1.3 Definitions & Abbreviations

ABBREVIATION	DESCRIPTION
MSC	Maroochy Shire Council
DOWP	Development Operations Works Policy
MCU	Material Change of Use
ROL	Reconfiguration of Lot
AASHTO	American Association of State Highway & Transportation Offices
AC	Asphaltic Concrete
ADWF	Average Dry Weather Flow
AHD	Australian Height Datum
AMCORD	Australian Model Code for Residential Development
ARI	Average Recurrence Interval
ASD	Approach Sight Distance
ASS	Acid Sulphate Soils
AV	Air Values
BBQ	Bare-Be-Que
CBR	California Bearing Ratio
CD	Compact Disk
CPESC	Certified Professional in Erosion & Sediment Control
CPTED	Crime Prevention through Environmental Design
DICL	Ductile Iron Cement Lined
EP	Equivalent Persons
ESA	Equivalent Standard Axles
ESC	Erosion Sediment Control
ESCP	Erosion & Sediment Control Plan
ESCS	Erosion & Sediment Control Strategy
ESD	Entering Sight Distance
FRC	Fibre Reinforced Pipe
HDPE	High Density Polyethylene
IFD	Intensity Frequency Duration
IEAust	Institute Engineering Australia
IPWEA	Institute of Public Works Engineering Australia
ITP	Inspection & Test Plan
K	Potassium
LATM	Local Area Traffic Management
MUTCD	Manual of Uniform Traffic Control Devices
MH	Maintenance Hole
MS	Maintenance Shaft
N	Nitrogen
NATA	National Association of Testing Authorities
P	Phosphorus
PASS	Possible Acid Sulphate Soils
PE	Polyethylene
PVC-M	PVC Modified
PVC-O	PVC Orientated
PVC-U	Unplasticised PVC
QDMR	Queensland Department of Main Roads
Qld	Queensland
QUDM	Queensland Urban Drainage Manual
RM	Rising Mains
RPEQ	Registered Professional Engineer Queensland
RPZD	Reduced Pressure Zone Device
SCADA	Supervisory Control and Data Acquisition
SISD	Safe Intersection Sight Distance
SQUIDs	Stormwater Quality Interception Devices
SV	Stop Valves
TMS	Terminal Maintenance Shaft
PVCU	Unplasticised PVC
Vpd	Vehicles per day
WSAA	Water Services Association Australia

1.4 Funding Strategy

Applicants should demonstrate that there will be sufficient funding to adequately manage and maintain the network.

A number of sources of funds are available to apply to the asset management need. These sources include rates and charges, infrastructure charges, government grants, etc. These funds do not always meet the need of asset management so it is necessary to identify the shortfall between funding and required expenditure.

Financial model constraints will establish the extent of under funding and may lead to a revision of levels of service, the design of the asset or the need to increase funding or provide other funding options.

Sinking fund or benefited area levy funding options, if proposed, are to be fully supported by documentation and financial modelling over the lifecycle of the proposed infrastructure. Council in no way accepts either of these options as a valid alternative to good asset management planning.

1.5 Levels of Service

Consideration is to be given to what services the assets deliver, and the expectations of the customer.

Levels of service are to be based on:

- Customer expectations; and
- Legislative / regulatory requirements.

Key service criteria to be addressed include:

- Quality;
- Quantity;
- Reliability;
- Responsiveness;
- Environmental / safety;
- Cost; and
- Legislative compliance.

1.6 Plan Presentation

Representation of required plans both in hard copy and electronic format are detailed under Appendix B.

2 General Information Requirements

2.1 Information Supporting Development Applications

This section contains guidance on the type of information that Council will generally seek to have submitted with an application that relates to any aspect dealt with in this policy. More specific information requirements in relation to particular matters are identified in the subsequent sections of this document.

It is preferable that such information is submitted with an application, however, if not initially provided by an applicant, Council is likely to issue an information request that seeks its subsequent provision.

2.1.1 Material Change of Use & Lot Reconfiguration

The Operational Works and Integrated Water Management codes are applicable at the material change of use or reconfiguration of lots stage, in addition to the operational works/detailed design stage (refer to the tables of development assessment in Volume 1 to determine the applicability of these codes).

Compliance with these codes at the initial material change of use or reconfiguration application stage should generally be demonstrated by:

- Identifying the locations of services and utilities and the relevant connection points for the services and utilities;
- Providing an assessment of flooding issues for the site;
- Identifying stormwater management devices for the purpose of stormwater quality and quantity control, with sufficient calculations undertaken to demonstrate that appropriate space allocations for such devices have been allocated; and
- Providing a conceptual design for the required operational works.

2.1.2 Operational Works Application

An operational works application must be accompanied by detailed engineering design and calculations for all relevant works. Specifically, applications should be accompanied by the following:

1. Completed IDAS application forms and the required application fee;
2. Five copies of engineering plans for the proposed works, (1 set to be A1 size and 4 sets to be A3 size);

Figure 2.1 – Lifecycle Management Structure

2.2.3 Lifecycle Expenditure Category Definitions

CATEGORY	DEFINITION	TYPICAL EXAMPLES
Maintenance	Expenditure related to the ongoing upkeep of assets	Mowing, Paintings, 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, replace works
Upgrade / augmentation	Expenditure on upgrading the level of service by investment in an existing infrastructure or service	Widening or sealing of roads, traffic calming, urban improvement program
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

3 Utilities

This section is relevant to the assessment of compliance with performance criterion P1 in Element 1 (Utilities) of the Code for Operational Works:

