilitation Plan;

(i) indicators for monitoring the success of the ecological protection and rehabilitation in terms of the outcomes in **Table 10.3.4.3B (Palmview ecological and landscape protection and rehabilitation landscape units)** of the **Palmview Structure Plan** and in the resilience based condition assessment;

(j) reporting arrangements including details of the process for identifying and rectifying failures;

(k) the requirement for a progress report to be provided to the Council at the completion of each stage of works as identified in the schedule of works detailing the following:-

(i) the areas worked, rehabilitation methodologies undertaken, on-going maintenance requirements and estimated costs;
(ii) how outcomes have been met; and
(iii) as constructed plans of non-urban open space areas including accurate master plans, rehabilitation treatments, above and below ground land improvements, irrigation and any other infrastructure;

(l) mapping where necessary to complement or support the Local Ecological and Landscape Protection and Rehabilitation Plan which:-

(i) is accurate;
(ii) is easy to read and understandable,
(iii) is appropriately scaled;
(iv) provides an appropriate level of detail for site-specific assessment and management; and
(v) shows the direction of north and includes a scale, legend and title.

SC6.20 Planning scheme policy for biodiversity offsets

SC6.20.1 Purpose

The purpose of this planning scheme policy is to:-

(a) state standards identified in the **Biodiversity, waterways and wetlands overlay code** and **Vegetation management code** relating to biodiversity offsets; and

(b) identify and provide guidance about information that may be required to support a development application providing a biodiversity offset.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.20.2 Application

This planning scheme policy applies to assessable development providing a biodiversity offset for the removal of a native vegetation area.

SC6.20.3 Standards for biodiversity offset outcomes

For the purposes of Acceptable Outcome AO3 of **Table 8.2.3.3.2 (Performance outcomes and acceptable outcomes for assessable development)** in the **Biodiversity, waterways and wetlands overlay code** and Acceptable Outcome AO6.1 and AO7 of **Table 9.4.9.3.1 (Performance outcomes and acceptable outcomes for assessable development)** of the **Vegetation management code**, the following are the standards in the codes for biodiversity offset outcomes:-

Biodiversity offsets generally[1]

(a) A biodiversity offset is:-

(i) not to replace or undermine existing environmental principles or regulatory requirements, and is not to be used to facilitate development in areas otherwise identified as being unacceptable through the planning scheme or legislation;

(ii) only to be used where it has been demonstrated that clearing cannot practicably be avoided and any impacts are effectively minimised;

(iii) to achieve an equivalent environmental outcome at maturity[2];

(iv) to be provided in a strategically important location, including within an identified state, regional and local biodiversity network;

(v) to commence prior to the vegetation clearing and be designed to minimise the time-lag between the impact and the offset reaching maturity;

(vi) to provide permanent protection of biodiversity values and additional management actions to improve biodiversity and broader environmental values over the longer term;

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1 The Queensland government *Offsets for Net Gain of Koala Habitat in South East Queensland Policy* sets out the minimum requirements for offsetting the clearing of non-juvenile koala habitat trees. The objective of this State policy is to ensure that where unavoidable impacts and the removal of koala habitat trees occur as a result of development activities, an offset achieving a net gain in koala bushland habitat is established. A koala habitat offset site should be provided in a strategic area located within the local biodiversity/habitat network and is suitable for koala habitat rehabilitation. All proposed koala habitat offset areas should meet the offset criteria as set out in the *Offsets for Net Gain of Koala Habitat in South East Queensland Policy*, and be assessed and approved by the relevant assessment manager. Any koala offset site is protected from future development impacts on habitat by permanently securing the site for conservation purposes and managed in accordance with an approved Koala Offset Area Management Plan.

2 Biodiversity offsets are considered to have achieved an equivalent environmental outcome when:-
(a) remnant vegetation status is achieved; and
(b) the quality of the environmental values are improved through the implementation of management actions which are additional to any existing management actions. In all cases quantifying environmental values are undertaken using an appropriate offset ratio as specified in **Table 9.4.9.3.2 (Biodiversity offset requirements of the Vegetation management code)**.

(vii) to be subject to binding arrangements that secure the use and management of the site for the conservation of any vegetation and other environmental values that are present for perpetuity; and

(viii) to be the responsibility of the applicant for the development or the vegetation clearing, including in terms of the payment of all costs associated with securing and managing a biodiversity offset.

