Part 10 Priority Infrastructure Plan

[Insert Caloundra City Plan Priority Infrastructure Plan]

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10.1 Interpretation

10.1.1 Terms and Definitions Used in Priority Infrastructure Plan

(1) A term or definition used in the Priority Infrastructure Plan has the meaning assigned to that term by:

(a) the Act; or

(b) Infrastructure Guideline 1, where that term is not defined in the Act; or

(c) Infrastructure Guideline 2, where that term is not defined in the Act or Infrastructure Guideline 1; or

(d) the Planning Scheme, where that term is not defined in the Act, Infrastructure Guideline 1 or Infrastructure Guideline 2; or

(e) this Part, where that term is not defined in the Act, Infrastructure Guideline 1, or Infrastructure Guideline 2, or the Planning Scheme; or

(f) the *Acts Interpretation Act 1954,* where that term is not defined in the Act, Infrastructure Guideline 1, Infrastructure Guideline 2, the Planning Scheme or the Act;

(g) the Macquarie Dictionary where that term is not defined in the Act, Infrastructure Guideline 1, Infrastructure Guideline 2, the Planning Scheme, this part or the Acts Interpretation Act 1954.

(2) A reference in the Priority Infrastructure Plan to any Act includes any regulation or instrument made under it and where amended or replaced means that amended or replaced Act.

(3) A reference in the Priority Infrastructure Plan to a specific resource document or standard means the latest version of the resource document or standard.

(4) Unless noted otherwise a reference to a Part, Section, Table or Schedule is a reference to a Part, Section, Table or Schedule of the Priority Infrastructure Plan.

(5) Where a conflict between the Planning Scheme and the Priority Infrastructure Plan occurs, the Planning Scheme is devised to prevail.

(6) Where a conflict between the Priority Infrastructure Plan and the Development Design Planning Scheme Policy occurs, the Priority Infrastructure Plan is devised to prevail.

10.1.2 Other Definitions

"Act" means the *Integrated Planning Act 1997* and subsequent IPOLAA amendments.

"Application date" means the date the application is received by the Local Government.

"Coastal" means the area of the Caloundra City Planning Scheme that is east of the Bruce Highway.

"Current Development" means the development constructed on the ground and any existing live approvals at the date being considered (excluding pending applications yet to be approved).

"DDPSP" means the Development Design Planning Scheme Policy.

"Desired Standards of Service (DSS)" means the standards to which trunk development infrastructure is planned and provided.

"Developable Area" means the gross site area excluding land removed through a mapped layer of the Planning Scheme (ie. flooding, steep slope, bush fire hazard) and land for trunk infrastructure specifically identified in the PIP.

"Development Control Plan 1 Kawana Waters" has the meaning given in section 1.1.2(3) (Application of Planning Scheme) of the Planning Scheme.

"Equivalent Tenement (ET)" means, in the context of infrastructure, the demand generated in a network (or system) by a detached dwelling or lot.

"Existing Development" means the development that existed in the Caloundra City Planning Scheme area on 31 December, 2004.

"Footloose Employment" means those employed as transient workers, work from home and construction workers.

"Future Trunk Infrastructure" means the infrastructure needed to service additional demand by development in future years supplied at designated timing.

"Gross site area" means the total area of the site.

"Hinterland" means the area of the City west of the Bruce Highway.

"Infrastructure Guideline 1" means the IPA Infrastructure Guideline 1/08 – Priority Infrastructure Plans dated 25 June 2008.

"Infrastructure Guideline 2" means the IPA Infrastructure Guideline 2/08 – Infrastructure Charges Schedules dated 25 June 2008.

"Infrastructure Network" means the following five systems of infrastructure identified in the Priority Infrastructure Plan:

(a) transport, including roads (local government and the local function of State controlled roads), bus stops and shelters, and paths generally located in road reserves;
(b) water supply;
(c) sewerage;
(d) open space (including public parks and land for community facilities which includes recreational and sporting parks and embellishments and land for other community facilities); and
(e) stormwater.

"Kawana Waters Development Agreement" has the meaning given in section 1.1.2(3) (Application of Planning Scheme) of the Planning Scheme.

"Net Developable Area" means the developable area less internal roads and any land required for trunk and non-trunk infrastructure or removed or protected from development by the Planning Scheme over and above the mapped constraints.

"Open Space" means the open space network of the Priority Infrastructure Plan including public parks and land for community facilities.

"Park" means public park in the context of the Priority Infrastructure Plan.

"Planning Scheme" means *Caloundra City Plan 2004*.

"Priority Infrastructure Area" means the area that is developed, or approved for development, for each of the following purposes:

(a) residential, other than rural;
(b) retail and commercial;
(c) industrial.

It is the area that will accommodate at least 10 years but not more than 15 years of growth.

"Public parks" means only those parks covered by this Priority Infrastructure Plan. Public parks form part of the overall park network of Caloundra City but exclude some parkland (eg. parkland solely for conservation purposes with no public access).

"Statistical Local Area (SLA)" means the Statistical Local Area as defined by the Australian Bureau of Statistics for the collection of the census data.

"Total Development" means the current development plus outstanding approvals and the application under consideration.

10.1.3 Acronyms

AD	average day demand
ADWF	average dry weather flow
AEP	Annual Exceedance Probability
BA	Building application
CAMCOS	Caboolture to Maroochydore Corridor Study
CBA	Central Business Area (CBD and surrounding areas)
CBD	Central Business District (Bulcock Street and environs)
CPTED	Crime Prevention Through Environmental Design.
DDPSP	Development Design Planning Scheme Policy
DSS	Desired Standards of Service
EP	Equivalent Persons

ERP	Estimated Resident Population (excluding tourists)
ESTRP	Estimated Resident Population (including tourists)
ET	Equivalent Tenement
GFA	Gross Floor Area
IPA	Integrated Planning Act (1997) and subsequent IPOLAA amendments
IPOLAA	Integrated Planning and Other Legislative Amendments Act
LGAQ	Local Government Association Queensland
LGMS	Local Growth Management Strategy
MCU	Material Change of Use
MD	maximum day demand
MDMM	mean day maximum month demand
MH	maximum hour demand
NHMRC	National Health and Medical Research Council
NPV	Net Present Value
OESR	Office of Economic and Statistical Research
OPW	Operational Works application
PDWF	peak dry weather flow
PFTI	Plans for Trunk Infrastructure
PIA	Priority Infrastructure Area
PIFU	Planning Information and Forecasting Unit of State Government
PIP	Priority Infrastructure Plan
PT	Public Transport
PWWF	peak wet weather flow
QUDM	Queensland Urban Drainage Manual
QWC	Queensland Water Commission
ROL	Reconfiguring a Lot
SCTFM	Sunshine Coast Traffic Forecasting Model
SDU	Standard Demand Unit
SLA	Statistical Local Area
VPD	Vehicles per day
WSAA	Water Services Association Australia

10.2 Introduction

10.2.1 Citation and Commencement

(1) This Priority Infrastructure Plan may be cited as Caloundra City Priority Infrastructure Plan 2013.

(2) The Priority infrastructure Plan was adopted by the Sunshine Coast Regional Council 22 August 2013.

10.2.2 Purpose

(1) The purpose of the Priority Infrastructure Plan is to integrate the planning of land use within Caloundra City with the trunk infrastructure required to meet the needs of development.

(2) The Priority Infrastructure Plan will seek to achieve this purpose by:

- (a) Defining the areas of anticipated urban growth in Caloundra City until 2016;
- (b) Specifying the assumptions underpinning the anticipated growth; and
- (c) Defining the Trunk Infrastructure for each Infrastructure Network that is required to support the anticipated growth.

10.2.3 Structure of the Priority Infrastructure Plan

(1) The Priority Infrastructure Plan includes:

- (a) The Priority Infrastructure Area;
- (b) Planning and growth assumptions for Caloundra City and projection methodology;
- (c) The DSS for each Infrastructure Network;
- (d) Definitions of trunk infrastructure; and
- (e) The PFTI.

10.2.4 Time Horizons

(1) The Priority Infrastructure Plan identifies the future growth in Caloundra to the year 2016.

(2) The Priority Infrastructure Plan addresses growth in two time cohorts.

- (a) From December 31, 2004 to June 2011 (referred to as 2011); and
- (b) From July 2011 to June 2016 (referred to as 2016).

(3) Information for intermediate years within a cohort may be obtained through interpolation.

10.2.5 Review

(1) The Priority Infrastructure Plan will be reviewed at least every five years as required by the *Sustainable Planning Act.* However, Council will monitor development in the Caloundra City planning area and will review and amend the Priority Infrastructure Plan more regularly should significant variations occur to the pattern of development, to infrastructure supply strategies or to infrastructure ownership.

10.3 The Priority Infrastructure Area

10.3.1 Introduction

(1) The PIA is that area of Caloundra City that is shown on Map PIA I (Caloundra City PIA Boundaries by Statistical Local Area (SLA)) that contains areas of anticipated growth in residential and non-residential development to 2016.

(2) The area of the PIA has been determined having regard to the development opportunities provided by the Development Assessment Tables in the Planning Scheme (other than impact assessable development).

(3) The Priority Infrastructure Plan identifies the trunk infrastructure that will be required for each Infrastructure Network to service the land within the PIA. Land outside of the PIA, but within the service catchment, has also been included in the planning for each Infrastructure Network.

10.3.2 Exclusions from the Priority Infrastructure Area

(1) The PIA does not include land in the rural use class in the Planning Scheme, although for completeness development growth in these areas is reported in the Priority Infrastructure Plan.

(2) The settlements of Conondale and Witta are also excluded from the PIA, with the expected growth in these settlements included in the rural projections for the City.

(3) The population located in caravan and relocatable home parks, tourist resorts and parks, backpacker hostels, bed and breakfasts, guesthouses and camping grounds are also generally excluded from the growth projections in the PIA.

(4) That part of the PIA area within Development Control Plan 1 Kawana Waters which is the subject of the Kawana Waters Development Agreement is the subject of an existing Infrastructure Agreement. Accordingly, this area has not been the subject of the Council's detailed growth projections. The planned growth has been included in the Kawana Statistical Local Area (SLA no. 2135) and reported in the growth projections accordingly

10.3.3 Inconsistent Development

(1) A development is considered to be inconsistent with the planning assumptions in terms of:

- (a) Location (the development is in a location outside the PIA boundary or that is inconsistent with City Plan precincts and the PIP); and/or
- (b) type (the development type is inconsistent with the City Plan precinct); and/or
- (c) scale (the development has an inconsistent amount of growth for the SLA, Planning Area, catchment, charge area or PIA area or has a higher level of intensity than was predicted in terms of dwelling numbers (ET's) or GFA); and/or
- (d) timing (the rate of development within the SLA, Planning Area, catchment, charge area or PIA area brings forward or delays the demand for infrastructure).

(2) Inconsistent development will be triggered by (but not limited to):

- (a) Being located partly or wholly outside the PIA; and/or
- (b) In addition to the current development and approvals given, development exceeds the total projected for either the City, an SLA or a planning precinct of a Planning Area within the PIA, within any defined time horizon, within the development categories described in 11.4.1; and
- (c) Further, a development will be deemed to be inconsistent with the planning assumptions, if in addition to the current development and approvals given that include the development, exceed the demand for trunk infrastructure planned in the sub catchment of any system covered by the Priority Infrastructure Plan in which the development resides, at any year or time horizon.

(3) Tests for inconsistent development will be made against:

- (a) The number of proposed dwellings or lots for residential purposes and not against population;
- (b) The proposed gross floor area (GFA) for non-residential purposes and not against employment.

10.3.4 The PIA and Charging

(1) Development that is inconsistent with the planning assumptions and is located wholly within the PIA may be conditioned to pay the additional cost of supplying the necessary trunk infrastructure identified in the PFTI that has been brought about by the inconsistency.

(2) Development that is partly or wholly outside the PIA is considered to be inconsistent with the planning assumptions and may be conditioned to pay the full cost of supplying the development with trunk infrastructure identified in the PFTI.

10.3.5 Trunk and Non Trunk Infrastructure

(1) Infrastructure planning in this Priority Infrastructure Plan only relates to the types of trunk infrastructure identified in section 11.6 (Plans for Trunk Infrastructure).

(2) By contrast, non trunk infrastructure includes all infrastructure other than that identified in Section 11.6 (Plans for Trunk Infrastructure) which is generally infrastructure for individual users or infrastructure that is confined to the use of one development site and is located within a development site or connects a development site to the trunk infrastructure network. The supply of non-trunk infrastructure is not provided for in the Priority Infrastructure Plan or Infrastructure Charges Schedule. The supply of non trunk infrastructure will generally be required through development conditions.

10.4 Planning and Growth Assumptions

10.4.1 Growth Projections

(1) Growth projections have been made with respect to the existing population plus anticipated growth in Caloundra City to 2016. These growth projections are based upon planning assumptions as to future growth anticipated by the Planning Scheme as shown on the maps referred to in Table 10.4.7 (Planning Assumption Map Reference).

(2) Growth projections are made for the total residential development (existing and future) in Caloundra City including the rural population and tourists, and for non residential development.

(3) The anticipated employment generated by each class of non-residential development is reported in the planning assumptions based on the Planning Scheme plot ratio and the number of employees per square metre of floor area (refer to Table 10.4.8 Floor Space Utilisation).

(4) Projections are reported for completeness for the rural residential population and rural non residential development outside the PIA.

(5) The non residential growth projections include 'footloose' employment which covers those employed as transient workers, work from home and construction workers. Whilst reported for completeness in the Priority Infrastructure Plan, this class of employment is not considered to create a demand for permanent service infrastructure outside that planned for the growth.

(6) A combined 'top down' and 'bottom up' approach to projecting growth has been taken in this Priority Infrastructure Plan. The 'top down' provides the control total ESTRP (that is, including tourists) and has been prepared by the State government through PIFU (now OESR), whilst the 'bottom up' projection provides the more detailed distribution, location and timing of different types of development.

(7) The base date that defines the existing development in this Priority Infrastructure Plan and from which projections are made is 31 December, 2004. Existing development data has been obtained from the Council's databases and includes information relevant at 31 December, 2004.

(8) The existing and the trends in SLA housing occupancy rates have been used to estimate the future population within the PIA, with a further adjustment made for tourists, to define the ESTRP of Caloundra City.