(1) Utilities

PERFORMANCE CRITERIA	ACCEPTABLE MEASURES
P1 Services are provided in a manner which: (a) ensures appropriate capacity to meet the current and future needs of the development site; (b) is integrated with and efficiently extends existing networks; (c) minimises risk to life and property; (d) minimises risk of environmental harm; (e) minimises whole of life cycle costs; (f) can be easily and efficiently maintained; and (g) minimises potable water demand and wastewater production.	**A1.1** (a) Each site or lot is connected to Council's reticulated water supply and sewerage system[2]. Or (b) Where the site is in a Rural Precinct and not within Council's water supply or sewerage supply areas, on site water supply and a system for waste water treatment and disposal is provided in accordance with Planning Scheme Policy No. 5 – Operational Works. Or (c)Where the site is in the Sustainable Rural Residential Precinct and is not within Council's water and sewerage supply areas, an on site system for waste water treatment and disposal is provided in accordance with Planning Scheme Policy No. 5 – Operational Works[3] **A1.2** Reticulated water supply and sewerage systems are designed and constructed in accordance with Planning Scheme Policy No. 5 – Operational Works **A1.3** Each site or lot is connected to an existing power supply and telecommunications network[4] . **A1.4** Other than in a rural precinct, electrical and telecommunications reticulation infrastructure is provided underground. **A1.5** Street lighting is provided in accordance with Planning Scheme Policy No. 5 – Operational Works.

The following subsections set out the standards referred to in these acceptable measures, and related specifications and standard drawings (as appropriate). Also identified are any specific information requirements for applications in relation to these matters. These information requirements apply in addition to those general requirements identified in Section 2 of this policy.

[2] *Applicants should note that the requirements of the Code for Integrated Water Management will also apply.*
[3] *Where on-site sewerage treatment is permitted the management of sewage generated on-site must comply with the Plumbing and Drainage Act 2002, the On-Site Sewerage Code and Australian/New Zealand Standard 1547:2000 (on-site domestic wastewater management).*
[4] *Applicants should note that such connection will be subject to the approval of the relevant supply authority.*

Street light poles are placed on 0.3m alignment in the following circumstances:-
• at the property boundary of hatchet blocks with narrow road frontage, and in cul-de-sac where frontages are narrow.

When joining to existing installations, or extending subdivisional estates in stages, new lamps and brackets match, as near as possible,
existing installations.

All major Lamps (as defi ned in Section 1 of ENERGEX's Policy, Design and Equipment Manual) are aeroscreen type.

Opal sphere lanterns are not used.

Post top and nostalgia lanterns for decorative use are used on P5 category roads (and lower).

Unless joining and conforming to existing lighting, the minimum length of outreach brackets on either a steel column or timber pole is 0.5m.

3.3.4 Standard Drawings

Standard drawings are defined under ENERGEX Public Lighting Manuals i.e. 'Construction Manual' and 'Policy, Design and Equipment Manual'.

Updating of drawing shall remain with the document owner and shall be the responsibility of the user to maintain current version. Relevant drawings are not maintained with Council list of standard drawings.

3.3.5 Specific information requirements

The developer shall provide Council all required approvals and certifi cation applicable from Energex.

4 Movement Networks

4.1 Purpose of this Section

This section is relevant to the assessment of compliance with performance criteria P1 – P8 in Element 2 (Movement Networks) of the Code for Operational Works:

Performance Criteria	Acceptable Measures
P1 Development sites are provided with external roadworks along the full extent of the frontage appropriate to the function and amenity of the road and including: **(a) paved roadway;** **(b) kerb and channel;** **(c) safe vehicular access;** **(d) safe footpaths and bikeways;** **(e) stormwater drainage; and** **(f) conduits to facilitate the provision of street lighting systems and traffic signals.**	**A1.1** Road works design and construction is undertaken in accordance with *Planning Scheme Policy No. 5 - Operational Works and Planning Scheme Policy No. 6 - Transport, Traffic and Parking*
P2 The reserve width, pavement, edging, street-scaping and landscaping support the intended functions and amenity of the road.	**A2.1** Road works design and construction is undertaken in accordance with *Planning Scheme Policy No. 5 - Operational Works and Planning Scheme Policy No. 6 - Transport, Traffic and Parking.*
P3 Road pavement surfaces: **(a) are sufficiently durable to carry wheel loads for parked and travelling vehicles;** **(b) ensure the safe passage of vehicles, pedestrians and cyclists;** **(c) ensure appropriate management of stormwater and maintenance of all weather access; and** **(d) allow for reasonable travel comfort**	**A3.1** Road pavement design and construction is undertaken in accordance with *Planning Scheme Policy No. 5 -Operational Works.*
P4 Pavement edges control vehicle movements by delineating the carriageway.	**A4.1** Road pavement design and construction is undertaken in accordance with *Planning Scheme Policy 5 – Operational Works.*
P5 The verges and footpaths provide **(a) safe access for pedestrians clear of obstructions;** **(b) an access for vehicles onto properties;** **(c) an area for public utility services; and** **(d) provide for people with disabilities by allowing safe passage of wheel chairs and other mobility aids**	**A5.1** Verge and footpath design and construction is undertaken in accordance with *Planning Scheme Policy No. 5 - Operational Works and Planning Scheme Policy No. 6 - Transport, Traffic and Parking.*
P6 Bikeways provide safe and attractive cycle routes for commuter and recreational purposes	**A6.1** Bikeway design and construction is undertaken in accordance with *Planning Scheme Policy No. 5 - Operational Works and Planning Scheme Policy No. 6 - Transport, Traffic and Parking and*the Priority Infrastructure Plan..
P7 Measures intended to restrain traffic speeds and/or volumes[6]: **(a) avoid stop-start conditions;** **(b) provide for appropriate sight distances;** **(c) avoid increased vehicle emissions;** **(d) minimise unacceptable traffic noise to adjoining land uses;** **(e) maintain convenience or safety levels for cyclists and public transport; and** **(f) are integrated with landscaping and streetscape design.**	**A7.1** Speed control devices are designed and constructed in accordance with *Planning Scheme Policy No. 5 - Operational Works and Planning Scheme Policy No. 6 - Transport, Traffi c and Parking.*
P8 Constructed roads and paths must be designed to minimise environmental impact	**A8.1** Roadworks design and construction is undertaken in accordance with *Planning Scheme Policy No. 5 - Operational Works and Planning Scheme Policy No. 6 - Transport, Traffi c and Parking.*