Note— the primary purpose of a biodiversity offset is to mitigate development impacts in order to achieve a net environmental benefit and the nature of the offset ratio should have due regard to this outcome. The offset ratio will be determined based on the extent and nature of the values which are to be impacted. For example, if large areas of vegetation are proposed to be cleared, then an area-based approach to the offset ratio will be required in order to achieve the desired net environmental benefit, while a volume based metric is more relevant to the removal of a number of trees. Therefore, the nature of the offset ratio is to be determined on a site by site basis.

Biodiversity offset areas

(b) A biodiversity offset area is:-

(i) to be located on land:-
  (A) within the boundaries of the Sunshine Coast Council local government area; and
  (B) which has the same or very similar underlying geology, soils, aspect and drainage to re-establish (offset) the vegetation subject to clearing;

(ii) to be located in one of the following areas:-
  (A) an area within the boundaries of the development site;
  (B) a core habitat area identified on **Strategic Framework Map SFM5 (Natural Environment Elements)**;
  (C) an area contiguous with a core habitat area identified on **Strategic Framework Map SFM5**;
  (D) an area contiguous with a connecting habitat area within a biodiversity linkage identified on **Strategic Framework Map SFM5**;
  (E) an area identified as a local ecological linkage on a local plan elements figure;
  (F) an area suitable for koala habitat rehabilitation; and/or
  (G) an area identified as equivalent pre-cleared regional ecosystem vegetation by the Queensland Government Regional Ecosystem mapping;

(iii) not to be located:-
  (A) on land in which the vegetation is already protected or required to be retained by an existing approval issued under any Act administered by the Federal, State or local government;
  (B) within or adjacent to an area planned or identified for the provision of infrastructure (e.g. road, rail, power, water, sewerage and water storage) unless it can be demonstrated that the provision of the infrastructure will not impact on the biodiversity offset or its immediate environs;
  (C) on Land subject to the Extractive Resource Areas Overlay identified on the relevant overlay maps in the planning scheme; and
  (D) within an unconstrained area suitable for urban development unless the biodiversity offset area provides a reconnection between environmental areas or provides additional buffering to a core habitat area; and

(iv) to be capable of being designed and managed so as to:-
  (A) achieve remnant vegetation status and improve habitat functionality and ecological connectivity; and
  (B) be delivered in a spatial configuration that minimises edge effects.

Securement of biodiversity offsets

(c) Securement of a biodiversity offset is to be achieved through one or more of the following legal mechanisms:-

(i) an Environmental Covenant;
(ii) a nature refuge under the *Nature Conservation Act 1992*;
(iii) a reserve for environmental purposes under the L*and Act 1994*;
(iv) utilising (by agreement) land held by the Council which forms a part of Council's Ecological Reserve Estate; and
(v) utilising (by agreement) land owned by a non-government organisation (NGO) such as the Australian Wildlife Conservancy, Bush Heritage Trust, Australian Koala Foundation, Wildlife Land Fund Ltd for environmental protection which is *managed for* ecological objectives under a conservation covenant made under the *Land Act 1994* or the *Land Title Act 1994* and where a conservation agreement has been entered into with the Council.

Biodiversity offset agreement

(d) A biodiversity offset agreement is to be entered into between the applicant and the Council for each biodiversity offset, or for all related biodiversity offsets, that:-

(i) identifies the obligations of the applicant, the Council and any third party;
(ii) outlines that the biodiversity offset remains in effect until the biodiversity offset ends under the terms of the biodiversity offset agreement and associated biodiversity offset area management plan;
(iii) provides provisions for bringing a biodiversity offset agreement to an end;
(iv) provides for the area to be protected in perpetuity consistent with one of the securement mechanisms;
(v) provide provisions requiring a financial assurance (e.g. a bond) at the time of entering into the legally binding agreement, particularly where restoration works are undertaken[1]; and
(vi) includes provisions for transferring a biodiversity offset obligation to a third party.