(9) Assumptions about city wide trends in household size in the future are shown in Table 10.4.1 (Trend in Household Size) and this trend has been applied to the existing household sizes in Table 10.4.2 (Existing Household Size for each SLA) for determining the future population in each SLA (refer to Map PIA I).

Table 10.4.1 Trend in Household Size

Development	2004	2006	2011	2016
Detached	2.51	2.5	2.45	2.4
Attached	1.62	1.6	1.55	1.5

Table 10.4.2 Existing Household Size for each SLA

SLA	Detached household size	Attached household size
2132	2.49	1.59
2133	2.39	1.32
2135	2.42	1.66
2136	2.33	2.05
2138	2.72	2.49

(10) Land availability affects growth in Caloundra City. Whilst the Planning Scheme has been used to identify the areas that can be developed, it has also been used to remove the areas that are subject to physical constraints defined as mapped layers in the Planning Scheme. The following constraints are the only constraints that have been or will be used to determine the developable area of a lot:

(a) Flooding (Refer to overlay maps in Part 4 of the Planning Scheme);

(b) Steep slopes (Refer to overlay maps in Part 4 of the Planning Scheme); and

(c) Bush fire hazard (Refer to overlay maps in Part 4 of the Planning Scheme and Map 7.3 of the Planning Scheme).

(11) The Priority Infrastructure Plan, provides the forecasted growth in the following PIP Projection Categories:

(a) Residential – detached
(b) Residential – attached
(c) Business
(d) Retail
(e) Showroom
(f) Community use
(g) Industrial
(h) Industry – high impact
(i) Education
(j) Hospital

(12) Projection categories that are reported at a global City level are:

(a) Rural
(b) Footloose

(13) Dwellings, in the case of residential, and employment, in the case of non-residential development, are the principal forecasting measures with population and GFA derived using household size and floor space utilisation rates respectively.

(14) The City Plan outlines use classes (refer Part 3 Interpretation of the Planning Scheme). The relationship between the use classes and the Priority Infrastructure Plan forecasting categories is defined in Table 10.4.3 (Development Categories). Full definitions of each of the use classes are contained in Part 3 Interpretation of the Planning Scheme.

(15) Table 10.4.3 combines the use classes of Community use, Sport and Recreation Use and Other uses. The use class of Sport and Recreation use – indoor sport, recreation and entertainment has been split for the purposes of the PIP and is shown with an asterisk (*). Licensed and unlicensed clubs have been included in the community use class as most sporting clubs are contained on community purpose land. The remaining uses within this category are more likely to be contained within a business or commercial centre and have therefore been included in the Retail category.

(16) Short term growth projections are driven by live development applications and approvals (not acted upon by December 2004), together with possible development on lots that cannot be further reconfigured under the current Planning Scheme provisions. Middle and longer term growth projections are driven by the propensity of vacant lots to be developed to their potential in accordance with the Planning Scheme or for lots that contain development to intensify in accordance with the provisions of the Planning Scheme.

(17) Potential development yield and land or property values have been used in combination, as the major determinants of the propensity to reconfigure or redevelop.

(18) For more detail on the methods used for projecting growth in Caloundra City, refer to the report in the Growth Projections Background Paper.

Table 10.4.3 Development Categories

City Plan Use Class [1]	PIP projection categories	City Plan Use Class inclusions	City Plan cited examples[1]
Residential	Residential - detached	detached house	house, an outbuilding, a small secondary dwelling
		display dwelling	builder's display home, prize home, estate sales office.
		home-based business	
		bed & breakfast	
	Residential – attached	duplex dwelling	
		multiple dwelling	
		caravan and relocatable home park	caravan and relocatable home park includes managers office, caretakers residence, kiosk, amenity buildings and recreation & entertainment facilities
		accommodation building	boarding house, guest house, backpacker hostel, serviced apartments, student accommodation
		motel	
		retirement community	nursing home and retirement communities
Business & commercial use – business	Business	funeral parlour	
		veterinary surgery	
		medical centre	medical and dental surgery, pathology lab, physiotherapy clinic, naturopath or alternative therapies clinic, chiropractic clinic, psychological counselling rooms.
		office	business or professional advice and services, services or goods not physically on the premises, the office based administrative function of an organisation.
Business & commercial use - retail (excluding showroom) and catering Sport and Recreation use - indoor sport, recreation and entertainment [2]	Retail	indoor sport, recreation and entertainment *	theatre, cinema, amusement centre, sport and fitness centre, gym (excludes licensed and unlicensed club).
		adult product shop	
		garden centre	
		market	
		shop	hairdressing salon, barber shop, video library, bottle shop, TAB, real estate, bank, credit union, retail bakery, hot bread shop and internet café (not exceeding 300m2 GFA that would otherwise be defined as showroom) [1]
		shopping complex	GFA exceeding 1000m2 with one or more buildings for a shop and any one or more of: art & craft, garden centre, hotel, indoor sport, recreation and entertainment, industry-local service, medical centre, office, restaurant, service station and vehicle repair centre.[1]
		art and craft centre	art and craft centre
		restaurant	includes outdoor dining, restaurant, café, milk bar, coffee shop, tea room, take away shop, drive through food outlet and fast food outlet.
		hotel	
		function room	room for the conduct of function, conference, reception
		nightclub	
Business & commercial use - showroom	Showroom	Showroom	Exceeds 300m2 GFA with goods primarily of a bulky nature.[1]
Community use - education establishment	Education	education establishment	school, pre-school, college, adult education centre, university and associated offices, libraries, bookshops, canteens, sporting fields, tennis courts, swimming pools on site.

City Plan Use Class [1]	PIP projection categories	City Plan Use Class inclusions	City Plan cited examples[1]
Community use – hospital	Hospital	hospital	medical or psychiatric care
Community use, Sport and Recreation use and Other use[2]	Community use	park	free use of playing field, playground or ornamental garden.
		emergency service	police station, ambulance station, fire station and emergency services depot
		place of worship	church, chapel, synagogue, temple
		cemetery	Cemetery
		community centre	neighbourhood centre, senior citizens centre, youth centre
		outdoor sport, recreation and entertainment	commercial playing of a game, recreation. eg. sporting field, athletics track, race track, public swimming pool, golf course, driving range.
		child care centre	child care centre (not including family day care), after school care, occasional care, kindergarten, crèche
		car park	
		marina	Launching, berthing, storage, fuelling, servicing and maintenance of boats and marine accessories, parking of trailers and recreation, offices, shops and other associated services.
		telecommunication tower	Poles, towers, antennae, cabinets exceeding 5m2 or 2.5 m in height
		camping grounds	Camping ground, includes managers office, caretakers residence, kiosk, amenity buildings and recreation and entertainment facilities.
		major utility	power plant, storage and treatment of water, sewer or refuse, council, state or federal purpose not defined.
		indoor sport, recreation and entertainment *	licensed and unlicensed club (excluding theatre, cinema, amusement centre, sport and fitness centre, gym).
		local utility	conveyance of water, sewer, stormwater, roads, traffic controls, power, railway, state forest, national park or conservation park, postal or telecommunication services (but not towers). Civic services like libraries, tourist info and council controlled emergency services.
Rural use	Rural use	animal husbandry - low impact	small fisheries (not aqua culture), dairying, cattle grazing, animal breeding, holding yards and hatcheries
		animal keeping	boarding kennel, animal pound, cattery
		aquaculture	large fisheries (refer definition)
		agriculture	plantation forestry, a wholesale nursery, packing raw produce, storage sheds, machinery shed
		rural service industry	preparing, packaging and handling of primary produce
		rural holiday accommodation	farm stays, host farms, holiday cabins.

City Plan Use Class [1]	PIP projection categories	City Plan Use Class inclusions	City Plan cited examples[1]
		native forest harvesting	trees and other forest products (not including milling or chemical treatment)
		stable	stable
		rural produce stall	
Industrial use	Industrial	industry - general	industry other than high impact or local service.
		industry - local service	Laundromat, making, assembling, repairing or servicing of products. Refer to list.
		warehouse	includes self storage facility
		vehicle repair centre	includes tyre fitting, engine tuning and reconditioning, radiator repairs, panel beating, spray painting
		outdoor sales or hire yard	
		landscape supplies	display and sale
		car wash	car wash
		extractive industry	Quarry
		vehicle depot	storage of buses, trucks, taxis and the servicing of same.
		service station	
		salvage yard	Wreckers
		storage yard	builders yard, construction or earthmoving yard, storage of goods
Industry use – high impact	Industry – high impact	industry - high impact	chemical, coal and petroleum products activities; fabricated metal product activities; food processing; metal products activities; miscellaneous activities; non-metallic product manufacture; saw milling, wood chipping and treating timber; maritime services; waste management. Includes concrete batching plant, abattoir, oil or fuel depot.
		animal husbandry - high impact	stables, feedlots, piggery, poultry, emus or ostriches

1. For specific definitions of City Plan uses, refer part 3 (Interpretation) of the Planning Scheme.
2. Refer to Section 10.4.1 (15).

10.4.2 Reporting Geography

(1) The planning assumptions are reported at a number of levels of geography, being;

(a) City wide;

(b) for each SLA (Caloundra City contains five SLA's which are identified in Map PIA I), and

(c) that component of Planning Areas contained within the PIA.

10.4.3 Planned Growth in Residential Development

(1) Tables 11.4.4 to 11.4.6 (Caloundra City Residential Growth) identify the existing and future residential planning assumptions across the whole of Caloundra City, by SLA and by PIA area respectively.

Table 10.4.4 Caloundra City Residential Growth – City-wide

	Existing Population 2004	Population 2011	Population 2016
ESTRP	93,505	115,518	131,810
Visitors	6666	8,078	9,365
ERP	86,839	107,440	122,445

Table 10.4.5 Caloundra City Residential Growth by SLA

	Existing Population 2004	Population 2011	Population 2016
2132	20,167	24,164	27,745
2133	20,128	25,823	31,410
2135	20,488	26,488	29,662

2136	8,061	9,539	10,217
2138	17,995	21,426	23,401
TOTAL	86,839	107,440	122,445

Table 10.4.6 Caloundra City Residential Growth by PIA area

	Existing Population 2004	Population 2011	Population 2016
Stanley River - Peachester	612	743	774
Mooloolah Valley	3,276	3,929	4,283
Maleny	1,970	3,517	4,188
Glasshouse Mountain	1,941	2,263	2,725
Beerwah	2,244	3,536	4,983
Landsborough	2,966	4,647	5,408
Beerburrum	221	329	455
Kawana Waters	20,849	27,741	30,253
Caloundra Eastern Beaches	10,599	11,211	11,473
Caloundra West	8,079	11,932	15,894
Caloundra South	14,455	18,531	23,511
Central Caloundra	7,969	9,675	11,761
Outside PIA	11,658	9,386	6,737
TOTAL	86,839	107,440	122,445

(2) The anticipated growth of residential development within each class in district locations is presented in the maps and associated growth projections tables identified in Table 10.4.7 (Planning Assumptions Map Reference).

Table 10.4.7 Planning Assumptions Map Reference

Location	Map Number	Growth Projection Table Number
Maleny	PIA 1	10.4.10
Peachester	PIA 2	10.4.11
Mooloolah Valley	PIA 3	10.4.12
Landsborough	PIA 4	10.4.13
Beerwah	PIA 5	10.4.14
Glass House Mountains	PIA 6	10.4.15
Beerburrum	PIA 7	10.4.16
Kawana Waters	PIA 8	10.4.17
Caloundra West	PIA 9	10.4.18
Caloundra Eastern Beaches	PIA 10	10.4.19
Caloundra South	PIA 11	10.4.20
Central Caloundra	PIA 12	10.4.21

10.4.4 Factors Affecting Non Residential Growth

(1) Floor space utilisation is the key factor affecting the derivation of the future growth in gross floor space from the estimated employment. The average floor space utilisation rates found to generally exist in 2004, have been held constant into the future and are shown in Table 10.4.8 (Floor Space Utilisation).

Table 10.4.8 Floor Space Utilisation

Employment Category	Average floor-space utilisation (Square metres per employee)
Retail	35
Business	24
Industry – high impact	150 (Range 100 – 300)
Industrial	100
Showroom	100
Education	n/a
Hospital	30
Community Use	35
Rural Use	n/a
Footloose	n/a

10.4.5 Growth in Non-residential Development

(1) Table 10.4.9 (Existing and Projected Growth in Non Residential Development and Employment) identifies the existing and future assumptions about the distribution of employment across the City.

Table 10.4.9 Existing and Projected Growth in Non Residential Development And Employment

Category	Existing 2004	Growth 2004 - 2011	Growth to 2012 - 2016
Retail	7,594 (265,797m^2)	1,885 (66,030 m^2)	1,407 (48,419m^2)
Business	3,872 (102,098 m^2)	1,929 (46,300 m^2)	140 (3,360m^2)
Industry – high impact	2,208 (331,245m^2)	1,801 (270,045m^2)	1,141 (171,121m^2)
Industrial	1,223 (124,780m^2)	386 (38,818m^2)	310 (31,139m^2)
Showroom	1,098 (109,779m^2)	230 (22,987m^2)	159 (15,911m^2)
Education	1,080 (N/A)	355 (N/A)	175 (N/A)
Hospital	1,540 (N/A)	349 (N/A)	175 (N/A)
Community use	755 (N/A)	242 (N/A)	161(N/A)
Rural use	1,883 (N/A)	20 (N/A)	100
Footloose	3,108 (N/A)	262 (N/A)	536
Total Jobs	24,365	7,459	5,204

Note: In the above table the first value indicates number of employees and values in brackets refer to Gross Floor Area (GFA).

(2) The anticipated growth of non residential development within each class in district locations is shown in the Maps and associated tables identified in Table 10.4.7 (Planning Assumption Map Reference).