The following subsections set out the standards referred to in these acceptable measures, and related specifications and standard drawings (as appropriate). Also identified are any specific information requirements for applications in relation to these matters. These information requirements apply in addition to those general requirements identified in section 2 of this policy.

[6] Council will not accept the use of speed restriction techniques and devices in place of appropriate road design, in accordance with P7.

Footpaths		
IPWEAQ R-0065	Yes	Concrete Strip Footpaths
Verge Construction		
MSC R-0100		Public Utilities in Verges, Service Corridors and Alignments

4.4.5 Specific Information Requirements

Maroochy Shire Council advise that all operational work details shall advise of proposed footpath and bikeway details.

Developments constructed in stages are to make an allowance for interconnecting access pathways and bikeways.

Conditions to be considered include the following:

- sufficient for pedestrian and bicycle movements;
- have consideration for lighting and safety aspects;
- access for maintenance access and attendance;
- treatment for stormwater management and overland flow considerations;
- maintenance practice and long term maintenance costs of the pathway;
- impact on adjoining neighbours; and
- Compliance with requirements defined in Council bikeway strategic plan.

4.5 Bikeway Design & Construction

4.5.1 Relevant Code Requirements

This section relates to acceptable measure A6.1 for performance criterion P6 in Element 2 (Movement Networks) of the Code for Operational Works. It sets out standards and potential information requirements for the design and construction of bikeways.

4.5.2 Standards

Bikeways to be designed and constructed in accordance with Councils current bikeways planning and AUSTROADS – Part 14 where applicable.

4.5.3 Specifications

CQS	Quality system requirements
CQC	Quality control requirements
C101	General
C211	Control of Erosion and Sedimentation
C212	Clearing and Grubbing
C213	Earthworks
C242	Flexible Pavements

4.5.4 Standard Drawings

Standard drawing outlined below is available from Maroochy Shire Council webpage:

Bikeways	
IPWEAQ P-0010	Entrance to Road Reserve
IPWEAQ P-0012	Pavement Joints
IPWEAQ P-0013	Slowdown Control, Reserve Curve
IPWEAQ P-0015	Slowdown Control Offset Chicane

4.5.5 Specific Information Requirements

Details provided in conjunction with Transport Traffic and Parking Code requirements.

4.6 Speed Control Device Design & Construction

4.6.1 Relevant Code Requirements

This section relates to acceptable measure A7.1 for performance criterion P7 in Element 2 (Movement Networks) of the Code for Operational Works. It sets out standards and potential information requirements for the design and construction of speed control devices.

4.6.2 Standards

Council's preference is for target speeds to be achieved by road alignment rather than using speed control devices. However, where speed control devices are required the following standards apply:

- Queensland Streets
- Manual Uniform Traffic Control Devices

4.6.3 Specifications

No specific details for construction of speed control devices. However, they are to be constructed using the general road construction standards outlined in this policy.

Regional AUS–SPEC available on Maroochy Shire Council web page.

4.7 Stormwater Drainage

4.7.1 Relevant Code Requirements

This section relates to Element 2 (Movement Networks) of the Code for Operational Works and Element 2 (Water Cycle Management) of the Code for Integrated Water Management. It sets out standards for the design and construction of conventional stormwater drainage systems, which typically do not address current requirements for improvements in stormwater quality. Such requirements may be met by implementing Water Sensitive Urban Design (WSUD). However, WSUD requires alternative approaches and construction methods to conventional stormwater drainage systems. The standards below relate to design and construction of conventional stormwater drainage systems, elements of which will continue to play a role in water sensitive drainage systems. Where water sensitive design elements are used within a drainage system, such elements should be designed in accordance with recognised guidelines (as outlined in Section 7 of this Policy) to provide levels of flood immunity and public safety similar to conventional systems.

4.7.2 Standards

Stormwater drainage is to be designed and constructed in accordance with the following:

- Queensland Urban Drainage Manual (QUDM);
- Overland flow paths are provided at all sag points;
- Side entry gully pits or gully pit/manholes are used in sags;
- Manholes are not located within the carriageway of any street or road; and
- Anti ponding gullies in curves are side entry type, chamber and lintel. Gully pits are not located on kerb returns.
- Inter-allotment drainage is to be designed and constructed in accordance with the following:
- Inter-allotment drainage systems are provided to all lots where any part of the lot falls away from the frontage roadway and are designed in accordance with QUDM Section 5.18;
- Easements created over all inter-allotment drainage systems;
- Pipe bedding and backfill are in accordance with Specification No. 4.6 - Sewer Reticulation for PVC-U pipes, and Specification No. 4.5 - Stormwater Drainage for RC and FRC pipes;
- Pipe materials are PVC-U sewer pipe minimum class SH; PVC-U drainage pipe PLASCOR or equivalent, of equivalent class to PVC-U sewer class SH; R.C. pipe class '1' rubber ring jointed; or F.R.C. pipe class 'X' rubber ring jointed;
- PVC-U pipes are either rubber ring jointed or solvent weld jointed. Standard manufacturer's fittings are used in both cases;
- The minimum pipe size for inter-allotment drainage is 225mm diameter;
- Inspection Manholes are cast insitu concrete boxes, or precast FRC or RC pipe systems to the dimensions shown in Table 4.7.2 below;
- FRC and RCP systems are constructed by embedding the lower precast section into a wet cast-insitu concrete base. Cut outs for pipe penetrations are made using concrete saws/drills while minimising damage to the adjacent pipe materials;
- Lids to cast-in-situ manholes are light duty, close fitting bolt down cast iron or galvanised steel, concrete infill type (Gatic Light Duty, Polycrete Broadstel or similar) of approximately the same internal dimensions as the manhole;
- Lids to FRC and RCP manholes are in accordance with the manufacturer's proprietary concrete or concrete infill type;
- Lids match finished surface ground slope and sit 25-50 mm proud, and are marked 'stormwater' impressed into the concrete infill;
- Infill concrete is Class N25;
- PVC-U pipe and kerb adaptors are used where discharge is into the kerb and channel, or for commercial, industrial and community title premises, steel rectangular hollow section hot dip galvanised pipe are used with the pipe being placed on compacted sand bedding and the opening to the kerb is either formed at the time of kerb and channel construction or saw cut and reinstated neatly with mortar;
- Inter-allotment drainage lines are located 0.5 metres from rear or side boundaries within the properties served;
- Manholes are located at a maximum spacing of 100 metres, at changes of grade, at changes of direction, changes of pipe diameter, at ends of lines, and 0.5m to 1.5m from boundaries;

- At least one connection point provided to serve each lot, with a minimum 100 mm diameter located 0.5m to 1.5m from the lowest property boundary and connections are made direct to inspection manholes;
- Connection points on line are in the form of a 'Y' junction, bend, and inspection opening as for a sewer connection with the connection point being capped with a screw on or push on cap;
- Outlets from inter-allotment drainage systems are connected directly to the trunk drainage system by way of a gully or manhole;
- Where there is no trunk drainage system, individual discharge to the street shall be located within 0.5m of the lowest side lot boundary, measured square off the back of kerb and channel
- Easements of minimum width 1.5m are provided over pipes of 225mm diameter or less, and 3m over pipes of 300mm diameter or more;
- The depth of the house connection is determined by the longest run of house drain to the connection point possible within the lot and allowing 0.3 metres cover to the house drain at the head of the line, and allowing a minimum grade of 1 in 100 for the house drain; and
- Materials and construction are in accordance with Council's Standard Specification for Stormwater drainage.

Table 4.7.2 AS/NZ 3500.3 2003

Maximum Depth to Invert (mm)	Boxes – Internal Dimensions (mm)	FRC or RCP Systems
<600	450 x 450	600 mm diameter
>600 <900	600 x 600	900 mm diameter
>900 <1200	600 x 900	1000 mm diameter
>1200	900 x 900	1000 mm diameter
Minimum Wall thickness	100	N/A

4.7.3 Reserves and Easements

Drainage reserves in accordance with QUDM Section 3.05 are generally required over all natural or similar stormwater flow paths traversing a development site unless specifically approved otherwise. Drainage reserves are to convey the 100 year ARI flood event with an allowance for freeboard, as outlined in QUDM Table 8.02. Easements are required for a constructed or modified waterways:

- With a catchment area of less than 5 ha in residential or commercial areas, or
- With a catchment area of less than 10 ha in industrial and rural residential areas.

Constructed waterways with larger catchment areas are to be placed within drainage reserves. In rural residential & rural areas, Council may agree to place fl ood prone land under a drainage easement instead of acquiring the land under a drainage reserve, as indicated in Code 8.2, Element 3.1, Part (c) of Maroochy Plan 2000.

Natural waterways are to be placed within drainage reserves. Drainage reserves are to be sized to include buffer widths required by Council's Waterways and Wetlands Code.

A drainage reserve will be required over all areas containing detention basins, gross pollutant traps, wetlands and other stormwater quality improvement devices and verges required to adequately serve or maintain these devices.

Easements in accordance with QUDM (Section 3.04) are required over all municipal drainage systems which traverse private property. All costs associated with the provision of an easement are to be borne by the applicant.

Where overland flow easements are proposed which allows for the passage of stormwater runoff or redirection of flow across the natural land surface such easements will 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 must take into account future fencing that may be constructed across the easement. 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. Fencing must be constructed to allow free passage of flow.

5 Public Parks Infrastructure

5.1 Relevant Code Requirements

This section is relevant to the assessment of compliance with performance criterion as defined in two (2) relevant codes defined by MSC.

a) P1 in Element 4 (Pedestrian and Cyclist facilities) of the Code for Reconfiguration of Lots:

PERFORMANCE CRITERIA	ACCEPTABLE MEASURES
P1 A network of pedestrian ways and cycle routes is provided having regard to: **(a) opportunities to link open space networks and community facilities, including public transport stops, local activity centres and schools;** **(b) likely trip purpose;** **(c) topography;** **(d) cyclist and pedestrian safety;** **(e) cost effectiveness;** **(f) likely user volumes and types; and** **(g) convenience.**	**A1.3** Internal (local) linear linkages are: (a) (i) provided in accordance with Map 1 of the Maroochy Public Parks Strategy if indicated on Map 1; or (ii) provided in suitable locations; and (b) at least 10 m wide, unless forming part of a road reserve; (c) capable of accommodating a combined walking/bicycle path; (d) connected to the local street network; (e) aligned along water courses or water bodies where relevant; (f) broken by access points at least every 100m; and (g) are capable of being maintained in accordance with Planning Scheme Policy No.5 – Operational Works.