Management of offset areas and biodiversity offset management plans

(e) A development application requiring the provision of a biodiversity offset is to demonstrate how the offset will be managed and is to include the following:-

(i) a biodiversity offset area management plan which conforms to the *South East Queensland Ecological Restoration Framework: Code of Practice, Guideline and Manual*;
(ii) the estimated management costs associated with achieving the offset management objectives, actions and outcomes;
(iii) the trust account details for the holding of funds for the ongoing management actions for the offset area;
(iv) details of the dispersal of funds for ongoing management actions based on the yearly schedule of management actions;
(v) the entity responsible for undertaking the management actions and the skills or expertise of the entity responsible for undertaking the management actions;
(vi) evidence that the landholder has received legal advice in regards to their obligations under the legally binding securement mechanism; and
(vii) details of all maintenance work to be undertaken for a period of 5 years.

Financial contributions in lieu of an on-ground biodiversity offset

(f) A financial contribution in lieu of providing an on-ground biodiversity offset may be accepted by the Council where an applicant can demonstrate that they are unable to secure a biodiversity offset and they have undertaken extensive investigations seeking to comply with the provisions of this planning scheme policy.

(g) The amount of any financial contribution will reflect the total cost of:-

(i) locating and purchasing new offset land or using existing Council owned offset land;
(ii) undertaking all revegetation and habitat rehabilitation works associated with the offset requirements; and
(iii) undertaking all maintenance works that ensures the biodiversity offset achieves an equivalent environmental outcome at maturity.

Advance biodiversity offsets

(h) An advance biodiversity offset may be established either by an applicant for a specific project or projects, or by a third party for any development which may require a biodiversity offset at a future date. The advance biodiversity offset may be used as a whole, or in part to provide an offset to meet one or more biodiversity offset requirements.

(i) The applicant or entity seeking in-principle approval of an advance biodiversity offset should provide Council:-

(i) the lot and plan numbers for the project or projects where the clearing is proposed;
(ii) the biodiversity values located on the land where the clearing is to occur and on the proposed advance biodiversity offset;
(iii) the extent of clearing proposed;
(iv) the lot and plan numbers for the proposed advance biodiversity offset area;

[1] If all milestones outlined in the Biodiversity Offset Area Management Plan are met then the bond is released. Where poor performance occurs then Council may opt to use the bond to undertake restoration works on the site.

(v) information on how the advance biodiversity offset generally meets the criteria for biodiversity offsets;
(vi) timeframes associated with the advance biodiversity offset; and
(vii) details of the legally binding mechanism proposed by the applicant or entity.

(j) The legally binding mechanism over the advance biodiversity offset should be finalised within four months of in-principle approval by Council. An advance biodiversity offset may be revoked by the applicant or entity prior to the area being used to acquit an offset requirement.

(k) approval in-principle of an advance biodiversity offset and registration by Council does not provide any indication that a development application lodged at a future stage will be approved.

SC6.20.4 Guidance for the preparation of a biodiversity offset area management plan

(1) A biodiversity offset area management plan prepared by a competent person is to be submitted for development proposing to provide a biodiversity offset.

Note—for the purposes of this planning scheme policy, a competent person is an appropriately qualified and experienced consultant with tertiary qualifications in environmental science, botany, zoology or another related discipline and with appropriate and proven technical expertise in preparing biodiversity offset management plans for sites within the South East Queensland Bioregion.

(2) A biodiversity offset area management plan is to include or identify the following:-

(a) an A3 size map at a scale of no greater than 1:500, including a scale on the plan;

(b) the proposed biodiversity offset area with associated Lot on Plan Global Positioning System (GPS) reference points, including any areas subject to specific management actions;

(c) the proposed vegetation clearing and the environmental values impacted as determined by an ecological assessment report[2];

(d) the environmental values of the proposed offset area as determined by the ecological assessment report;

(e) the management objectives and outcomes expressed as measurable and achievable criteria for the biodiversity offset area on which the performance of the floristic and structural re-vegetation components can be assessed annually over at least five years;

(f) the density and diversity of species reflecting the target regional ecosystem and how this is to be achieved by either planting, natural regeneration from seed stock, or reliance upon natural encroachment into the site;

(g) fencing, access limitations, and other restrictions imposed on the use of the offset area;

(h) a schedule of management requirements for the first five years (i.e. at least to achieve the management objectives and outcomes described in (e) and (f) above);

(i) a six monthly monitoring program with an annual report to be provided to Council for approval;

(j) all registered interests including mortgages, leases, subleases, covenants, profit á prendres, easements and building management statements that have been registered on title under the *Land Act 1994* or the *Land Title Act 1994*;

(k) management requirements to achieve an area that is weed[3] free within two years of the re-vegetation period; and

(l) bonding requirements, including:-

(i) a total bond amount of 1.5 times the schedule of works estimate of costs (plus GST) for the re-vegetation works, including maintenance for at least five years; and

[2] Advice about the preparation of ecological assessment reports is contained within the **Planning scheme policy for the Biodiversity, waterways and wetlands overlay code**.