Map PIA I Caloundra City PIA Boundaries by Statistical Local Area (SLA)

Map PIA 1 Maleny PIA Boundary Growth Projections

Table 10.4.10 Maleny Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Residential – detached	1845	735	1510	662	663	298
Residential - attached	125	77	37	18	8	4
			0	0		
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	3482	35	5048	50	900	9
Business	21899	561	980	41	120	5
Retail	25860	739	5888	169	2223	64
Showroom	0	0	0	0	0	0
Education		104	0	5		10
Hospital		67	0	5		10
Community Use		46	0	7		9

Map PIA 2 Peachester PIA Boundary Growth Projections

Table 10.4.11 Peachester Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	612	244	131	49	31	12
Attached	0	0	0	0	0	0
				0		
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	0	0	0	0	0	0
Business	0	0	0	0	0	0
Retail	1620	46	0	0	0	0
Showroom	0	0	0	0	0	0
Education		10		2		0
Hospital		0		0		0
Community Use		3		0		0

Map PIA 3 Mooloolah Valley PIA Boundary Growth Projections

Table 10.4.12 Mooloolah Valley Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	3263	1289	653	249	354	135
Attached	13	8	0	0	0	0
			0			
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	63	1	63	1	63	1
Business	3900	156	0	0	0	0
Retail	13765	393	1500	43	750	21
Showroom	0	0	0	0	0	0
Education		45	0	8		0
Hospital		0	0	0		0
Community Use		12	0	2		1

Map PIA 4 Landsborough PIA Boundary Growth Projections

Table 10.4.13 Landsborough Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	2942	1170	1681	627	703	267
Attached	24	15	0	0	58	24
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	50823	339	12028	80	4500	30
Industrial	606	6	549	5	549	5
Business	4024	161	0	0	120	5
Retail	6511	186	5000	143	2500	71
Showroom	0	0	15911	159	15911	159
Education		36		4		0
Hospital		0		0		0
Community Use		18		0		14

Map PIA 5 Beerwah PIA Boundary Growth Projections

Table 10.4.14 Beerwah Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	2131	848	1067	398	1159	441
Attached	113	70	225	92	288	120
				0		
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	20878	139	13301	89	4500	30
Industrial	3823	38	10811	108	3823	38
Business	9326	374	1100	46	0	0
Retail	19702	563	6340	72	3520	101
Showroom	0	0	0	0	0	0
Education		133	0	6		0
Hospital		55	0	10		0
Community Use		54	0	4		8

Map PIA 6 Glasshouse Mountains PIA Boundary Growth Projections

Table 10.4.15 Glasshouse Mountains Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	1938	771	322	120	462	176
Attached	3	2	0	0	0	0
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	1249	12	1249	12	1249	12
Business	751	30	0	0	0	0
Retail	2054	59	1503	43	500	45
Showroom	0	0	0	0	0	0
Education		33		2		0
Hospital		0		0		0
Community Use		19		0		4

Map PIA 7 Beerburrum PIA Boundary Growth Projections

Table 10.4.16 Beerburrum Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	221	88	108	43	113	45
Attached	0	0	0	0	0	0
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	2198	22	2198	22	2198	22
Business	735	29	0	0	0	0
Retail	735	21	70	2	0	0
Showroom	0	0	0	0	0	0
Education		10		2		0
Hospital		0		0		0
Community Use		0		0		0

Map PIA 8 Kawana Waters PIA Boundary Growth Projections

Table 10.4.17 Kawana Waters Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	17590	7003	5382	1705	0	0
Attached	3259	2012	1510	1726	2512	2558
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	131380	876	23017	154	10521	70
Industrial	49030	490	5349	53	15000	150
Business	12071	503	25320	1055	1120	47
Retail	63925	1826	18900	540	10000	286
Showroom	109779	1098	7076	71	0	0
Education		236		20		32
Hospital		300		20		32
Community Use		112		119		69

Map PIA 9 Caloundra West PIA Boundary Growth Projections

Table 10.4.18 Caloundra West Growth Projections

	Existing 2004		Growth 2004 -2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	7648	3040	3853	1575	3822	1599
Attached	431	266	0	0	140	94
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	2330	16	0	0	0	0
Business	8975	374	0	0	0	0
Retail	22058	630	6672	191	10657	297
Showroom	0	0	0	0	0	0
Education		87		156		48
Hospital		0		103		48
Community Use		3		5		2

Map PIA 10 Caloundra Eastern Beaches PIA Boundary Growth Projections

Table 10.4.19 Caloundra Eastern Beaches Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	8383	3255	335	136	7	3
Attached	2216	1368	277	178	255	171
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	47557	476	16553	135	2337	23
Business	2172	90	0	0	0	0
Retail	9751	279	5807	162	1019	29
Showroom	0	0	0	0	0	0
Education		62		0		15
Hospital		406		65		15
Community Use		99		21		10

Map PIA 11 Caloundra South PIA Boundary Growth Projections

Table 10.4.20 Caloundra South Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	10896	4331	3878	1653	3518	1536
Attached	3559	2197	198	156	1462	1198
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	128163	854	221700	1889	151600	1011
Industrial	5414	54	0	0	5022	50
Business	5323	222	4000	167	0	0
Retail	13549	387	2050	59	0	0
Showroom	0	0	0	0	0	0
Education		74		150		30
Hospital		159		90		30
Community Use		146		7		5

Map PIA 12 Caloundra Central PIA Boundary Growth Projections

Table 10.4.21 Caloundra Central Growth Projections

	Existing 2004		Growth 2004 - 2011		Growth 2011 - 2016	
Residential Type	**Population**	**Dwellings**	**Population**	**Dwellings**	**Population**	**Dwellings**
Detached	1960	753	10	4	0	0
Attached	6009	3709	1696	1327	2086	1710
Non-Residential Type	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**	**Gross Floor Area**	**Employment**
Industry – high impact	0	0	0	0	0	0
Industrial	9031	73	0	0	0	0
Business	32922	1372	14900	620	2000	83
Retail	86268	2465	12300	351	17250	493
Showroom	0	0	0	0	0	0
Education		254		0		40
Hospital		553		56		40
Community Use		243		77		39

10.5 Desired Standards of Service

10.5.1 Introduction

(1) The Desired Standards of Service (DSS) for each network is expressed in terms of Planning criteria and Design criteria. Planning criteria explain the basis on which the network of infrastructure is formed and are generally expressed in qualitative terms through the definition of objectives that are to be met. Design criteria describe why items are sized the way they are and are expressed in quantitative terms but also through the definition of operational objectives to be met.

(2) IPA section 2.1.24 clarifies that intentions stated in the plan do not create an obligation to supply the infrastructure or that any right exists to expect or demand the standard of service stated.

(3) The following networks are included in this Priority Infrastructure Plan:

(a) Transport;

(b) Water supply;

(c) Sewer;

(d) Public parks and land for community facilities; and

(e) Stormwater.

(4) Under the Water Reform implemented by the State Government, Water Supply and Sewerage infrastructure networks are no longer provided by Council whereby responsibility has been given to Unitywater.

10.5.2 Desired Standards of Service for Transport

(1) The transport network contains three integrated systems of:

(a) Local government roads

(b) State controlled roads; and

(c) Paths.

(2) Note that the off-road Trails system is included in the Public Parks and Land for Community Facilities network.

10.5.3 Road System Planning Criteria

(1) The standards of service (Table 10.5.1 Road Network Planning Criteria) that follow relate to the provision of Caloundra City roads, although the standards have been coordinated with adjacent local governments and the Department of Transport and Main Roads.

(2) Planning characteristics attached to the functional hierarchy are defined in Table 10.5.2 (Functional Planning Provisions in the Hierarchy).

(3) The Road Hierarchy shown on Maps 9.1 and 9.2 of Part 9 of the Planning Scheme is indicative of the existing network shown on maps TE1 to TE9. The future network shown on maps TFU1 to TFU9 is indicative of the change of function performed by any given road over the time horizon of the Priority Infrastructure Plan.

Table 10.5.1 Road Network Planning Criteria

Planning Objective	Desirable Outcomes
Provide a functional hierarchy of roads through Caloundra City in which the structured pattern and characteristics of travel derived from the structure of land use is carried upon a network appropriately planned and located to meet the required range of operating characteristics whilst fulfilling amenity and environmental objectives.	Promote safety by separating travel functions that have different and conflicting operating characteristics and requirements. Minimise fuel consumption, emissions and congestion by maintaining optimal operating speeds across the hierarchical network. Protect residential amenity while providing efficient freight routes.

10.5.4 Road Design Criteria

(1) This section outlines the design criteria for the road network.

Table 10.5.2 Functional Planning Provisions in the Hierarchy

Road element	Speed Environment	Provisions						
		Access	Public Transport	Intersections	Parking	Turning Traffic	Cyclists	Pedestrians
Major Arterial	State	State	State	State	State	State	State	Nil
Arterial	State	State	State	State	State	State	Cycle lanes and Underpass/intersections	Footpaths on both sides
Sub Arterial	60 km/h	Intersections	Indented stops where there is inadequate width in the verge.	C – 0.2 - 0.5km	None	Protected and deceleration lanes	Cycle lanes and intersection treatments	Footpaths on both sides
Trunk Collector	60 km/h	Intersections	Indented stops where there is inadequate width in the verge.	C/P – 0.2km	Limited to commercial areas	Localised protection	Cycle lanes and intersection treatments	Footpaths on both sides
Collector	50 – 60 km/h	Frontage	In traffic where width conforms	C/P – 0.1km	On road	None	On road	Footpath on one side
Residential Access Street	30 – 50 km/h	Frontage	In traffic where width conforms	P - 0.06km	On road	None	On road	Footpath on one side

C = Controlled Intersections
P = Priority Intersections

*Note: This table outlines desirable attributes not design standards

Table 10.5.3 Road Design Criteria

Design Criteria	Desired Standards
• Base the design capacity of roads on the efficient movement of goods and services by adopting the volume/capacity ratio in Table 10.5.4. • At intersections, the maximum degree of saturation shall not exceed 0.95 and the vehicle delay rates to be less than 25 total vehicle hours delay per hour..	• Reduce congestion and accidents and promote fuel efficiency. • Maintain efficient travel speeds in the network. • Maintain efficient freight distribution and costs.
Ensure traffic on access streets does not exceed 2000 vehicles per day with less than 3% commercial vehicles.	Minimise the adverse impacts of safety risks and noise in residential streets.

(2) Table 10.5.4 (Road Network Operating Design Standards) outlines the design standards for each level of road in the hierarchy.

Table 10.5.4 Road Network Operating Design Standards

Road Element	Maximum desirable volume/capacity ratio by location			Maximum desirable daily volume/lane in urban/suburban locations
	Rural	Suburban	Urban	
Major Arterial	0.7	0.75	0.75	11,000 vpd
Arterial	0.75	0.8	0.85	9,000 vpd
Sub-arterial	0.75	0.8	0.85	9,000 vpd
Trunk Collector	0.8	0.9	0.90	8,000 vpd
Collector (Development Frontage)	3,000 vpd	4,000 vpd	4,000 vpd	2,000 vpd
Residential Access Street	2,000 vpd	3,000 vpd	3,000 vpd	1,500 vpd

*Note: This table outlines desirable attributes not design standards or intervention levels

10.5.5 Path System Planning Criteria

(1) The path system includes those walking and cycling facilities provided within the road reserve of the road network and the Coastal Path.

Table 10.5.5 Path System Planning Criteria

Planning Objective	Desirable Outcomes
Provide an integrated system of safe 'in road reserve' shared paths thatconnect all major cycle and walk trip generating activities of the city to their catchments and meet the range of cycle and walking travel patterns of the community, including open space, and major waterways.	• Promote the use of healthy and energy efficient modes of travel. • Minimise fuel consumption, emissions and congestion by encouraging the use of non-motorised forms of travel. • Enhance safety in cycle and walk travel. • Provide an integrated system of cycling and walking facilities (including end of trip facilities). • Provide high quality direct and efficient system of paths to public transport infrastructure.

10.5.6 Path System Design Criteria

(1) This section outlines the design criteria for the path network.

Table 10.5.6 Path Design Criteria

Design Criteria	Desired Standards
Design of the path elements to be in accordance with Council's DDPSP and Caloundra City Bicycle and Pedestrian Strategy.	* Encourage walk and cycle travel as a safe and healthy alternative to car. * Ensure facilities are designed to appropriate and consistent standards and that the community has equal access to these facilities across the City.

10.5.7 Desired Standards of Service for Water Supply

(1) For the water supply network, Unitywater has adopted the following Desired Standards of Service:-

(a) Water supplied for human consumption complies with the National Health and Medical Research Council's (NHMRC) *Australian Drinking Water Guidelines* for colour, turbidity and microbiology.

(b) Potable water is collected, stored, treated and conveyed from source to consumers in the manner prescribed, and to the standards required, under the *Water Act 2000.*

(c) Non-revenue water loss does not exceed industry best practice.

(d) The water supply network is constructed to the adopted design parameters identified in Table 10.5.7 (Desired Standards of Service for Water Supply Network).

(2) Separate demand assumptions and peaking factors have been adopted for each of the following cases:

(a) Case 1 Dwellings – Properties constructed prior to being subject to the water saving targets in the Queensland Development Code (QDC) - Conventional Potable Supply.

(b) Case 2 Dwellings – Properties built subject to the water saving targets in the QDC - Conventional Potable Supply and Rainwater Tanks to Toilets

(c) Case 3 Dwellings – New

Table 10.5.7 Desired Standards of Service for Water Supply NetworkDescription — **Adopted Design Parameter**

Water Demand

1 Average Day Demand (AD)

Demands per Equivalent Tenement (ET) for Case 1 Dwellings (L/ET/day)

Land Use Group	Existing	2011	2016	2021	2031	Ultimate
Single Family Residential (SFR)	804	774	733	705	669	653
Multiple Family Residential (MFR)*	683	654	618	593	562	548
Rural Residential (RUR)	804	774	733	705	669	653
Commercial (COM)	804	785	767	758	754	750
Industrial (IND)	804	785	767	758	754	750

Demands per Equivalent Tenement (ET) for Case 2 Dwellings (L/ET/day)

Land Use Group	Existing	2011	2016	2021	2031	Ultimate
Single Family Residential (SFR)	405	390	366	353	340	336
Multiple Family Residential (MFR)*	493	476	451	436	425	421
Rural Residential (RUR)	405	390	366	353	340	336
Commercial (COM)	804	785	767	758	754	750
Industrial (IND)	804	785	767	758	754	750

Demands per Equivalent Tenement (ET) for Case 3 Dwellings (L/ET/day)

Land Use Group	Existing	2011	2016	2021	2031	Ultimate
Single Family Residential (SFR)	367	353	331	318	306	303
Multiple Family Residential (MFR)*	377	364	343	332	325	322
Rural Residential (RUR)	367	353	331	318	306	303
Commercial (COM)	603	589	575	569	566	563
Industrial (IND)	603	589	575	569	566	563

Table 10.5.7 Desired Standards of Service for Water Supply NetworkDescription		Adopted Design Parameter

* MFR value is not per dwelling. 0.69 ET per attached dwelling has been assumed^^. The demand per residence identified for an attached dwelling has been divided by 0.69 to derive a demand per ET.