b) P1 in Element 6 (Public Parks Infrastructure) of the Code for Reconfiguration of Lots:

PERFORMANCE CRITERIA	ACCEPTABLE MEASURES
P1 Public parks infrastructure[7] is provided that: **(a) is accessible and equitably distributed in a manner appropriate to the proposed settlement or development;** **(b) contributes to the legibility and character of the development;** **(c) allows for a range of uses and activities;** **(d) is cost effective to maintain;** **(e) contributes to stormwater management, visual amenity and environmental care;** **(f) provides opportunities for rest and social interaction; and** **(g) facilitates safe connectivity between areas.**	Where land is provided: **A1.2** Preliminary works are undertaken free of cost to the Council and in accordance with *Planning Scheme Policy No. 5 - Operational Works* so that that the land is useable for its intended purpose.

This element is not relevant to the subdivision of existing or approved buildings.
Descriptions of the type of parks to be provided in the Shire are provided in the Priority Infrastructure Plan.

c) P1 in Element 3 (Public Parks Infrastructure) of the Code for Operational Works:

PERFORMANCE CRITERIA	ACCEPTABLE MEAUSRES
P1 Parks are designed to support their intended function, amenity and recreational setting.	**A1.1** Public parks are conceptually designed to the desired standard of service as outlined in the Priority Infrastructure Plan and designed and constructed in accordance with *Planning Scheme Policy No. 5 – Operational Works.*

[7] Descriptions of the type of parks to be provided in the Shire are provided in the Priority Infrastructure Plan..

The following subsections set out the standards relevant to this acceptable measure, and related specifications and standard drawings (as appropriate).

Also identified are any specific information requirements for applications in relation to public park infrastructure. These information requirements apply in addition to those general requirements identified in Section 2 of this policy.

5.1.1 Standards

Refer to: Priority Infrastructure Plan

Council's current open space strategy. Maroochy Shire Council Parks and Open Space Landscape Standards Manual

Copies of this document are available by contacting Maroochy Shire Council's Parks, Bushland and Open Space Branch.

5.1.2 Specifications

Refer to: PM-MRS (Pacific Motorway Main Roads Specification) 11.16 Landscaping
Aus Spec C273 Landscaping

Copies of these documents are available by contacting Maroochy Shire Council's Parks and Open Space Branch.

5.1.3 Standard Drawings

Standard drawings application to public parks infrastructure are as detailed in MSC document 'Landscape and Open Space Standards'.

5.1.4 Specific Information Requirements

Should any development wish to apply a standard above processes defined as standard by MSC, then the developer shall be responsible for the following:

Provision of additional maintenance costs as developer contributions over that defined as allowable under the Maroochy maintenance allocation. Details pertaining to the allocation of maintenance costs applied by MSC, shall be subject to the application proposed by each individual development. Evaluation shall be undertaken by MSC Shire Services at the time of submission.

- Provision of whole of life maintenance costs for all activities associated with the public park to be provided with proposed submission to detail the following:
  - comparison between forecast maintenance costs associated with MSC standards and proposal made in conjunction with the individual park development additional standard.

6 Construction Management

6.1 Purpose of this Section

This section is relevant to the assessment of compliance with performance criteria P3, P5, P6 and P7 in Element 5 (Construction Management) of the Code for Operational Works:

PERFORMANCE CRITERIA	ACCEPTABLE MEASURES
P3 Existing utilities, road and drainage infrastructure: • **continue to function efficiently; and** • **can be accessed by the relevant authority for maintenance purposes.**	**A3.1** Existing utilities, road and drainage infrastructure are protected and or relocated in accordance with the standards set out in Section 6.0 of Planning Scheme Policy No. 5 - Operational Works. **A3.2** The costs of any alterations or repairs are met by the applicant.
P5 Provision is made for: • **minimisation of waste material;** • **separation of recyclable material;** • **storage of waste and recyclable material;** • **collection of waste and recyclable material;** • **in a manner that minimises adverse impacts on the amenity and safety of surrounding areas.**	**A5.1** Waste minimisation, storage and servicing arrangements are made in accordance with Section 6.3 of Planning Scheme Policy No. 5 – Operational Works.
P6 Erosion and sediment control devices and techniques must prevent adverse impacts on the water quality of downstream stormwater drainage and natural systems.	**A6.1** Erosion and sediment control is undertaken in accordance with Section 6.4 of Planning Scheme Policy No. 5 - Operational Works.
P7 The integrity of assets to be delivered to Council is protected.	**A7.1** Construction is undertaken in accordance with the standards set out in Section 6.1 of Planning Scheme Policy No. 5 - Operational Works.

The following subsections set out the standards referred to in these acceptable measures, and related specifications and standard drawings (as appropriate).

Also identified are any specific information requirements for applications in relation to these matters. These information requirements apply in addition to those general requirements identified in section 2 of this policy.

6.1.1 Specific Information Requirements

In order to demonstrate compliance with the performance criteria or acceptable measures set out in element 5 of the Operational Works Code, Council require the preparation and submission of a Construction Management Plan.

The plan shall be developed to detail how the work shall be managed to ensure all processes outlined below are effectively managed to not incur breaches.