[3] Weed includes declared plants under the *Land Protection (Pest and Stock Route Management) Act 2002* and sub-ordinate *Regulation 2003*, and the *draft Sunshine Coast Local Government Area Pest Management Plan 2011-2015* pest species of significance in Group 1, Group 2 and Group 6.

(ii) triggers for the release of the bond at 10% for each year with the balance in the final year[1].

[1] A bond may only be released provided performance of management objectives and outcomes of a biodiversity offset area management plan have been achieved for that year.

SC6.21 Planning scheme policy for other information local government may require

SC6.21.1 Purpose

(1) The purpose of this planning scheme policy is to identify information, other than that specified in another planning scheme policy, that Council may require to inform the proper assessment of a development application.

(2) In particular, this planning scheme policy provides advice and guidance about the circumstances when the following types of plans and reports may be required, as well as the typical content to be included in such plans and reports:-

(a) a site analysis plan;

(b) an economic impact assessment report;

(c) a community impact assessment report; and

(d) a safety and security management plan.

Note—nothing in this planning scheme policy limits Council's discretion to request other relevant information under the Development Assessment Rules made under section 68(1) of the Act.

SC6.21.2 Application

This planning scheme policy applies to assessable development which, owing to its location, nature or scale requires specific information to determine its likely impacts and the measures necessary to be implemented to avoid or mitigate those impacts to acceptable levels.

SC6.21.3 General advice about preparation of site analysis plans

(1) Council is likely to require submission of a site analysis plan for most types of development.

(2) It is important that a development proposal recognises the natural and artificial characteristics of its site and the surrounding locality and minimises any negative impacts arising from the development proposal on the amenity of adjoining properties.

(3) A site analysis plan is a document which identifies and describes:-

(a) the key influences on the design of the development; and

(b) how proposed uses and buildings will relate to each other and to the immediate surroundings.

(4) A site analysis plan should be specifically relevant to the site and development in question, with the type and detail of information provided matched to the size, scale and nature of the proposed development.

(5) Typically, a site analysis plan should include the following:-

(a) in respect to the site, information pertaining to:-

(i) contours and pertinent spot levels;
(ii) type, size and location of existing vegetation;
(iii) past and present land uses, activities and buildings;
(iv) views to and from the site;
(v) access and connection points;
(vi) drainage, services and infrastructure;
(vii) orientation, microclimate and noise nuisance sources;
(viii) any contaminated soils and filled areas;
(ix) natural hazards (e.g. areas subject to flooding, bushfire, landslide, steep land etc);
(x) fences, boundaries, lot sizes, easements and any road realignment lines;
(xi) features of environmental, cultural or heritage significance; and
(xii) any other notable features; and

(b) in respect to the site surrounds, information pertaining to:-

(i) the use of adjacent and opposite properties and the location of buildings;
(ii) pedestrian and traffic circulation patterns;
(iii) where residential use adjoins the site, abutting secluded private open spaces and habitable room windows, which have outlooks towards the site;
(iv) views and solar access enjoyed by adjacent residents;
(v) major trees on adjacent properties;
(vi) extractive resource areas or infrastructure corridors;
(vii) characteristics of any adjacent public open space;
(viii) street frontage features such as poles, street trees, kerb crossovers, bus stops and services;
(ix) the built form and character of adjacent and nearby development, including characteristic fencing and garden styles;
(x) direction and distances to local shops, schools, public transport, parks and community facilities; and
(xi) the difference in levels between the subject land and adjacent properties.

(6) Photographs of the site and surrounds are helpful for assessment of development applications, and should also be included in a site analysis plan.

SC6.21.4 General advice about preparation of an economic impact assessment report

(1) Council is likely to require the submission of an economic impact assessment report for major retail and commercial development and other types of development with the potential to have adverse economic impacts.