System Losses

	Existing	2011	2016	2021	2031	Ultimate
(%) production assumed as System Losses	16.0%	14.0%	12.0%	11.0%	10.5%	10.0%

Where: A detached residential dwelling is considered an equivalent tenement (ET) and a person living within a detached dwelling is considered an equivalent person (EP).

Assumed conversion ratios:

Detached Residential Dwellings: 2. 7 EP / ET

Attached Residential Dwellings: 1.8 EP / ET

For the areas covered by the Caloundra South and Palmview Infrastructure Agreements Attached dwellings have been loaded with 0.69 ET.

Peaking Factors

		Land Use Group	MDMM	MD	MH
2	Case 1 Dwellings	Single Family Residential (SFR)	1.5	1.9	4
		Multiple Family Residential (MFR)	1.5	1.9	3.5
		Rural Residential (RUR)	1.5	1.9	4
		Commercial (COM)	1.5	1.9	2.85
		Industrial (IND)	1.5	1.9	2.66
3	Case 2 Dwellings	Land Use Group	MDMM	MD	MH
		Single Family Residential (SFR)	1.5	1.9	4
		Multiple Family Residential (MFR)	1.5	1.9	3.5
		Rural Residential (RUR)	1.5	1.9	4
		Commercial (COM)	1.5	1.9	2.85
		Industrial (IND)	1.5	1.9	2.66
4	Case 3 Dwellings	Land Use Group	MDMM	MD	MH
		Single Family Residential (SFR)	2.0	2.5	4.2
		Multiple Family Residential (MFR)	1.9	2.4	4.1
		Rural Residential (RUR)	2.0	2.5	4.2
		Commercial (COM)	1.5	1.8	2.7
		Industrial (IND)	1.5	1.8	2.5

System Pressure

5	Minimum Operating Pressure	At maximum hour demand, the minimum pressure at the water meter shall not be less than 20m of head. (In isolated high level areas, the minimum operating pressure may be reduced to 16 m above the highest elevation on any lot with the water level in the reservoir not more than 1.0 m above reservoir floor level.)
6	Maximum Operating Pressure	80m of head at the property's water meter

Fire Fighting Requirements

7	System Pressure	12 m minimum pressure head at the hydrant/dedicated service location, and minimum 6m pressure head at any location in the water supply zone during the fire event with model conditions as detailed in Items 8, 9 and 10.
8	Fire Flow	For predominantly residential development no more than 3 storeys in height - 15 L/s simultaneous with the background demand prescribed in Item 9 for a period of 2 hours. For predominantly commercial/industrial development or residential buildings greater than 3

<table>
<tr><th colspan="2">Table 10.5.7 Desired Standards of Service for Water Supply NetworkDescription</th><th>Adopted Design Parameter</th></tr>
<tr><td></td><td></td><td>storeys in height - 30 L/s simultaneous with the background demand prescribed in Item 9 for a period of 4 hours.
Note that each special risk/hazard land use may require an even greater fire flow.</td></tr>
<tr><td>9</td><td>Background demand</td><td>2/3 of MH demand</td></tr>
<tr><td colspan="3">Storage</td></tr>
<tr><td>10</td><td>Ground Level Storage</td><td>Required Storage = [1.3 x MD]
Potable Ground Level Reservoirs in Dual Reticulation Networks = [1.8 x MD]</td></tr>
<tr><td>11</td><td>Elevated Storage</td><td>Required Storage Volume = Operating Volume + Fire Fighting Reserve
Where:
Operating Volume = 6 x (MH – 1/12 MDMM)
Fire Fighting Reserve = 150 kL
Or
Maintenance of storage is demonstrated through dynamic modelling where the operation of the supply pumping station is acceptable and the pumping station contains adequate security against power failure. Performance is to be tested using dynamic modelling</td></tr>
<tr><td colspan="3">Pumping Capacity</td></tr>
<tr><td>12</td><td>Duty pump capacity to serve ground level reservoirs.</td><td>Supply MDMM demand in no more than 20 hours of operation in any 24 hour period.</td></tr>
<tr><td>13</td><td>Pumps serving elevated storage.</td><td>Pump must discharge not less than:-
[(6 x MH) – Operating Volume]/(6 x 3600)
Where:
Operating Volume is as prescribed in item 13 above.</td></tr>
<tr><td>14</td><td>Standby Pump Capacity</td><td>Equal to the capacity of the largest duty pump</td></tr>
<tr><td colspan="3">Pipeline Design</td></tr>
<tr><td>15</td><td>Trunk Main Capacity</td><td>Sized for MDMM flows</td></tr>
<tr><td>16</td><td>Reticulation Capacity</td><td>Sized for Maximum Hour and Fire Flow</td></tr>
<tr><td>17</td><td>Friction Default Values</td><td>Hazen Williams Coefficients of Friction:
<table>
<tr><th rowspan="2">Material</th><th colspan="5">Diameter (mm)</th></tr>
<tr><th>100</th><th>150-200</th><th>250-300</th><th>375-600</th><th>>600</th></tr>
<tr><td>Mild steel concrete lined (MSCL)</td><td>110</td><td>120</td><td>125</td><td>130</td><td>135</td></tr>
<tr><td>Ductile iron concrete lined (DICL)</td><td>100</td><td>110</td><td>120</td><td>125</td><td>130</td></tr>
<tr><td>Ductile iron (DI)</td><td>100</td><td>110</td><td>115</td><td>120</td><td>125</td></tr>
<tr><td>Cast iron concrete lined (CICL)</td><td>100</td><td>110</td><td>120</td><td>125</td><td>130</td></tr>
<tr><td>Cast iron (CI)</td><td>100</td><td>110</td><td>115</td><td>120</td><td>125</td></tr>
<tr><td>UPVC</td><td>110</td><td>120</td><td>125</td><td>130</td><td>135</td></tr>
<tr><td>Asbestos cement (AC)</td><td>100</td><td>110</td><td>115</td><td>120</td><td>125</td></tr>
<tr><td>Other</td><td>100</td><td>110</td><td>115</td><td>120</td><td>125</td></tr>
</table></td></tr>
<tr><td>18</td><td>Maximum Flow Velocity</td><td>Not to exceed 2.5 m/s</td></tr>
</table>

10.5.8 Desired Standards of Service for Sewerage Network

(1) For the sewerage network, Unitywater has adopted the following Desired Standards of Service:-

(a) A reliable network that collects, stores and treats sewage from premises to industry best practice is provided:

(b) The sewerage network is designed and constructed to the standards prescribed in:-

- Water Services Association of Australia (WSAA) guidelines;
- *Water Act (2000);*
- All Environmental Protection Agency (EPA) licence conditions; and
- The adopted design parameters identified in Tables 10.5.8 (Sewerage Network Planning Criteria).

Table 10.5.8 Sewerage Network Planning Criteria

<table>
<tr><th colspan="2">Description</th><th>Adopted Design Parameter</th></tr>
<tr><td colspan="3">Occupancy Ratio</td></tr>
<tr><td>1</td><td>Equivalent Person (Sewerage) / Equivalent Tenement (EPS/ET).</td><td>2.7 EPS/ET
Note that one equivalent person (sewerage) is equivalent to the service demand from a single occupant of an average occupied detached house, while one equivalent tenement is equivalent to the service demand from an average occupied detached house.</td></tr>
<tr><td colspan="3">Sewage Loading</td></tr>
<tr><td>2</td><td>Average Dry Weather Flow (ADWF).</td><td>600 L/ET/d.</td></tr>
<tr><td>3</td><td>Peak Wet Weather Flow (PWWF).</td><td>5 X ADWF for conventional gravity sewers
4 X ADWF for reduced Infiltration gravity sewers</td></tr>
<tr><td>4</td><td>Peak Dry Weather Flow (PDWF).</td><td>C_2 X ADWF where $C_2 = 4.7 \times (2.7 \times ET)^{-0.105}$</td></tr>
<tr><td colspan="3">Gravity Sewer Design</td></tr>
<tr><td>5</td><td>Flow calculation method.</td><td>Manning’s Equation</td></tr>
<tr><td>6</td><td>Manning’s ‘n’.</td><td>
<table>
<tr><th>Material</th><th>Manning’s Roughness Coefficient (n Value)</th></tr>
<tr><td>Cemnet Mortar</td><td>0.013</td></tr>
<tr><td>Ceramics</td><td>0.014</td></tr>
<tr><td>Smooth Concrete</td><td>0.012</td></tr>
<tr><td>Normal Concrete</td><td>0.013</td></tr>
<tr><td>Rough Concrete</td><td>0.015</td></tr>
<tr><td>Iron (cast)</td><td>0.014</td></tr>
<tr><td>Iron (wrought)</td><td>0.015</td></tr>
<tr><td>PVC/Plastic/PE</td><td>0.013</td></tr>
<tr><td>Stone</td><td>0.013</td></tr>
<tr><td>Vitrified Clay</td><td>0.014</td></tr>
</table>
</td></tr>
<tr><td>7</td><td>Minimum Size</td><td>150mm</td></tr>
<tr><td>8</td><td>Minimum velocity at PDWF.</td><td>0.7 m/s</td></tr>
<tr><td>9</td><td>Depth of Flow at PWWF – Existing system.</td><td>Maximum hydraulic grade level = 1.0 m below MH cover level and no spillage through overflow structures.</td></tr>
<tr><td>10</td><td>Depth of Flow at PWWF – Proposed sewers.</td><td>≤ 0.75 x Pipe Diameter</td></tr>
<tr><td>11</td><td>Minimum Grades</td><td>
<table>
<tr><th>Diameter (mm)</th><th>Grade %</th></tr>
<tr><td>150*</td><td>0.55</td></tr>
<tr><td>225</td><td>0.33</td></tr>
<tr><td>300</td><td>0.25</td></tr>
<tr><td>375</td><td>0.17</td></tr>
<tr><td>450</td><td>0.14</td></tr>
<tr><td>525</td><td>0.12</td></tr>
<tr><td>600</td><td>0.10</td></tr>
<tr><td>750</td><td>0.08</td></tr>
<tr><td colspan="2">* For ET’s < 2 the minimum grade for a 150 mm diameter main = 1.25%
* For ET’s 2-5 the minimum grade for a 150 mm diameter main = 1.00%</td></tr>
</table>
</td></tr>
<tr><td colspan="3">Rising Main Design</td></tr>
<tr><td>12</td><td>Flow Equation.</td><td>Hazen Williams.</td></tr>
</table>

<table>
<tr><th colspan="2">Description</th><th>Adopted Design Parameter</th></tr>
<tr><td rowspan="11">13</td><td rowspan="11">Friction Factors.</td><td><table><tr><th>Material</th><th>Hazen Williams Roughness Coefficient (C Value)</th></tr><tr><td>Cemnet Mortar</td><td>130</td></tr><tr><td>Ceramics</td><td>110</td></tr><tr><td>Smooth Concrete</td><td>140</td></tr><tr><td>Normal Concrete</td><td>130</td></tr><tr><td>Rough Concrete</td><td>100</td></tr><tr><td>Iron (cast)</td><td>110</td></tr><tr><td>Iron (wrought)</td><td>100</td></tr><tr><td>PVC/Plastic/PE</td><td>130</td></tr><tr><td>Stone</td><td>130</td></tr><tr><td>Vitrified Clay</td><td>110</td></tr></table></td></tr>
<tr><td>14</td><td>Maximum Velocity.</td><td>Maximum velocity under single pump operation (new mains) - 2 m/s (1.5 m/s target)
Maximum velocity under all pump operation (new mains) - 2.5 m/s
Existing mains - 2.5 m/s (single pump) and 3 m/s (all pumps)</td></tr>
<tr><td colspan="3">Wet Well Performance Criteria</td></tr>
<tr><td>15</td><td>Wet Well Operating Storage</td><td>[0.9 X Single pump capacity) / N]
Where
N = number of pump starts
N = 12 starts for motors less than 50kW
N = 5 starts for motors greater than 50kW
Operating Storage is between pump start and pump stop levels</td></tr>
<tr><td>16</td><td>Minimum Wet Well Diameter</td><td>2.4m</td></tr>
<tr><td colspan="3">Pumping Station Performance Criteria</td></tr>
<tr><td>17</td><td>Duty Pump Capacity for existing pumping stations.</td><td>Not less than C_1 x ADWF Where $C_1 = 15 \times (2.7 \times ET)^{-0.1587}$
Minimum value of $C_1 = 3.5$
PWWF = 5 X ADWF</td></tr>
<tr><td>18</td><td>Duty Pump Capacity for new pumping stations in areas with conventional sewer networks</td><td>5 x ADWF</td></tr>
<tr><td>19</td><td>Duty Pump Capacity for new pumping stations in areas with reduced infiltration gravity sewers</td><td>4 x ADWF</td></tr>
<tr><td>20</td><td>Standby Pump Capacity.</td><td>Equivalent to capacity of the duty pump.</td></tr>
<tr><td colspan="3">Emergency Storage Performance Criteria</td></tr>
<tr><td>21</td><td>Emergency Storage.</td><td>Conventional Sewers: 4 hours of ADWF (can include system storage below the wet well overflow level)
Reduced Infiltration: 12 hours of ADWF (can include system storage below the wet well overflow level)</td></tr>
</table>

10.5.9 Desired Standards of Service for Open Space Network

(1) The Open Space Network contains three integrated systems of:

(a) Public parks – recreation and sporting;

(b) Land for community facilities.

(2) In this section, the DSS are described in terms of planning criteria that define how the public parks, land for community facilities and trails networks are planned and design criteria that explain why items are to be sized and developed in the way proposed. Within this network, public parks and land for community facilities are treated together in describing the DSS, although the network planning is separate and the plans for trunk infrastructure identify future works separately.