Such a plan should address:

- Proposed hours of construction and contact details;
- The protection of vegetation (vegetation management) with aesthetic or ecological value;
- Control of air, noise, vibration and light emissions
- Water quality
- Fauna
- Air quality
- Vibration criteria
- Control of dust;
- Waste management (through waste management plan
- Erosion and sediment control (Refer to section 6.4);
- Protection of existing infrastructure;
- Protection of assets to be contributed to Council
- Protection of public access
- Traffic management control plan (TMCP)

A traffic management control plan 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.

7.4 Flood Management

7.4.1 Relevant Code Requirements

This section is relevant to the assessment of compliance with performance criterion P2 in Element 3 (Flooding) of the Code for Integrated Water Management:

PERFORMANCE CRITERIA	ACCEPTABLE MEASURES
P2 For all floods up to and including the 100 year ARI: • **the safety of people the site is maintained;** • **potential damage to property on the site minimised; and** • **the functioning of essential services is maintained.**	**A2.1** (a) Development is sited on land that would not be subject to flooding during the 100 year ARI flood event. Or (b) There is no increase in the number of people living or working on the site, except where the premises are occupied on a short-term or intermittent basis (e.g. by construction / maintenance workers, certain agricultural and forestry workers). Or (c) Development complies with the standards for flood immunity set out in Planning Scheme Policy No. 5 – Operational Works **A2.2** Any components of infrastructure that are likely to fail to function or may result in contamination when inundated by flood water (e.g. electrical switchgear and motors, water supply pipeline air valves) are: (a) located in accordance with the standards for flood immunity set out in Planning Scheme Policy No. 5 – Operational Works; or (b) designed and constructed to exclude floodwater intrusion/infiltration. **A2.3** Infrastructure is designed and constructed to resist hydrostatic and hydrodynamic forces as a result of inundation by the 100 year ARI flood event.

The following subsections set out the standards referred to in these acceptable measures. Also identified are any specific information requirements for applications in relation to flooding.

7.4.2 Standards

In addressing Performance Criteria 2 for Flooding, the following information provides guidance in achieving the acceptable solutions A2.1 to A2.3

7.4.2.1 Flood Immunity for Uses and Lots Drainage Deficiency Areas

Where a development is proposed in a Drainage Deficiency Area, as shown on Regulatory Map 1.5, allotments are to be filled to the levels nominated for the relevant area where the 100 year ARI flood level does not govern.

Rural and Rural Residential development

For areas proposed as Rural allotments, a minimum of 600m$_2$ of each lot is to be located above the 100 year ARI flood level, and suitable for a building platform. For Rural Residential allotments, where portions of the allotment are below the 100 year ARI flood level a drainage easement may be negotiated by Council.

Access to Rural Residential and Rural building sites is to ensure that a low hazard criteria is met. The safety of the site can be determined by the following equation:

Low Hazard:
D + 0.3V δ 0.8
where:
D = depth of floodwater in 100 year ARI event (m) and must be less than 0.8m and
V = velocity of floodwater in 100 year ARI event (m/s) and must be less than 2m/s

Public Parks
Drainage requirements and flood immunity requirements for parks outlined in the Priority Infrastructure Plan are to be provided as shown in Table 7.1 below.

7.4.2.2 Flood Immunity for Certain Infrastructure

Emergency Services

Allotment levels of Emergency services, Hospital, residential, commercial and industrial developments are to be above the 100 year ARI flood level.

Mechanical and Electrical Works

Mechanical and electrical works (eg. Pump stations) are to be located above the 100 year ARI flood level.

Roads

The flood immunity for roads is to be provided in accordance with the Queensland Urban Drainage Manual (QUDM) except for the Bruce Highway, which must be above 100 year ARI flood levels.

Farming Activities

Farming activities in water resource catchments are confined to areas above the 10 year ARI flood level.

Animal keeping and intensive animal husbandry are confined to areas above the 100year ARI flood level.

7.4.2.3 Building Floor Levels

For detached house, annexed units, display homes and caretakers residences:

Buildings are to have a minimum floor level of at least:

a. 2.5m AHD to provide protection from storm surge events;

b. (i) 400mm above the 100 year ARI flood level or;

(ii) 600mm above the highest recorded flood level[14] which ever is greater.

c. Where in a Drainage Deficiency Area shown on Regulatory Map 1.5 application is to be made to Council to determine the required floor levels.

For all other building types:

Buildings are to have a minimum floor level of at least:

• 2.5mAHD to provide protection from storm surge events.

And

• Floor levels of Emergency services and Hospitals are a minimum of 1000mm above the 100 year ARI flood level or 1000mm above the highest recorded flood level in areas where no design flood levels have been determined.

Or

• Floor levels of residential, commercial and industrial buildings are a minimum of 400mm above the 100 year ARI flood level and at least 600mm above the highest recorded level for the site. Where design flood levels have not yet been determined the floor level shall be a minimum of 600mm above the highest recorded flood level.

And

• Where in a Drainage Deficiency Area shown on Regulatory Map 1.5 application is to be made to Council to determine the required floor levels.

And

• Openings to basement carparks have a minimum level equal to the requirements stated above.

7.4.2.4 Other Issues Requiring Consideration

Design Hydrology

Maroochy Shire Council is currently reviewing the appropriateness of Australian Rainfall and Runoff (ARR) Volume Two design event temporal patterns for our region. In some instances historical rainfall patterns recorded in the past 20 years have yielded greater discharge volumes and peak flood levels than those produced using the standard ARR patterns. Where flood plain storage is potentially significant consultants may be required to consider recorded historical rainfall patterns in addition to ARR design temporal patterns.