(2) In particular, Council may require an economic impact assessment report for development which involves one or more the following:-

(a) the establishment of a business use exceeding a gross leasable floor area of 2,500m², where located in a centre zone, or the Specialised centre zone;

(b) the establishment of a business use exceeding a gross leasable floor area of 100m², where located in a zone other than a centre zone or Specialised centre zone; or

(c) the establishment of a business use which is identified as an inconsistent use in the applicable zone code or local plan.

(3) An economic impact assessment report is a report prepared by a competent person, which assesses and demonstrates the public need for, and the acceptable economic impact of a proposed development.

Note—for the purposes of this section of the planning scheme policy, a competent person is an appropriately qualified and experienced economist or economic analyst with appropriate and proven technical experience in providing advice about the economic impacts of development.

(4) Typically, an economic impact assessment report should include the following:-

(a) a description of the size, function and tenancy mix of the proposed development, together with details of any pre-commitments;

(b) an examination of the population growth prospects and socio-economic characteristics of a defined trade area;

(c) a description of the location, size, nature, function and tenancy mix of competitive centres likely to be affected by the proposed development;

(d) an assessment of the extent of inadequacy, if any, within the competitive network of activity centres;

(e) an assessment of the quantitative economic impact upon competitive centres likely to be affected by the proposed development describing the consequent effects upon those activity centres; and

(f) an assessment of the effect of the proposed development upon the Sunshine Coast Activity Centre Network as defined by the planning scheme.

SC6.21.5 General advice about preparation of a community impact assessment report

(1) Community impact assessment is a process of investigating the possible social effects of development on a community.

(2) While most development will impact on a community in some way, informed judgement is required to determine those impacts that are acceptable and those that are not. As with many other planning matters, measuring community impacts often relies on a combination of quantitative and qualitative analysis and judgement. The community impact assessment process provides a means to investigate social impacts in consultation with the affected community by addressing:-

(a) possible impacts in an objective and inclusive way;

(b) whether or not possible impacts are acceptable; and

(c) how possible impacts might be managed.

(3) While the range and severity of effects can vary, generic impacts that may affect communities include:-

(a) alteration in demand for community services and/or facilities;

(b) change in community activity, cultural activities and important places;

(c) changes to housing affordability, choice and mix;

(d) changes to accessibility;

(e) changes in character, identity and amenity;

(f) community cohesion/severance;

(g) unfair and/or inequitable opportunities for specific groups or individuals;

(h) reduction/enhancement in employment access and opportunities;

(i) financial gain/loss;

(j) community health and safety effects;

(k) opportunities for local economic development; and

(l) access to natural environment features/resources.

(4) Council is likely to require the submission of a community impact assessment report for development which involves one or more the following:-

(a) the establishment of any residential use involving more than 100 dwellings;

(b) the establishment of any entertainment/catering business use except for a food and drink outlet;

(c) the establishment of a high impact industry or special industry;

(d) the establishment of a club (where the use involves the serving of alcohol), major sport, recreation and entertainment and motor sport facility;

(e) the establishment of air services, major electricity infrastructure, port services, a renewable energy facility, telecommunications facility or utility installation except where a local utility; or

(f) the establishment of any use which is identified as an inconsistent use in the applicable zone code or local plan.

(5) A community impact assessment report is a document prepared by a competent person which:-

(a) provides an assessment of the potential effects of a development on the community; and

(b) includes:-

(i) a description of the proposed development;
(ii) a statement of the likely impacts on the community of the proposed development;
(iii) a statement of the measures to be used to avoid or mitigate negative impacts on the community of the proposed development and to enhance potential positive impacts on the community of the development; and
(iv) details of consultation undertaken with the community to determine impacts on the community of the development.

Note—for the purposes of this section of the planning scheme policy, a competent person is an appropriately qualified and experienced social planner with appropriate and proven technical experience in providing advice about the social impacts of development.

(6) Means of dealing with social impacts may include changes to a development proposal, compensation to affected communities or requirements for ongoing management of impacts in accordance with an agreed management regime.

SC6.21.6 General advice about preparation of a safety and security management plan

(1) Council is likely to require the submission of a safety and security management plan for development involving an entertainment/catering business use or sport and recreation use, where the use involves the serving of alcohol and/or extended evening hours operation.

(2) A safety and security management plan is a document prepared by a competent person, which assesses the likely safety and security issues associated with a development and identifies design and management measures to maintain the safety and security of patrons, premises and the general community.