(3) Community facilities includes land only, to be used for a range of community activities and uses, including meeting rooms, community halls, art galleries, libraries and visitor information centres.

10.5.10 Public Parks and Land for Community Facilities System Planning Criteria

(1) This section outlines the planning criteria for the public parks, and land for community facilities.

Table 10.5.9 Planning Criteria for Public Parks and Land for Community Facilities

Planning Objective	Desirable Outcomes
Provide an accessible and integrated system of local, district and city-wide public parks and recreational facilities that respond to the recreational and sporting needs of the community.	• Enable the community to access parks and participate in a range of recreational pursuits from home and work locations. • Encourage community health. • Provide a range of park types and settings to meet diverse user needs.
Maximise the co-location of parks and sporting facilities with other community infrastructure and valued natural resources.	• Protect and enhance valued environmental assets. • Maximise the efficient utilisation of natural resources. • Increase community ownership and identity of community space.
Ensure public parks and land for community facilities are centrally located and accessible to the catchment they serve.	• Equitable access for all users. • Promotion of bicycle and pedestrian trips for recreational purposes.
A hierarchy of local, district and City wide recreational parks will be planned across Caloundra City, whilst the structure of sporting parks will be planned at a district and City wide level only.	• Provide a range of choices and experiences to all community members. • Ensure the provision of parkland is sustainable in terms of maintenance and effectively meets the needs of users.

• Provide land for community facilities that is accessible to all members of the community and, wherever possible, is consolidated around existing complementary facilities such as parks, schools and centres.
• A hierarchy of local, district and City-wide community facilities will be planned across the City.
	• Cater for:
	  ○ a range of existing and future community needs; and
	  ○ social interactions
	• Ensure facilities are well distributed throughout the community and can enhance existing facilities where possible.
	• Build strong, cohesive and inclusive communities with an increased level of self containment.
	• Reduce travel, foster community awareness and civic pride and enable sustainable management of community resources.

10.5.11 Public Parks and Land for Community Facilities System Design Criteria

(1) This section outlines the design criteria for the public parks and land for community facilities.

Table 10.5.10 Design Criteria for Public Parks and Land for Community Facilities

Design Criteria	Desired Standards
Local and district recreation open space should have direct access from a public road from one side or from at least 25% of the perimeter. In the case of Citywide open space, at least 50% of the perimeter should have direct access from a public road.	• Ensures adequate public access to public parks. • Provide visual surveillance. • Ensures pedestrian and cycle linkages.
Crime Prevention Through Environmental Design (CPTED) principles to be adopted in designing all public parks and land for community facility (relevant to the level of risk and the nature of the setting).	Promote safety of open space for the community.
Land to be developed for multi purpose sport facilities is to be practically flat with a 10% or less slope.	Ensure sporting parks are able to be developed for a range of uses.
Public parks and land for community facilities are to be provided to a size, quality and character that ensures they are appropriate for their purpose.	• Provide public parks and land for community facilities at a total provision of 6.16 Ha per 1,000 persons population, guided by at the distribution rates identified in Table 10.5.11 (Rates of Land Provision for Public Parks and Land for Community Facilities). • Ensure public parks reflect the relationship with catchments identified in Table 10.5.12 (Desirable Minimum Accessibility Provisions). • In industrial and commercial precincts, one local park shall be provided for each industrial area. • Ensure that public parks and land for community facilities meet the minimum size requirements in Table 10.5.13 (Desirable Size and Form Provisions). • Ensure that land for public parks and land for community facilities meet the flood immunity provisions of Table 10.5.14 (Desirable Minimum Flood Immunity Provisions).
Provide land for community facilities that is generally flat and located within catchments they serve.	Ensure adequate accessible land is available and fit for the provision of future community facilities.
Ensure land for community facilities is accessible to intended users through appropriate road, public transport, bicycle and pedestrian access and adequate levels of car and bicycle parking.	Build strong and cohesive communities by way of accessible community facilities.

Table 10.5.11 Rates of Land Provision for Public Parks and Land for Community Facilities

Infrastructure Type	Desired rate of provision (Ha/1000 people)		
	Local	District	Citywide
Recreation park	1.5	1.6	0.6
Sport - multi purpose park	N/A	1.6	0.6
Community Facilities	0.1	0.09	0.07

(2) The level of provision outlined above is a guide only. The purpose of the table is to outline the possible distribution of the provision, however only the total provision of 6.16 Hectares per 1,000 persons can be guaranteed. Actual distribution of provision by type may vary based on need and land availability and suitability for purpose. Non residential provision for industrial area is one park per estate.

(3) Table 10.5.12 (Desirable Minimum Accessibility Provisions) identifies the accessibility criteria that need to be met by future public parks and land for community facilities.

(4) The park infrastructure types are defined in the Open Space Network Background Paper.

Table 10.5.12 Desirable Minimum Accessibility Provisions

Desirable Access for Catchment			
	Local	**District**	**City-wide**
Recreation – residential	< 500m	< 2.5 km	< 25 km
Recreation – industrial	<1km	n/a	n/a
Sport multi-purpose	n/a	< 2.5 km	< 25 km
Community facilities – urban residential	< 2km	< 5 km	< 25 km
Community facilities – rural residential	< 5km	< 20km	> 25km

Table 10.5.13 Desirable Size and Form Provisions

Infrastructure Type	Local	District	City-wide
Recreation Park	0.5 -2 Ha.	5 Ha	10-20Ha
Multi-purpose Sport	N.A	10 Ha	10-20ha
Land for Community Facilities	0.6ha	1.7ha	3ha

Table 10.5.14 Desirable Minimum Flood Immunity Provisions

Infrastructure Type	Local		District		City-wide		
Flood immunity	>2% AEP	>20% AEP	>1% AEP	>2% AEP	>1% AEP	>2% AEP	>20% AEP
Recreation park	25%	75%	10%	90%	10%	40%	50%
Sport - multi purpose park	n/a		10%	90%	10%	40%	50%
Community facilities	n/a		100%		100%		

(5) The typical embellishments for the public park network will range from natural to developed settings are outlined in Table 10.5.15 (Typical Embellishments).

Table 10.5.15 Typical Embellishments

Typical Embellishments	
Recreation Park - Natural Setting	**Recreation Park – Developed Setting**
Local – Landscaping and Planting, signage, transport links, seating, and fencing	**Local** - Landscaping and planting, signage, transport links, seating, fencing, playground/teenage equipment
District - Landscaping and planting, signage, onsite car parking and transport links, seating, fencing, BBQ facilities, and toilets	**District** - Landscaping and planting, signage, transport links, seating, fencing, play/teenage equipment, BBQ facilities, onsite car parking, and water access
City wide - Landscaping and planting, signage, onsite car parking and transport links, seating, fencing, BBQ facilities, toilets, playground/ teenage equipment, and water access	**City wide** - Landscaping and planting, signage, transport links, seating, fencing, play/teenage equipment, BBQ facilities, onsite car parking, water access, skate park and dog park.
Multi Use Sport – Natural	**Multi Use Sport – Developed**
District – Planting, signage, onsite car parking and transport links, seating and fencing.	**District** – Planting, signage, onsite car parking and transport links, flat mown area, seating, toilets, field lighting, multi-purpose courts and fields, basic spectator seating, and fencing.
City wide – Planting, signage, onsite car parking and transport links, seating and fencing.	**City wide** – Planting, signage, onsite car parking and transport links, flat mown area, seating, shelters, toilets, skate park, playground/teenage equipment, field lighting, multi-purpose courts and fields, basic spectator seating, and fencing.

(6) The level of typical embellishments for the remaining two settings ("mostly natural" and "mostly developed") fall partway between the range of natural and developed settings. A more detailed listing of embellishments can be found in the Open Space Network Background Paper.

10.5.12 Desired Standards of Service for Stormwater Network

(1) This section outlines the levels of service required for stormwater infrastructure in Caloundra City. The Stormwater network is an integrated system consisting of both quality and quantity infrastructure.

(a) Quality infrastructure focuses on the environmental values within and downstream of the catchment by maintaining or improving the quality of the stormwater that is discharged to the natural waterways.

(b) Quantity infrastructure controls the stormwater flows and discharges from within the catchment to the waterways, and includes provision for mitigating the effects of increased flows resulting from development.

(2) The standards detailed here are applied on a catchment wide basis and do not replace obligations to mitigate stormwater discharges from individual sites or developments.

(3) Table 10.5.16 (Stormwater Network Planning Criteria)outlines the planning criteria for the stormwater network.

Table 10.5.16 Stormwater Network Planning Criteria

Planning Objective	Desirable Outcomes
Provide a network for the collection of stormwater run off and its conveyance and discharge to the waterways.	Provide and secure drainage systems that will facilitate the collection and conveyance of stormwater discharges from developed areas within the catchment. Natural channel design to be used wherever possible in preference over "conventional" hard surface drainage systems. Watercourses form an essential part of the drainage network and the constructed elements shall integrate efficiently with these systems and ensure protection of their environmental values. Ensure that concentrated stormwater flows are contained within a dedicated reserve or easement, and that beyond this, private property and buildings have an acceptable level of immunity. Align surface flow systems, such as channels and swales, to suit the natural topography and locate as close as possible to natural flow paths. "Conventional" drainage systems which consist of pipe drainage for minor events and overland flow paths for the balance of flows from major events. Minimise the risk of impacts to persons and damage to property and the environmental values.
Provide stormwater facilities that protect the environmental values of Caloundra City's waterways, wetlands and groundwater resources.	Maintain amenity and use of receiving waterways. Maintain or improve the water quality of receiving waters. Protect and enhance the environment, which in turn supports the users' livelihood. Improve or protect the water quality for recreational uses Protect and enhance the waterways' aquatic and riparian ecology. Minimise adverse change in the hydrological cycle that impacts upon the waterway form, riparian ecology and aquatic ecology. Before discharging to waterways, stormwater shall be cleaned by a series of treatments (treatment train) that will enable efficient and effective removal of all categories and levels of pollutants.
Inclusion of stormwater in the Total Water Cycle Management in order to achieve sustainable water cycle outcomes.	Improvement in water quality and reduction in discharge volumes through systems that promote storage, detention infiltration and natural treatment of stormwater.
Protect the drainage corridor of waterways.	Minimise the impact of development by controlling the peak flows and velocities in the waterways. Watercourses to be incorporated into the drainage network with riparian zones dedicated as reserves or covered by easements. Avoid disturbance of the riparian zones and flood plains and wherever possible retain natural profiles and existing vegetation cover. Upgrade waterway areas to a natural condition through stabilisation of unstable waterway banks and riparian zones.
The discharge from development does not adversely impact on adjacent or downstream properties or infrastructure.	Detention/retention facilities are provided where necessary to mitigate changes in flows and maintain the existing hydrological regimes of the natural waterways, wetlands and drainage systems. Protection of downstream property and infrastructure from flooding. Minimise the cost of additional down stream infrastructure and waterways land requirements. Where possible adoption of natural channel designs to assist in reduction of discharge volumes.

(4) Table 10.5.17 (Stormwater Network Design Criteria) outlines the design criteria for the stormwater network to meet the standards of service.

Table 10.5.17 Stormwater Network Design Criteria

Design Criteria	Desired Standards
Ensure no adverse impacts from stormwater flows as a result of development.	All elements of the stormwater network are to be designed in accordance with the QUDM and the DDPSP Stormwater discharges from new development shall comply with the quantity standards in accordance with the DEO No.3 and DEO.6 and Section 9.10 Stormwater Management Code of the City Plan 2004. Ensure that the appropriate freeboard from design flood events is maintained to private property levels.
Ensure that the Water Quality Objectives for the receiving waterway are achieved through the use of stormwater quality improvement devices.	Design of the stormwater quality improvement devices in accordance with DDPSP. Stormwater discharges from new development shall comply with the quality standards in accordance with DEO No.3 and DEO.6 and Section 9.10 of the Stormwater Management Code of the City Plan 2004. Sufficient land shall be provided for access to infrastructure.
Ensure that all elements of stormwater quality improvement devices are designed to minimise the risk to public safety.	The design and construction of the stormwater quality improvement device in accordance with QUDM and the DDPSP.
Ensure that all elements of detention and retention facilities are designed to minimise the risk to public safety and private property.	Design of detention and retention facilities, spillway and outlet structures are in accordance with QUDM and the DDPSP. Ensure that the appropriate freeboard from the detention facility's design flood event is maintained to private property levels.
Drainage systems that effectively convey stormwater whilst ensuring adequate levels of protection for property, infrastructure and the environment.	Quantity infrastructure shall be designed for ultimate capacity in accordance with Council's DDPSP and QUDM. Natural watercourses form a part of the stormwater drainage network and shall be covered by an easement or reserve unless identified as Open Space – Conservation and Waterways under the Natural Waterways and Wetlands Code. Easements or reserves shall be of sufficient width to cover the AEP 1% flows with allowance for access.

10.6 Plans for Trunk Infrastructure

10.6.1 General

(1) The PFTI have been prepared for each infrastructure system and network to indicate both existing and future trunk infrastructure and the time horizon in which it is expected the infrastructure will be required based on the Planning Assumptions. Projects listed in the planning horizon may change to better reflect the emerging needs of the region. The indicative delivery timeframe outlines the estimated timeframe for completion of projects however, project planning or commencement may occur before or after this timeframe.

(2) The PFTI are only indicative of actual future infrastructure. IPA section 2.1.24 clarifies that intentions stated in the plan do not create an obligation to supply the infrastructure or that any right exists to expect or demand the standard of service stated.

(3) Under the Water Reform implemented by the State Government, Water Supply and Sewerage infrastructure networks are no longer provided by Council whereby responsibility has been given to Unitywater.

10.6.2 Transport Network

(1) The transport network contains three separate but integrated systems:

- (a) Local roads;
- (b) State controlled roads; and
- (c) Paths.

10.6.3 Travel Demand Assessment

(1) The concept of conventional closed system catchments does not apply well to the transport network due to the diverse distribution of attractions and the resulting distribution and patterns of travel. For this reason, travel demand and patterns of travel have been determined using the concept of a 'traffic zone', which is a small area of generally homogenous development. The travel characteristics and usage of transport infrastructure, are then related back to this small area of geography through a transport model, the outputs of which can be utilised and adapted to interpret how the existing and future transport networks perform and also 'the worth' of future projects or strategies.