Local Drainage Design Capacity

Implementation of Water Sensitive Urban Design (WSUD) requires alternative approaches and construction methods to conventional stormwater drainage systems. Where water sensitive design elements are used within a drainage system, such elements should be designed in accordance with recognised guidelines (as outlined in Section 7.1.4 of this Policy) to provide levels of flood immunity and public safety similar to conventional systems, as outlined in QUDM. Details of design and construction standards for conventional stormwater systems, elements of which will continue to play a role in water sensitive drainage systems, are given in section 4.6 of this Policy.

[14] *Enquiries regarding Maroochy shire Council's historical flood* records may be made through the customer service centre.

Climate Change

It is anticipated that climate change is likely to have some impact over the design of hydrologic and hydraulic systems, including changes in rainfall volumes, recurrence intervals and intensities. As yet Maroochy Shire Council has not adopted standard requirements for climate change, however consultants are encouraged to consider the potential impact of climate change on their base assumptions and provide references to sourced information.

Legal Points of Discharge

A legal point of discharge is to be negotiated and agreed to with adjacent landowners in accordance with QUDM – Chapter 3. Legal points of discharge need to be identified and approved before development approval can be given.

Regulation Line

Where a 'regulation line' has been set by Council to define the limit to which development may encroach onto a floodplain, development is undertaken outside such 'regulation line'.

Excavation and Filling

Where excavation and/or filling are to occur within the flood plain, below the 100 year ARI level, adequate assessment (within the Flood Assessment Report) will be required to determine the impacts of the loss of storage and other hydraulic factors. Generally, filling below the Flood Regulation Line and/or adverse impacts on adjacent properties would not be acceptable. Equitable flood plain management practices dictate that cumulative loss of storage will also need to be considered as part of the assessment process.

Rehabilitation of Riparian Zones

When preparing a rehabilitation plan to address the requirements of the Waterways and Wetlands Code, due consideration must also be given to the effects on channel roughness (commonly expressed as Mannings 'n') by the mature rehabilitated vegetation. This should be addressed in the Flood Assessment Report. For guidance applicants are directed to the Brisbane City Council's Natural Channel Design Guidelines for further guidance on Mannings 'n' and vegetation densities.

Table 7-1 Public Parkland Requirements for Flooding and Drainage

Open Space Type	Drainage and Flood Immunity Requirements
Sports Grounds and Courts Shire Wide	**Drainage:** On-site detention with discharge through natural filter (eg. wetland) to river or creek. All drainage away from adjoining residential areas or direct discharge to creek or adjoining bushland. **Minimum Q20** design flood level for ovals and fields and **Q50** design flood level for courts (**Q100** design flood level if courts fenced). All buildings (including playgrounds) to be located above **Q100** design flood level.
Sports Grounds and Courts District	**Drainage:** On-site detention with discharge through natural filter (eg. wetland) to river or creek or street stormwater system. All drainage away from adjoining residential areas or direct discharge to creek or adjoining bushland. Minimum **Q10** design flood levels for ovals and fields and **Q50** design flood levels for courts (**Q100** design flood level if courts fenced). All buildings (including playgrounds) to be located above **Q100** design flood level.
Recreation Parks (includes formal parks and gardens, play and picnic parks, plazas and other hard urban spaces) Shire Wide	**Drainage:** Where possible drain into feature lake or creek through natural filter eg. wetland) or street stormwater system. All drainage away from adjoining residential areas or direct discharge to creek or adjoining bushland. Except where the intrinsic character of the park or location makes it impractical (eg. adjacent to watercourse) all these parks are to be located above the **Q100** design flood level. In all circumstances, areas containing buildings (including playgrounds) are to be located above the **Q100** design flood level.
Recreation Parks (includes formal parks and gardens, play and picnic parks, plazas and other hard urban spaces) District	**Drainage:** Where possible drain into feature lake or creek through natural filter (eg. wetland) or street stormwater system. All drainage away from adjoining residential areas or direct discharge to creek or adjoining bushland. Except where the intrinsic character of the park or location makes it impractical (eg. adjacent to watercourse) all these parks are to be located above the **Q100** design flood level. In all circumstances, areas containing buildings (including playgrounds) are to be located above the **Q100** design flood level.
Recreation Parks (includes formal parks and gardens, play and picnic parks, plazas and other hard urban spaces) Local	**Drainage:** Where possible drain into creek through natural filter (eg. wetland) or street stormwater system. All drainage away from adjoining residential areas or direct discharge to creek or adjoining bushland. Except where the intrinsic character of the park or location makes it impractical (eg. adjacent to watercourse) all these parks are to be located above the **Q100** design flood level. In all circumstances, areas containing buildings (including playgrounds) are to be located above the **Q100** design flood level.
Waterside Parks Level 1	**Drainage**: 'Soft' engineering constructions with natural filter to river.
Waterside Parks Level 2	**Drainage**: 'Soft' engineering constructions with natural filter to river.
Waterside Parks Local	**Drainage**: 'Soft' engineering constructions with natural filter to river.
Recreation Trails Shire Wide	**Drainage**: 'Soft' engineering constructions with natural filter to river.

7.4.3 Demonstrating Compliance` – Flood Management

7.4.3.1 Stormwater Quantity Management

To address the management of stormwater quantity both within and outside of the applicant's site, a Flood Assessment Report will be required as part of an IWM Plan. The IWM Plan must also show how integration of the management of stormwater quality and quantity through the adoption of water sensitive urban design principles is addressed on the site. These include identifying infrastructure that can provide multiple uses. For example, a wetland may also be able to provide a flood detention capacity or rainwater tanks may be used on a development to minimise the impacts of peak flows and improve the performance of water quality management measures.