Note—for the purposes of this section of the planning scheme policy, a competent person is an appropriately qualified and experienced security consultant with a proven technical experience in providing advice about safety and security management issues.

(3) Typically, a safety and security management plan should include the following:-

(a) a description of the proposed development;

(b) an assessment of the safety and security issues associated with the use, having regard to the characteristics of the use and the location and design of the premises;

(c) a statement as to the measures to be used to maintain the safety of patrons, premises and the general community; and

(d) details of consultation undertaken with the Queensland Police and other emergency services to identify safety and security issues and determine appropriate design and management measures.

SC6.22 Planning scheme policy for performance bonds

SC6.22.1 Purpose

(1) Council often imposes conditions of approval on development applications which seek to have the developer carry out works, make payments to Council or conduct construction and development in accordance with approved plans of development. As a means of achieving compliance with certain conditions, it is Council's practice to require security in the form of a cash bond or trading bank guarantee (bond).

Note—**Section SC6.14.11.7 (Bonding)** of the **Planning scheme policy for development works** provides further detail about bonding arrangements for operational works.

(2) The purpose of this planning scheme policy is to provide advice about the circumstances in which Council may require payment of a bond and the manner in which the amount of any bond will be determined.

SC6.22.2 Application

This planning scheme policy applies to development requiring imposition of a bond for security purposes.

SC6.22.3 General advice about imposition of bonds

The following is general advice about the imposition of bonds:-

(a) without limiting its powers under section 65 of the Act, Council may impose conditions on a development approval requiring the lodgement of a bond;

(b) a bond is intended to provide an incentive to develop in accordance with conditions of approval, as very often, in the view of the community, particular conditions are critical to a satisfactory development outcome being achieved;

(c) a bond is to be of sufficient scale to ensure that:-

  (i) causing a breach on the basis of deliberate action is not a desirable option; and
  (ii) monitoring to ensure that contractors and employees do not unknowingly cause a breach is a desirable option;

(d) in determining the amount of a bond, Council will have regard to the following:-

  (i) the critical attributes of the site;
  (ii) the relative importance, in planning, environmental and engineering terms, of the Council's requirements;
  (iii) the scale of the development and the specific matters against which security is required;
  (iv) the likely degree of community concern should a breach occur; and
  (v) the remedial action, if any can be taken, which may be required should a breach occur;

(e) Council will usually require the bond to be lodged prior to the commencement of development works;

(f) a bond will be returned following completion of development and fulfilment of all conditions the subject of the bond; and

Note—it is an applicant's responsibility to lodge a formal request with Council for the return of a bond at the completion of development works.

(g) in certain circumstances where compliance with conditions is essential to avoiding serious environment harm or other serious adverse impacts, Council may require a bond from the specific contractor or builders as well as from the developer, as a means of ensuring compliance with one or more conditions of approval.

Appendix 2 Table of amendments

Table AP2.1 Table of amendments

Date of adoption and effective date	Planning scheme version number	Amendment type	Summary of amendment
Date of adoption – 24 July 2014 Effective date – 10 November 2014	Version 2 incorporating Sunshine Coast Planning Scheme 2014 (Minor Amendment) No. 1	Minor Amendment	The amendment clarifies the application and interpretation of the filling and excavation provisions in the Dwelling house code and the provisions relating to dwelling houses in the Landslide hazard and steep land overlay code.
Date of adoption – 26 February 2015 Effective date – 9 March 2015	Version 3 incorporating Sunshine Coast Planning Scheme 2014 (Administrative and Minor Amendment) No. 2	Administrative and Minor Amendment	The amendment corrects formatting, spelling, grammatical, mapping and cross-referencing errors and corrects factual matters incorrectly stated in the Planning Scheme.
Date of adoption – 13 July 2015 Effective date – 3 August 2015	Version 4 incorporating Planning Scheme Policies (Administrative and Minor Amendment) No. 3	Administrative and Minor Amendment	The amendment corrects spelling and grammatical errors, factual matters incorrectly stated, outdated terms and minor technical matters in the planning scheme policies for the flood hazard overlay code, development works and the transport and parking code.
Date of adoption – 23 November 2015 Effective date – 7 December 2015	Version 5 incorporating Sunshine Coast Planning Scheme 2014 (Transitional Interim Local Government Infrastructure Plan Amendment) No. 4	Transitional Interim Local Government Infrastructure Plan Amendment	The amendment deletes reference to water and sewer networks, corrects mapping errors, adds and removes a number of infrastructure projects and includes other minor revision or corrections.
Date of adoption – 22 March 2016 Effective date – 1 April 2016	Version 6 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) No. 5	Major Amendment	The amendment reflects revised land use, densities and road layouts for the Palmview Master Planned Area, and includes amendments to the Planning Scheme Policy for Palmview Structure Plan and consequential planning scheme amendments.
Date of adoption – 5 August 2016 Effective date – 15 August 2016	Version 7 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) No. 6	Major Amendment	The amendment changes the zoning of land at Tweddell Drive, Pelican Waters and at School Road, Bli Bli. The amendment also corrects a number of site specific zoning and building height anomalies located in other parts of the planning scheme area.
Date of adoption – 5 August 2016 Effective date – 15 August 2016	Version 7 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) No. 7	Administrative and Minor Amendment	The amendment corrects formatting, spelling, grammatical, mapping and cross-referencing errors, corrects factual matters incorrectly stated in the Planning Scheme and reflects updates to the Queensland Planning Provisions (version 4.0).