(2) The transport network analysis and evaluation upon which the Priority Infrastructure Plan is based used the Sunshine Coast Travel Forecasting Model (SCTFM) which is a conventionally formulated four step travel demand model, dealing primarily with road based travel.

(3) Existing and future planning data has been defined at traffic zone level in order to validate travel making characteristics and to estimate the future travel demand, travel patterns and infrastructure use.

10.6.4 The Road System

(1) Caloundra City has adopted a Road Hierarchy Study that, including State roads, is classified as shown in Table 10.6.1 (Road Hierarchy).

Table 10.6.1 Road Hierarchy

Hierarchy Element	State Interest	Caloundra City Interest
Major Arterial	Yes	No
Arterial	Yes	No
Sub-arterial	Yes	Yes
Trunk collector	No	Yes
Collector	No	Yes
Access street	No	Yes
Access place	No	Yes

(2) The trunk road infrastructure contained in the PIP includes those roads in the Major Arterial, Arterial, Sub-arterial, Trunk collector and Collector categories.

(3) The existing trunk road network is shown in Maps TE1 - TE9.

10.6.5 Performance of the Existing Road System

(1) The absence of the following links is causing the inappropriate use of the road system, adverse impacts on amenity and congestion:

- (a) Parkland Boulevard from Village Way to Sunset Drive;
- (b) North facing ramps between Queens Street and the Nicklin Way;
- (c) Pelican Waters Boulevard;
- (d) Kawana Way south of Main Drive.

(2) Roads that are experiencing some stress from peak congestion include:

- (a) Caloundra Road from the Bruce Highway to Nicklin Way;

(b) Nicklin Way from Beerburrum Street to Caloundra Road;

(c) Nicklin Way from the Sunshine Motorway to Koorin Drive;

(d) Beerburrum Street from Cooroy to Elizabeth Street;

(e) Elizabeth Street from Macdonald Street to Roderick Street;

(f) Bowman Road from Nicklin Way to Bulcock Street;

(g) Baldwin Street from North Street to Bowman Road;

(h) Landsborough Parade from Oxley Street to Bowman Road.

(3) Other road corridors in the City are generally performing at or above the desired standards of service.

10.6.6 Growth in Development

(1) The development projections for the City indicate that Kawana Waters, Caloundra West and Caloundra South will experience the highest population growth in the early period, with the greatest share going to Kawana. This general pattern is repeated to 2011, although growth is expected to pick up in Caloundra Central, Landsborough, Beerwah and Maleny in this period. In the final period to 2016, the greatest growth is again contributed by the coastal growth fronts of Kawana Waters, Caloundra West and Caloundra South, but with growth accelerating in Caloundra Central and reducing relatively in the hinterland towns with the exception of Beerwah where growth remains relatively buoyant.

10.6.7 Future Road Network Planning

(1) The focus for the short to middle term future road network is on the programmed upgrading of the following key State controlled roads:

(a) Four lanes on Nicklin Way from Caloundra Road to Beerburrum Street;

(b) Caloundra Road duplication; and

(c) Stage 1 of the Multi Modal Transport Corridor from Caloundra Road to Kawana Town Centre.

(2) The critical pieces of future road upgrading of Caloundra City roads in this same period are:

(a) Introduction of Pelican Waters Boulevard as a means of protecting the Esplanade and Baldwin Street corridors from the growth in Caloundra South;

(b) The north facing ramps from Queen Street to Nicklin Way as a means of protecting the Beerburrum – Elizabeth – Maltman corridor and providing additional road network capacity into the growth areas of Caloundra Central.

(c) Development of Ulm Street from Queen Street to Bowman Road;

(d) The development of West Terrace and Oval Avenue as a relief for Bowman Road;

(e) Developing Minchinton Street with a distribution function for the CBD;

(f) Extend Roberts Road at Beerwah over the railway line to the Glass House Mountains Road.

(3) The focus for the longer term State road network is again built around further capacity improvements:

(a) Glasshouse Mountains Road;

(b) The extension of the Multi Modal Transport Corridor south of Caloundra Road.

(4) In support of these improvements, further long term development of the Caloundra City road network includes:

(a) Increasing the capacity in the northern section of Baldwin Street;

(b) Duplication of Creekside Boulevard;

(c) Duplication of Parklands Boulevard;

(d) Increase the capacity in Point Cartwright Drive;

(e) Duplicate Ulm Street;

(f) Develop the (southern) inner Maleny bypass;

(g) Upgrade the capacity of intersections in Maleny;

(h) Upgrade the capacity of intersections in Caloundra CBD;

(i) Upgrade the capacity of intersections on Nicklin Way.

10.6.8 The Future Road Networks

(1) The future road networks proposed for 2011 and 2016 are shown on Maps TFU1 to TFU9.

10.6.9 Statement of Intent for State Controlled Roads

(1) The future road network strategy identifies the actions on State controlled road corridors that are important for Caloundra City. Table 10.6.2 (General Statement of Intent for State Controlled Roads) summarises the State's longer term intentions in relation to the development of its road corridors within Caloundra City to 2016 and beyond.

(2) Current Statements of Intent for all State-controlled roads are available for review at Department of Transport and Main Roads North CoastRegion Office (21 Carnaby Street Maroochydore – telephone 5313 8700).

Table 10.6.2 General Statement of Intent for State Controlled Roads

Road	Function	Provision	Access Management
Bruce Highway	Major arterial	4 lanes	Interchanges 5-8km spacing
Nicklin Way	Arterial	Up to 6 lanes	Controlled intersections
Bowman Rd	Sub arterial	Up to 6 lanes	Controlled intersections
Caloundra Rd	Arterial	4 lanes	Interchanges/ intersections
Multi-modal Transport corridor	Arterial	2-4 lanes	Interchanges 2-4 km spacing
Kawana Way	Sub arterial	2-4 lanes	Controlled intersections
Steve Irwin Way	Arterial	2-4 lanes	Generally priority junctions
Mooloolah Connection Rd	Sub arterial	2 lanes	Generally priority junctions
Landsborough – Maleny Rd	Sub arterial	2 lanes	Generally priority junctions
Stanley River Rd	Sub arterial	2 lanes	Generally priority junctions
Maleny Kenilworth Rd	Sub arterial	2 lanes	Generally priority junctions
Maleny Montville Rd	Sub arterial	2 lanes	Generally priority junctions
Kilcoy Beerwah Rd	Arterial	2 lanes	Generally priority junctions

(3) Table 10.6.3 (Future Projects State Controlled Roads) provides a list of the future State Road projects.

Table 10.6.3 Future Projects – State controlled roads

Item No.	Project Title	Description	Costs ($) Total Value	Year
TS1	Nicklin Way, Caloundra Road to Beerburrum Street	Duplication - add two lanes	6,900,000	Completed
TS2	Caloundra Road, Bruce Hwy to Parklands Blvd	Duplication with two additional lanes and upgrade of existing intersections	80,000,000	Completed
TS3	MMTC Stage 1, Caloundra Rd to Woodlands Blvd	Construction of two new lanes including intersection with Caloundra Rd	85,000,000	Completed
TS4	Kawana Way, Lake Kawana Blvd to Metier Linkway	Duplication to four lanes.	25,000,000	Completed
TS5	Kawana Way, Lake Kawana Blvd to Woodlands Blvd	Construction of two new lanes	60,000,000	Completed
TS6	Caloundra Road, Nicklin Way to Baldwin	Widen to six traffic lanes (and upgrade intersections)	33,000,000	Post 2016
TS7	Glasshouse Mountains Rd, Bruce Hwy to Landsborough	Duplication - add two lanes including intersection upgardes	150,000,000	2016
TS8	Landsborough - Rail Open Level Crossing	Construct grade separated crossing	70,000,000	2016
TS9	MMTC South of Caloundra Rd	Construction of two new lanes	86,000,000	2016
TS10	Bruce Highway, Steve Irwin Way to Sunshine Motorway	Construct two lane service road	123,000,000	2016
TS11	MMTC, Woodlands Blvd to Kawana Town Centre	Construction of two new lanes, Woodlands Blvd to intersection with Lake Kawana Blvd	250,000,000	2016
TS12	Barrs Rd Grade Separated Rail Crossing	Grade separation of existing at grade rail crossing as part of North Coast Rail duplication project	45,000,000	Post 2016
TS13	Beerwah - Rail Open Level Crossing	Construct grade separated crossing	70,000,000	Completed
TS14	MMTC at Meridan Way	Construct bridge over Meridan Way	15,000,000	Completed

Note 1: The above estimates represent the full project costs.
Note 2: The projects identified here are based on the planning information relevant to the base date for this PIP. During the period of developing the PIP, additional projects may have been introduced into the PIP time frame but have not been included at this stage, as they are not related to the base planning assumptions adopted for the PIP.

10.6.10 Future Council Road Infrastructure

(1) Table 10.6.4 Future Council Projects is the schedule of future Council road works required by 2011 (schedules as "Completed"), 2016 and 2021.

Table 10.6.4 Future Council Projects

Asset No.	Project Title	Description	Year	Land ($)	Construction ($)
TF1	Nicklin Way ramps to Queen St. and Sugarbag Rd.	Single lane ramps and intersections including access to Golf Club	2016	347,594	5,213,905
TF2	Queen St. - Nicklin Way (off ramp) to Bower St.	Add two traffic lanes and rationalise parking, access and set down along school frontage	2016	1,815,000	1,406,603
TF3	Ulm Street - Queen St. to Bowman Rd.	Stage 1 construction - Initial two lanes and Queen/Ulm intersection	2021	131,486	1,972,294
TF4	Parkland Boulevard	Central section initial two lanes	Completed	1,188,000	1,446,644
TF5	West Tce - Bowman Rd to Oval Ave	Two additional lanes	2021	1,276,000	1,172,066
TF6	Oval Ave. and Gosling St. - West Tce. to Bowman Rd.	Two additional lanes	2021	2,904,000	2,610,963
TF7	Suller St. - Bowman Rd. to Minchinton St.	Widen to four traffic lanes plus parking	2021	1,540,000	1,437,777
TF8	Minchinton St. - Arthur St. to Omrah Ave.	Widen to four traffic lanes and upgrade intersections	2021	1,540,000	1,767,777
TF9	Ormuz Ave. - Omrah Ave. to Knox Ave.	Widen to four traffic lanes and upgrade intersections	2021	770,000	1,561,527
TF10	Knox Ave. - Ormuz Ave to Bulcock St.	Widen to four traffic lanes and upgrade intersections	2021	1,237,500	1,040,476
TF11	Baldwin St - Bowman Rd to North St	Widen to four traffic lanes	2021	495,000	875,185
TF12	Park Place - Bowman Rd to North St	Capacity improvements and upgrade intersections	2021	1,485,000	1,061,917
TF13	Burke St - Blaxland St. to Pelican Waters Blvd	Construct two new lanes	2021	569,250	1,159,323
TF14	Creekside Blvd. - Saffron Dr. to MMTC	Widen to four traffic lanes, bridge duplication and upgrade intersections	2016	344,295	5,164,421
TF15	North Street - Park Place to Baldwin St	Capacity improvements - additional lanes and intersection upgrades	2021	77,038	1,155,569
TF16	Pt Cartwright Drive - Orana St. to Nanyima St.	Provide four traffic lanes and intersection rationalisation	2021	47,347	710,210
TF17	Racecourse Road - Pierce Ave. to Caloundra Rd.	Duplication	Completed	341,000	1,417,618
TF18	Racecourse Road - South of Pierce Avenue	Construct two new lanes	Completed	852,500	3,008,919
TF19	Racecourse Road east to MMTC	Construct two new lanes	2021	357,500	2,536,916
TF20	Landsborough Pde. - Golden Beach	Intersection and road link improvements	2021	55,000	825,000
TF22	Maleny Southern Bypass	Provide alternative route to CBD	2021	1,155,000	3,783,945
TF23	Intersection approaches to	Works associated with intersection capacity	2021	550,000	8,250,000

Asset No.	Project Title	Description	Year	Land ($)	Construction ($)
	Nicklin Way	improvements on Nicklin Way			
TF24	Queen St. - Bower St. to Ulm St.	Upgrade to four traffic lanes	2021	1,179,750	815,174
TF25	Ulm Street - Queen St. to Bowman Rd.	Stage 2 construction - Two additional traffic lanes and upgrade intersections	2021	801,625	1,944,904
TF26	North Street - Baldwin St to Pelican Waters Blvd	Extension of North St. to Pelican Waters Blvd	2021	709,500	1,472,445
TF27	Pelican Waters Blvd. - Caloundra Rd. to Burke St.	Duplication	2021	325,689	4,885,336
TF28	Obi Lane bridge, Maleny	New two lane bridge link	2021	49,500	2,136,193
TF29	Fig St. and Willow Lane - Maple St. to Teak St.	Upgrade capacity to two traffic lanes with parking	2016	23,195	347,932
TF30	Maleny intersections	Key intersection capacity improvements	2016	137,500	2,062,500
TF31	Bellvista Bvd - Caloundra Rd. to Beldara Rd.	Upgrade to four lanes	2021	166,772	2,501,581
TF33	Parklands Blvd. - Sunset Dr to Meridan Way	Upgrade to four traffic lanes	2016	1,925,000	1,199,518
TF34	Parklands Blvd. - Saffron Dr. to Sunset Dr. (east)	Upgrade to four traffic lanes	2021	111,207	1,668,106
TF35	MMTC service road - Meridan Way - Creekside interchange	Construct two new lanes	2021	1,512,500	4,006,297
TF36	Sattler Road - North of Caloundra Rd.	Realignment to Caloundra Rd. interchange	Completed	137,500	1,012,275
TF37	Westaway Rd - Caloundra Rd. to Sattler Rd.	Realignment and extension to and intersection with Sattler Rd.	Completed	206,250	1,724,663
TF39	Maltman, Buccleugh & Elizabeth St; Queen St - Wilson Ave.	Intersection and road link improvements	2021	55,000	825,000
TF40	CBD intersections	Key intersection capacity improvements	2021	137,500	2,062,500
TF42	Lake Kawana Blvd - The Decks to Kawana Way	Construct two new traffic lanes plus shoulders	Completed	1,650,000	3,217,421
TF43	Pelican Waters Blvd. - Caloundra Rd. to Sir Joseph Banks Dr.	Construct initial two traffic lanes	Completed	6,187,500	5,952,157

10.6.11 Path system

(1) Paths in the context of the transport system include footpaths and pathways, including regional and recreational links having the functions defined in the Caloundra City Bicycle and Pedestrian Strategy provided within a road reserve. By comparison, trails in the context of the Priority Infrastructure Plan are provided outside the road reserve and generally fulfil regional or recreational link and trail functions. This network is included in the Open Space Network.