7.4.3.2 Professional Requirements

All elements of the flood assessment report are to be undertaken and certified by a suitably qualified and experienced Registered Professional Engineer Queensland (RPEQ).

- Release the maintenance security where the applicant has complied with requirements set out in Councils acceptance of 'Off Maintenance'.

- The Council may where the applicant has failed to comply with the terms of the Bonding Agreement, serve written notice on the applicant requiring the applicant within seven (7) days of the receipt of the notice to either comply with the terms of the bonding agreement or show cause why the Council shall not call up the security and complete the works.

- The Council may call up the security if the applicant has failed to comply with notice served as stated above, and in the interest of public safety, environmental health or structural failure certain works are required to be undertaken by the Council prior to the expiration of the term of the Bonding Agreement.

8.1.9 Appeal Process

Any person dissatisfied with a decision of a delegated officer may request that the decision be reviewed.

Where a person requests a review of the decision of a delegated officer, the General Manager, Planning and Development shall refer the request to the Review Board of the following officer, General Manager, Environmental Planning and Development, and any other two delegated officers where available or any other officer acting in their capacity.

The General Manager, Planning and Development shall advise the person who requests a review of the date of the committee meeting and their right to attend the Review Board.

The Board shall meet at the earliest possible date to review the decision of the delegated officer.

The Board shall consider the representations of the person requesting the review, of the persons who address the Committee and the advice of the delegated officer.

The Board shall have delegated authority from the Council to:

- Reaffirm the decision of the delegated officer with or without modifications
- Amend a decision of the delegated officer or
- Reverse the decision of the delegated officer

The General Manager, Planning and Development shall advise the person who has requested the review pursuant to the decision of the Board.

8.1.10 Construction Security Bond

Prior to construction of the works commencing the developer is required to lodge a security bond.

The bond is required to provide security to Council in the event that costs are incurred as a result of the following:

- Protection of on-street works, including landscape works, from damage by contractors, sub-contractors and suppliers
- Repairs to on-street works resulting from damage caused by contactors, subcontractors and suppliers
- Protection and repair of existing Council services (i.e. sewerage connections, water connections etc)
- Inadequate Soil and Water Quality Management during construction
- Inadequate provision for traffic
- 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.

Any costs incurred by Council in responding to the above circumstances will be recovered from the Security Bond.

At the completion of the works and the acceptance of the works 'On Maintenance', the security bond shall be returned to the developer or may be substituted for the maintenance bond.

8.2 Plan Sealing

8.2.1 Introduction

A person who makes application for the sealing of a plan of subdivision shall make the application in the form required by the Council and shall accompany such application with an application fee of an amount which is in accordance with a scale of fees determined by the Council, and subject to resolution as determined.

8.2.2 Submission

The application for sealing of the plan shall not be lodged with Council until:

- all subdivision works have been completed to the satisfaction of Council and accepted 'On Maintenance', unless otherwise bonded; and
- all drawings detailing current 'As Constructed' data excluding outstanding bonded works have been approved by the Council.

8.2.3 Application Requirements

The application made for sealing of the plan shall be:

a) made in writing

b) signed by the applicant or applicants, or :
— in the case of a partnership by one of the partners thereof, or in the case of an incorporated association by an authorised officer thereof
— in the case of a company or body corporate, under the seal of the company or body corporate,
— in the case of a consultant acting on behalf of the applicant the consultant

c) accompanied by the consent in writing of the registered proprietor of the registered lessee of the land as the case may be

d) accompanied by checklist for endorsement of survey plans

e) Accompanied by the plan of subdivision suitable for deposit in the office of the Registrar of Titles which plan shall comply in all respects with the Development Permit for Reconfiguration, the approval of the engineering requirements, drawings and specifications.

f) Accompanied by an approval of road names for any new roads being created prior to the application for Plan Sealing.

g) All fees and Development Contributions or infrastructure charges in accordance with checklist for endorsement of survey plans shall be paid h) All contributions or infrastructure charges as detailed in a development approval, infrastructure agreement or infrastructure charges notice shall be paid

i) A electronic file containing an Autocad drawing file or a Civilcad DXF file containing 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 Department of Natural Resources for registration.

j) Accompanied by a copy of the approved Flood Study. This Flood Study must be accompanied by a letter of certification from a RPEQ experienced in hydrologic/hydraulic engineering stating that the attached Flood Study is the latest study referenced and approved by Council's relevant Development Permits and incorporates all amendments.
Where a development is staged, the flood study and certification must be provided with every stage.

8.2.4 Plan Details

In no case shall amendments be made which contravene the terms and conditions of the Council approval.

An electronic copy of the plan is to be supplied to Council in DWG format in accordance with the document 'Specification for the Supply of Digital Georeferenced Data'. Copies of this document are available from Council's Customer Service Centres.

The Council shall compare the plan of subdivision for sealing with the Council approved plan of subdivision.

The Council shall compare any new road names shown on the plans for subdivision sealing with the road name proposal approved by Council.

If the Council finds the plan of subdivision conforms with the proposal plan as approved, and no material change, variation or alteration has been made, and all conditions of the subdivision approval have been complied with to the Council's satisfaction, sealing shall be carried out.

Council shall as part of the operation note its approval on the plan of subdivision. and shall return the plan of the subdivision to the applicant to be lodged at the office of the Registrar of Titles.

In the event of 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 (1) month from the requested alteration, notify the Council and forward two (2) copies.

8.3 As Constructed

8.3.1 General

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 include:

• As Constructed Submissions
• Standard Civil Works Inspection and Testing Plan (CWITP) 'As Constructed' plans serve three distinct functions:
• Checking: To enable a quantitative check of the 'As Constructed' works against the