Date of adoption and effective date	Planning scheme version number	Amendment type	Summary of amendment
Date of adoption – 16 February 2017 Effective date – 27 February 2017	Version 8 incorporating Sunshine Coast Planning Scheme 2014 (Administrative and Minor Amendment) No. 8	Administrative and Minor Amendment	The amendment corrects formatting, grammatical, mapping and cross-referencing errors. The amendment also reflects a number of development approvals including the Caloundra South Development Scheme and reflects latest State Planning Policy mapping in relation to transport infrastructure and erosion prone areas.
Date amendment made – 18 May 2017 Effective date – 3 July 2017	Version 9 incorporating Sunshine Coast Planning Scheme 2014 (Alignment Amendment) No. 9	Alignment Amendment	The amendment provides for terminology and other operational changes required to align the Planning Scheme with the *Planning Act 2016* and the *Planning Regulation 2017*.
Date of adoption – 17 July 2017 Effective date – 31 July 2017	Version 10 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) No. 10	Major Amendment	The amendment reflects the vision and recommendations of the *Place Making Mooloolaba Master Plan* and generally applies to the Mooloolaba town centre of the Mooloolaba/Alexandra Headland local plan area.
Date of adoption – 26 February 2018 Effective date – 5 March 2018	Version 11 incorporating Sunshine Coast Planning Scheme 2014 (Qualified State Interest Amendment) No. 11	Qualified State Interest Amendment	The amendment deletes the requirement for the Muraban Street extension through Key Site 1 (Brisbane Road Carpark), from the Mooloolaba/Alexandra Headland local plan code.
Date of adoption – 8 March 2018 Effective date – 19 March 2018	Version 12 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) No. 12	Major Amendment	The amendment changes the zoning of land at Twin Waters West, Pacific Paradise and includes specific provisions in the Maroochy North Shore Local plan code to guide future development of the Twin Waters West land. The amendment also undertakes necessary consequential planning scheme amendments.
Date of adoption – 8 May 2018 Effective date – 14 May 2018	Version 13 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment and Alignment Amendment) No. 13	Major Amendment and Alignment Amendment	The amendment changes a zone or overlay relating to specific sites and addresses operational matters to improve the clarity and efficiency of the planning scheme. The amendment also makes terminology changes to align the amended provisions with the *Planning Act 2016* and the *Planning Regulation 2017*.