(2) Existing and future paths are shown on Map TPCI and at a more detailed scale on Maps TP1 to TP9 which cover the following areas:

(a) Maleny;

(b) Mooloolah;

(c) Landsborough;

(d) Beerwah;

(e) Glass House/Beerburrum/Peachester

(f) Kawana Waters;

(g) Central Caloundra & Eastern Beaches;

(h) West Caloundra; and,

(i) South Caloundra.

10.6.12 Trunk Path Items of Infrastructure

(1) Trunk elements of the Path network are those paths that are constructed within road reserves (State and local government) for all elements of the road network above access place in the hierarchy (refer Caloundra City Road Network Hierarchy Study 2001). Trunk path infrastructure also includes pedestrian bridges, any control measures, terminal facilities and path signage associated with paths in road reserves.

(2) It should be noted therefore that 'trunk paths' do not solely relate to those paths provided on the 'trunk roads' that are included in this PIP.

10.6.13 Performance of the Existing Path System

(1) Caloundra City has an existing path network comprising a little above 250 kilometres of paths. Considering this and the dispersed physical distribution of the population between coastal and hinterland areas, Caloundra boasts a higher than South East Queensland average use of walk and cycle modes at 16% of all daily travel, with 20% of visitor travel similarly accommodated.

(2) The 'existing' path network is that constructed before 31 December 2004.

(3) The existing and future paths are identified in Maps TP1 to TP9.

(4) Whilst overall, the usage levels are relatively high an examination of the network does indicate that there are a number of missing links in particular corridors. This does detract from the attractiveness of cycle and walking as key modes of travel and at times, the use of informal and undesirable options.

(5) There is a broad mix of users and a mix of travel tasks being undertaken and a mix of skills on the part of users of the path network. This is to be expected, but an unstructured hierarchy of paths does lead to some conflicts under these conditions. Potential and actual conflicts between different types of user and their skills is an issue that has also been raised by the community.

(6) Whilst the path network does generally integrate with the bus network, the absence of some important links detracts from the overall capability of accessing a significantly enhanced range of opportunities provided throughout the City and its environs.

10.6.14 Planning for Growth in the Path System

(1) The future system is based on a number of factors, thus:

(a) Providing important missing links in the higher order functions of the existing network;

(b) Addressing existing safety problem areas;

(c) Introducing a structured network (hierarchy) of paths that meets the functional range of uses but also reflects appropriate characteristics and skills of users;

(d) Identifying existing key generators not served by the existing network, and the future key pedestrian activity generators emerging from the growth projections;

(e) Caloundra City Access and Equity Policy; and

(f) The Desired Standards of Service.

(2) Trunk paths will be provided adjacent to commercial and retail businesses in the full range of Caloundra's shopping and business centres. These centres will also be planned to be connected to the immediate residential suburbs of their sub-catchments by way of a network of 'trunk' paths. Industrial areas are planned to be similarly connected to their surrounding suburbs. Schools, playing fields, recreation parks, beaches and public transport stops are also the focus for the provision of appropriate elements of the hierarchy of paths.

(3) In residential areas, the 'trunk' path network will be provided on at least one side of all roads from local access street to and including collectors and as defined in the road hierarchy. On trunk collector level and above, paths will generally be provided on both sides of the road.

10.6.15 Future Path System

(1) The early focus of the future path system is on completing key corridor links and extending these corridors to include emerging growth areas of the City. It also recognises the need to ensure all high cycle and walk activity generators are progressively provided with an appropriate network of paths that links their catchment to the generator. Terminal facilities are also planned to be introduced at key locations. Locations with poor safety records are also addressed in the short term.

(2) Table 10.6.5 (Future Path system) summarises the timing and proposed path works for the time period of this PIP. The location of the proposed path works is shown on the future paths

network maps TPCI and TP1 to TP9. Further details on each section of path together with its location and PFTI map reference is available in the extrinsic material.

Table 10.6.5 Future Path system

Path type	Area (m^2)	Unit rate ($/$m^2$)	Total cost ($)
Existing Paths	478,100		38,458,067
Future paths (Completed)	154,961	74	11,532,000
Future paths (2011-2016)	86,706	74	6,452,555
Coastal Path (Future)	36,162		5,115,946
Point Cartwrigtht Path (Future)	14,916		272,146
Total network value			61,830,714

10.6.16 Water Network

(1) All Water Trunk Infrastructure for Caloundra City is identified in Table 10.6.6 (Water Trunk Infrastructure).

Table 10.6.6 Water Trunk Infrastructure

Infrastructure Network	Items Included in Trunk Infrastructure
Water supply	The following Infrastructure items as shown on Maps S136 156 to S79 80 are deemed to be trunk infrastructure for the purpose of planning and funding of the trunk water supply network including:- a) Pumping stations and trunk mains to transport the treated water to distribution or storage reservoirs or elevated tanks; b) Distribution or non-regional storage reservoirs and elevated tanks; c) Chlorination and re-chlorination equipment; d) Trunk delivery and distribution infrastructure, generally 200mm diameter mains and larger, except where smaller size mains are the principal network component for transport of water from source of supply to distribution or storage reservoirs, and/or from storage reservoirs to the reticulation system; e) Local control and monitoring systems; f) Bulk water meters, pressure and flow control valves as well as the telemetry/SCADA systems which provide system monitoring and/or control. <u>Specific Exclusions</u> The water supply trunk infrastructure items included are restricted to the distribution network components only. Water treatment plants are neither owned nor operated by Unitywater. Treated water from these facilities is supplied to Unitywater under a Bulk Supply Agreement, hence these facilities have been excluded from infrastructure charge calculations on the grounds that establishment costs are recovered by the current owner/operator through the water tariff detailed in the Bulk Supply Agreement.

10.6.17 Water PFTI Maps

(1) Maps S136 156 to S79 80 show the existing and future Water Supply Trunk Infrastructure.

(2) Note: Maps S136 156 to S79 80 are sourced from Unitywater's Netserv Plan Part B Growth Management Plan (v0-9), March 2013 which reflects Unitywater's capital works program to service development in accordance with PIP planning assumptions.

The Asset Schedule for all individual items of existing Trunk Water Supply Infrastructure, as well as the Capital Works Program showing all planned Trunk Water Supply Infrastructure projects is available through Unitywater.

10.6.18 Water Network Elements

(1) Table 10.6.7 (Future Water Network Trunk Infrastructure) identifies the Water Network future Trunk Infrastructure items.

(2) Note: Water Network future Trunk Infrastructure items are sourced from Unitywater's Netserv Plan Part B Growth Management Plan (v0-9), March 2013 which reflects Unitywater's updated capital works program to service development in accordance with PIP planning assumptions.

The Asset Schedule for all individual items of existing Trunk Water Supply Infrastructure, as well as the Capital Works Program showing all planned Trunk Water Supply Infrastructure projects is available through Unitywater.

Table 10.6.7 Future Water Network Trunk Infrastructure

Project ID	Project Title	Asset Class	Reg-ion	Catchment	Year	Present Value @1/7/12
EMD-WMN-N-0016	Orana Street BUDDINA Water Main FF New 225mm	Water Main FF	Cal	Kawana	2013	$74,763
EMD-WRS-N-0002	Caloundra Road LITTLE MOUNTAIN Generator New	Generator	Cal	Caloundra	2016	$144,240
LAN-WFM-N-0001	Landsborough Parade, GOLDEN BEACH Water District Meter	Meter	Cal	Caloundra	2025	$6,184
LAN-WFM-N-0002	Kawana Wy area BIRTINYA district water meters New 3 off	Meter	Cal	Kawana	2021	$28,391
LAN-WMN-N-0008	Macadamia Drv, MALENY Water Trunk Main	Water Main	Cal	Maleny	2013	$1,752,979
LAN-WMN-N-0050	Fullertons Road, GLASSHOUSE MOUNTAINS Water Trunk Main	Water Main	Cal	Beerwah	2011	$431,795
LAN-WMN-N-0140	Tallowood Street MALENY Water Main FF New 100mm	Water Main FF	Cal	Maleny	2015	$174,406
LAN-WMN-N-0197	Caloundra Street LANDSBOROUGH Water Main FF New 200mm	Water Main FF	Cal	Landsborough	2031	$109,560
LAN-WMN-N-0210	Sugarbag Road CALOUNDRA Reservoir New 25ML	Reservoir	Cal	Caloundra	2017	$43,744
LAN-WPS-N-0002	Macadamia Dr MALENY Water Pump Station New 16 kW	Pump station	Cal	Maleny	2013	$405,775
LAN-WPS-N-0003	Ngungun St, Landsborough - Water Pump Station	Pump station	Cal	Beerwah	2013	$804,024
LAN-WRS-N-0011	Macadamia Drive, MALENY Water Reservoir	Reservoir	Cal	Maleny	2021	$978,051
						$4,953,912

10.6.19 Sewer Network

(1) All Sewerage Trunk Infrastructure for Caloundra City is identified in Table 10.6.8 (Sewer Trunk Infrastructure).

Table 10.6.8 Sewer Trunk Infrastructure

Infrastructure Network	Items included in Trunk Infrastructure
Sewer	The following Infrastructure items as shown on Maps S125 126 to S79 80 are deemed to be trunk infrastructure for the purpose of planning and funding of the sewerage infrastructure network including:- a) Infrastructure for treatment in the form of:- i. sewage treatment plants (STPs), including mechanical, electrical and control equipment; ii. advanced water treatment plants; iii. flow measurement and telemetry/SCADA systems providing system monitoring and/or control. b) Infrastructure for collection and transport in the form of:- i. gravity sewers, generally 225mm and larger, except where smaller size sewers provide network connectivity from rising mains; ii. pumping stations and associated rising mains, which transport the sewage to a treatment plant or other pump station, except where those pump stations are not owned by Unitywater; and iii. emergency storage for pumping stations. <u>Specific Exclusions</u> Plans for any recycled water component were not sufficiently advanced at the time of preparation of this document to be included.

10.6.20 Sewer PFTI Maps

(1) Maps S125 126 to S79 80show the existing and future sewer trunk infrastructure.

(2) Note: S125 126 to S79 80 are sourced from Unitywater's Netserv Plan Part B Growth Management Plan (v0-9), March 2013 which reflects Unitywater's capital works program to service development in accordance with PIP planning assumptions.

The Asset Schedule for all individual items of existing Trunk Sewer Infrastructure, as well as the Capital Works Program showing all planned Trunk Sewer Infrastructure projects is available through Unitywater.

10.6.21 Sewer Network Elements

(1) Table 10.6.9 (Sewer Network Elements) identifies the Future Sewer Network Trunk Infrastructure items.

(2) Note: Sewer Network future Trunk Infrastructure items are sourced from Unitywater's Netserv Plan Part B Growth Management Plan (v0-9), March 2013 which reflects Unitywater's updated capital works program to service development in accordance with PIP planning assumptions.

The Asset Schedule for all individual items of existing Trunk Sewer Infrastructure, as well as the Capital Works Program showing all planned Trunk Sewer Infrastructure projects is available through Unitywater.

Table 10.6.9 Future Sewer Network Trunk Infrastructure

Project ID	Project Title	Asset Class	Reg-ion	Catchment	Year	Present Value @1/7/12
MLS-SSC-U-0001	Communication Infrastructure Program	Scada	All	All	2012	$555,022
MLS-SSC-U-0002	SCADA Improvement & Integration Program	Scada	All	All	2013	$3,970,524
KAW-SEI-U-0001	Power Rd, BUDERIM - SPS MTN046 (46)	Electrical	Cal	Kawana STP Sippy Downs Mountain Creek	2011	$55,552
KAW-SES-N-0001	Yeramba Pl, BUDERIM MTN065 further storage required	Emergency Storage	Cal	Kawana STP Sippy Downs Mountain Creek	2026	$22,152

Project ID	Project Title	Asset Class	Reg-ion	Catchment	Year	Present Value @1/7/12
KAW-SES-N-0002	Seriata Way, MOUNTAIN CREEK MBA007 further storage required	Emergency Storage	Cal	Kawana STP Sippy Downs Mountain Creek	2021	$210,443
KAW-SES-U-0001	Esplanade Headland, KINGS BEACH CAL015 further storgae required	Emergency Storage	Cal	Kawana STP Central	2012	$442,554
KAW-SGM-N-0002	Ormond Tce, KINGS BEACH - Gravity Sewer Augmentation	Gravity Main	Cal	Kawana STP Central	2012	$2,434,837
KAW-SGM-N-0006	LAKESHORE PL, LITTLE MOUNTAIN Rising Main	Rising Main	Cal	Kawana STP Central	2011	$493,812
KAW-SGM-N-0010	First Avenue CALOUNDRA Sewer Gravity Main	Gravity Main	Cal	Kawana STP Central	2012	$114,093
KAW-SGM-N-0016	The Esplanade, CALOUNDRA Sewer Gravity Main	Gravity Main	Cal	Kawana STP Central	2011	$733,606
KAW-SGM-N-0018	Caloundra Road, CALOUNDRA WEST Sewer Gravity Main	Gravity Main	Cal	Kawana STP Central	2031	$2,584
KAW-SGM-N-0019	Beerwah Parade, DICKY BEACH Sewer Gravity Main	Gravity Main	Cal	Kawana STP Central	2031	$1,657
KAW-SGM-N-0020	Ormonde Terrace, KINGS BEACH Sewer Gravity Main	Gravity Main	Cal	Kawana STP Central	2021	$18,728
KAW-SGM-N-0021	Landsborough Parade, GOLDEN BEACH Sewer Gravity Main	Gravity Main	Cal	Kawana STP South	2021	$157,826
KAW-SGM-N-0022	Esplanade, GOLDEN BEACH Sewer Gravity Main	Gravity Main	Cal	Kawana STP South	2021	$55,769
KAW-SGM-N-0023	Esplanade, GOLDEN BEACH Sewer Gravity Main	Gravity Main	Cal	Kawana STP South	2031	$1,362
KAW-SGM-N-0024	North Street, GOLDEN BEACH Sewer Gravity Main	Gravity Main	Cal	Kawana STP Central	2031	$158
KAW-SMS-N-0002	Esplanade, GOLDEN BEACH GLD003 F various	Miscellaneous	Cal	Kawana STP South	2011	$139,994
KAW-SMS-N-0004	Maloja Ave, CALOUNDRA - SPS CAL013 (L)	Miscellaneous	Cal	Kawana STP Central	2011	$182,886
KAW-SMS-N-0005	Ulm St, MOFFAT BEACH CAL001 R various	Miscellaneous	Cal	Kawana STP Central	2011	$82,300
KAW-SMS-N-0006	KAWANA STP, External Sullage Dump Station - Design & Installation	Miscellaneous	Cal	Kawana STP	2013	$37,225
KAW-SPS-N-0002	Rothfall Ch AROONA Sewage Pump Station CPK004 upgrade	Pump station	Cal	Kawana STP Central	2016	$65,986
KAW-SPS-N-0005	Erang St CURRUMUNDI Sewage Pump Station CPK001 upgrade	Pump station	Cal	Kawana STP Central	2016	$337,239
KAW-SPS-N-0010	Ulm St MOFFAT BEACH Sewage Pump Station CAL001 upgrade	Pump station	Cal	Kawana STP Central	2013	$7,695,817
KAW-SPS-N-0011	Ormonde Tce KINGS BEACH pump station and storage	Emergency Storage	Cal	Kawana STP Central	2016	$990,324
KAW-SPS-N-0012	Bulcock St CALOUNDRA Sewage Pump Station upgrade	Pump station	Cal	Kawana STP Central	2013	$2,534,998
KAW-SPS-N-0016	Millennium Ct PELICAN WATERS Pump Station PW4 upgrade	Pump station	Cal	Kawana STP South	2016	$36,790