Appendix 2

Date of adoption and effective date	Planning scheme version number	Amendment type	Summary of amendment
Date of adoption – 5 June 2018 Effective date – 11 June 2018	Version 14 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) No. 14	Major Amendment	The amendment deletes the Structure Plan for the Maroochydore Principal Regional Activity Centre from Part 10 (Other Plans) and incorporates relevant provisions relating to the area within the remainder of the planning scheme. The amendment also changes a zone or overlay relating to a number of specific sites within the Maroochydore Principal Regional Activity Centre and makes terminology changes to align the amended provisions with the *Planning Act 2016* and the *Planning Regulation 2017*.
Date of adoption – 14 June 2018 Effective date – 29 June 2018	Version 15 incorporating Sunshine Coast Planning Scheme 2014 (Local Government Infrastructure Plan Amendment) No. 15	Local Government Infrastructure Amendment	The amendment replaces the existing Priority Infrastructure Plan with a Local Government Infrastructure Plan that complies with the *Sustainable Planning Act 2009* (repealed) and *Statutory Guideline 03/14 Local government infrastructure plan*.
Date of adoption – 27 September 2018 Effective date – 19 October 2018	Version 16 applying or adopting Development Control Plan 1 Kawana Waters (Qualified State Interest Amendment) No. 16	Qualified State Interest Amendment	The amendment reflects and provides for the continued effect of the provisions of *Temporary Local Planning Instrument (Kawana Waters Town Centre) No. 3 2017*, which revises the planning and development framework for the Kawana Waters Town Centre.
Date of adoption - 27 November 2018 Effective date - 10 December 2018	Version 17 incorporating Sunshine Coast Planning Scheme 2014 (Qualified State Interest Amendment) No. 17	Qualified State Interest Amendment	The amendment provides for additional building height for certain publicly accessible rooftop uses in major tourism location on the Sunshine Coast.
Date of adoption – 15 March 2019 Effective date -1 April 2019	Version 18 incorporating Sunshine Coast Planning Scheme 2014 Amendment No. 18	Tailored Amendment	The amendment responds to changes to the Urban Footprint under the *South East Queensland Regional Plan 2017* (ShapingSEQ). The amendment also includes a small number of operational amendments which seek to improve the clarity and efficiency of the planning scheme, particularly with respect to local parks, telecommunication facilities and parking rates.

Appendix 2

Date of adoption and effective date	Planning scheme version number	Amendment type	Summary of amendment
Date of adoption – 9 September 2019 Effective date – 23 September 2019	Version 19 incorporating Sunshine Coast Planning Scheme (Major Amendment) No. 19	Major Amendment	The amendment reflects the adopted *Caloundra Centre Master Plan* and responds to a small number of other matters related to development in the Caloundra Centre.
Date of adoption – 1 November 2019 Effective date – 11 November 2019	Version 20 incorporating Sunshine Coast Planning Scheme (Major Amendment) No. 20	Major Amendment	The amendment changes zoning, overlays, precincts and/or planning provisions for a number of specific sites. The amendment also changes the zoning and the Height of buildings and structures overlay for a number of specific sites relating to Educational establishments, Residential care facilities and retirement facilities. The amendment also reduces the number of building height increments in the Height of buildings and structures overlay and addresses other operational matters to improve the clarity and efficiency of the planning scheme.
Date of adoption – 15 January 2020 Effective date – 28 January 2020	Version 21 incorporating Sunshine Coast Planning Scheme (Qualified State Interest Amendment) and Planning Scheme Policy (Amendment) No. 21	Qualified State Interest Amendment	The amendment makes changes to support/facilitate the live music industry on the Sunshine Coast. The amendment designates part of Nambour's activity centre as a special entertainment precinct under the *Local Government Act 2009*. The amendment also includes a small number of changes to zone codes, local plan codes and the Nuisance Code.
Date of adoption – 18 August 2020 Effective date – 24 August 2020	Version 22 incorporating Sunshine Coast Planning Scheme 2014 (Major Amendment) and Planning Scheme Policy (Amendment) No. 22 - Historic Cultural Heritage	Major Amendment	The amendment identifies new and modified local heritage places, character areas, character buildings and local plan elements, while removing some existing local heritage places from the planning scheme. The amendment also includes revised assessment provisions in the Heritage and character areas overlay code that broaden requirements for specific works as well as improving the clarity and efficiency of the planning scheme.

Appendix 2

Date of adoption and effective date	Planning scheme version number	Amendment type	Summary of amendment
Date of adoption – 29 April 2021 Effective date – 24 May 2021	Version 23 incorporating Sunshine Coast Planning Scheme 2014 (Planning Scheme Policy Amendment) No. 23 – Planning Scheme Policy for Development Works	Planning Scheme Policy Amendment	The planning scheme policy amendment, relating to the Planning Scheme Policy for Development Works, updates the standards, specifications and procedures to guide the design, construction and delivery of new development asset infrastructure and works, including roads, stormwater, landscaping and recreation infrastructure. The amendment also updates references and guidelines in the planning scheme policy, deletes redundant water and sewer specifications and includes a new section for the delivery of local parks as well as other consequential or administrative amendments.

Appendix 2