Project ID	Project Title	Asset Class	Reg-ion	Catchment	Year	Present Value @1/7/12
KAW-SPS-N-0026	Caloundra Rd CALOUNDRA WEST SPS Upgrade LMT001	Pump station	Cal	Kawana STP South Central	2015	$11,465,443
KAW-SPS-N-0029	Caloundra Rd CALOUNDRA WEST Sewage Pump Station LMT007 upgrade	Pump station	Cal	Kawana STP Central	2031	$534
KAW-SPS-N-0030	Esplanade GOLDEN BEACH Sewage Pump Station GLD001 upgrade	Pump station	Cal	Kawana STP South	2021	$293,593
KAW-SPS-U-0001	Bundilla Blvd., MOUNTAIN CREEK - SPS MTN036 augmentation	Pump station	Cal	Kawana STP Sippy Downs Mountain Creek	2013	$3,039,763
KAW-SPS-U-0002	Beattie ST GOLDEN BEACH Sewage Pump Station GLD002 upgrade	Pump station	Cal	Kawana STP South	2021	$428,372
KAW-SPS-U-0004	Onslow St GOLDEN BEACH Sewage Pump Station GLD003 upgrade	Pump station	Cal	Kawana STP South	2031	$2,797
KAW-SPS-U-0005	Emma Ct PELICAN WATERS Sewage Pump Station PWS006 upgrade	Pump station	Cal	Kawana STP South	2021	$303,640
KAW-SPS-U-0006	Koopa Pl PELICAN WATERS Sewage Pump Station PWS008 upgrade	Pump station	Cal	Kawana STP South	2011	$86,468
KAW-SPS-U-0011	Pelican Waters Bvd PELICAN WATERS Pump Station Upgrade PWS003	Pump station	Cal	Kawana STP South	2016	$234,760
KAW-SPS-U-0012	Pelican Waters Bvd PELICAN WATERS Pump Station Upgrade PWS012	Pump station	Cal	Kawana STP South	2016	$29,800
KAW-SPS-U-0019	MIMOSA CRESCENT CURRUMUNDI SPS Upgrade CKS001	Pump station	Cal	Kawana STP Central	2016	$188,915
KAW-SRM-N-0001	Bundilla Blvd., MOUNTAIN CREEK - SPS MTN036 Diversion RM	Rising Main	Cal	Kawana STP Sippy Downs Mountain Creek	2013	$3,950,750
KAW-SRM-N-0003	Main Dr, PARREARRA - Sewer Rising Main LMT001 (L1) - Stage 1	Rising Main	Cal	Kawana STP South Central	2012	$2,681,032
KAW-SRM-N-0004	Main Dr, PARREARRA - Sewer Rising Main LMT001 (L1) - Stage 2	Rising Main	Cal	Kawana STP All	2013	$4,051,319
KAW-SRM-N-0005	SPS L1 Pressure Main - Telemetry Controlled Air Release Valves	Rising Main	Cal	Kawana STP South	2012	$125,385
KAW-SRM-N-0006	SEWERAGE TREATMENT PLANT WARANA Rising Main	Rising Main	Cal	Kawana STP Central	2016	$49,376
KAW-SRM-N-0008	ORMONDE TCE KINGS BEACH Rising Main	Rising Main	Cal	Kawana STP Central	2016	$49,719
KAW-SRM-N-0009	BULCOCK ST CALOUNDRA Rising Main	Rising Main	Cal	Kawana STP Central	2014	$250,699
KAW-SRM-N-0015	Talara Street CURRIMUNDI Rising Main New 700mm	Rising Main	Cal	Kawana STP Central	2012	$3,334,809
KAW-SRM-N-0018	PELICAN WATERS BVD, GOLDEN BEACH Rising Main	Rising Main	Cal	Kawana STP South	2019	$798,321
KAW-SRM-N-0022	KOOPA PL, PELICAN WATERS Rising Main	Rising Main	Cal	Kawana STP South	2016	$83,809
KAW-SRM-N-0024	Kalana Rd Currimundi Rising Main New 750mm	Rising Main	Cal	Kawana STP Central	2013	$3,318,173

Project ID	Project Title	Asset Class	Reg-ion	Catchment	Year	Present Value @1/7/12
KAW-SRM-U-0001	Bower Street Caloundra Rising Main Upgrade 450mm	Rising Main	Cal	Kawana STP Central	2013	$3,578,375
KAW-STP-U-0001	KAWANA STP, Optimisation	STP	Cal	Kawana STP All	2012	$10,060,799
KAW-STP-U-0002	KAWANA STP, Stage 5 Augmentation Part1	STP	Cal	Kawana STP All	2016	$97,375,464
KAW-STP-U-0003	KAWANA STP Ocean Outfall Upgrade	STP	Cal	Kawana STP All	2016	$107,927,901
KAW-STP-U-0004	KAWANA STP, Stage 5 Augmentation Part2	STP	Cal	Kawana STP All	2016	$143,903,869
LNB-SCT-N-0001	Paget St, MOOLOOLAH VALLEY - MHL dosing system at MLL001	Treatment	Cal	Landsborough STP Mooloolah	2011	$206,070
LNB-SES-N-0001	Kello Rd BEERWAH SPSxxx New Emergency Storage	Emergency Storage	Cal	Landsborough STP G B	2016	$556,948
LNB-SES-N-0002	Old Gympie Rd BEERWAH SPSxxx New Emergency Storage	Emergency Storage	Cal	Landsborough STP Beerwah	2016	$80,668
LNB-SPS-U-0001	Gympie St LANDSBOROUGH SPSxxx Upgrade	Pump station	Cal	Landsborough STP Landsborough	2021	$140,995
LNB-SPS-U-0002	Steve Irwin Way BEERWAH SPSxxx Upgrade	Pump station	Cal	Landsborough STP G B	2021	$595,062
LNB-SRM-U-0001	Forestry Rd LANDSBOROUGH SPSxxx Rising Main Upgrade 300mm	Rising Main	Cal	Landsborough STP All	2015	$606,383
LNB-STP-N-0001	LANDSBOROUGH STP - External Sullage Dump Station - Design & Installation	STP	Cal	Landsborough STP All	2012	$37,225
LNB-STP-U-0001	LANDSBOROUGH STP Upgrade	STP	Cal	Landsborough STP All	2017	$19,910,753
MAL-SES-N-0001	Curlew Crt MALENY SPS xxx New Emergency Storage	Emergency Storage	Cal	Maleny STP	2016	$198,773
MAL-SPS-U-0001	Bunya St MALENY SPSxxx Upgrade	Pump station	Cal	Maleny STP	2016	$321,686
MAL-SPS-U-0002	Showgrounds MALENY SPSxxx Upgrade	Pump station	Cal	Maleny STP	2016	$181,464
MAL-STP-U-0001	MALENY STP, Upgrade	STP	Cal	Maleny STP	2013	$15,391,863
MAR-SGM-N-0001	Sunshine M'Way, SIPPY DOWNS - Town Centre Trunk	Gravity Main	Cal	Kawana STP Sippy Downs Mountain Creek	2012	$3,241,608
						$460,457,621

10.6.22 Open Space Network

(1) All public parks and land for community facilities trunk infrastructure for Caloundra City is identified in Table 10.6.10 (Public Parks and Land for Community Facilities Trunk Infrastructure).

Table 10.6.10 Public Parks and Land for Community Facilities Trunk Infrastructure

Infrastructure System	Items included in trunk infrastructure
Public parks	All land and works for parks and embellishments
Land for Community facilities	All land for community facilities including neighbourhood centres, libraries and meeting halls

10.6.23 Description of Catchments

(1) The public parks and land for community facilities catchments have been defined by reference to the PIA boundaries in the Hinterland district and the Planning Areas in the Coastal district.

(2) Map PFUI shows the index for the public parks and land for community facility networks and also shows the charge area boundaries.

10.6.24 Land Values

(1) Land Value – the land values used Parks infrastructure are based on an independent valuers report by Rafter and O'Hagan, 2004. This report is extrinsic material to this PIP.

(a) Three possible levels of land values: The location of each future park was analysed to determine the appropriate valuation to be applied to the land component of the park within the Infrastructure Charges Schedule. These levels were brownfield, greenfield or under the 1% AEP (Q100). That is, is the land that is likely to be acquired under the Q100 flood level (10% of greenfield land value), within a greenfield site (25% of serviced land value), or in a predominantly brownfield area (100% of serviced land value).

(b) Offsets: In the situation where a land acquisition will be provided instead of a financial contribution, an offset of the charge may be provided. The value of this offset will be calculated utilising the same land value used in the Infrastructure Charges Schedule for this park item. That is, if the land component for a park item was calculated using the Greenfield land value, the offset will be provided by multiplying the same Greenfield land value (per m^2) by the land area being provided.

(2) Future Parks: future land acquisition requirements have been determined by analysing each planning/PIA to meet the desired standards of service for both the existing and future population. Areas that required provision of land to meet the DSS (for either proximity or area reasons) are identified on the PFTI by a symbol. The symbol is shown in a generic location. That is, it is not located on a specific parcel of land, but is shown to inform decision making.

(3) There are a variety of symbols shown on the PFTI.

(a) Circles - The circles indicate the generic location of a requirement for a land parcel and embellishment this charge area. The circle shows the type of park (recreation or multi-purpose sport), the position in the hierarchy the park will be (city-wide, district or local), and the level of embellishment planned (developed, semi-developed, mostly natural, natural). Underneath the circle is the park number which is identified in the network table, the year the park is planned for and the planned area of land (in hectares).

(b) Squares: the square symbols indicate an existing park requires embellishment. No land component is linked to this park number. The square shows the type of park (recreation or multi-purpose sport), the park's position in the hierarchy (city-wide, district or local), the level of embellishment planned (developed, semi-developed, mostly natural, natural) and "EO" indicating that the planning is for embellishment only. Underneath the square is the park number which is identified in the network table and the year it is planned to embellish the park.

(c) Semi-circle: a semi-circle indicates a planned land contribution for community purposes. The semi-circle shows the type of park (Community purpose), and the position in the hierarchy the future community facility will be (city-wide, district or local). Underneath the semi-circle is the park item number which is identified in the network table, the year the acquisition is planned and the planned area of land (in hectares).

(4) Items that are expected to be acquired under the Kawana Infrastructure Agreement are shown on the future maps as these items will contribute to the future network. Council acknowledges that although no charges will be collected under this agreement, it was important to include the entire network of future public parks to fairly apportion the cost to all users.

10.6.25 Proportion of External Use

(1) 30% of the embellishments contained within City-wide public parks have been apportioned to visitor use.

(2) All City-wide park land is driven by the population of Caloundra City.

10.6.26 Public Parks and Land for Community Facilities System Demand

(1) Table 10.6.11 identifies the demand assumptions that have been utilised to develop the public parks and land for community facilities network.

Table 10.6.11 Public Parks and Land for Community Facilities Network Demand

Charge area name	Charge area locality	Total calculated demand units (ET)
PCA	Maleny	1,905
PCB	Mooloolah Valley	1,721
PCC	Landsborough	2,184
PCD	Beerwah	2,003
PCE	Glasshouse Mountains	1,082
PCF	Beerburrum	184
PCG	Stanley River - Peachester	308
PCH	Kawana Waters	13,513
PCI	Caloundra Eastern Beaches	4,682
PCJ	Caloundra West	6,572
PCK	Central Caloundra	5,772
PCL	Caloundra South	10,258
PCM	Rural	2,480
H	Hinterland district	10,627
C	Coastal district	42,036
CW	Citywide catchment	52,664

10.6.27 Public Parks and Land for Community Facilities PFTI Maps

(1) Maps PE1 to PE12 show the existing public parks and land for community facilities Trunk Infrastructure.

(2) Maps PFU1 to PFU12 show the future public parks and land for community facilities Trunk Infrastructure.

10.6.28 Public Parks and Land for Community Facilities System Elements

(1) Table 10.6.12 (Public Parks and Land for Community Facilities System Elements) identifies the public parks and land for community facilities network future trunk infrastructure items.

(2) Items showing a land area of zero are existing land parcels within the network which require embellishments to meet the Desired Standards of Service.

Table 10.6.12 Public Parks and Land for Community Facilities System Elements

Catchment	PFTI No.	Park Function	Hierarchy	Embellish-ment Setting	Land area (ha)	Year	Land Cost ($)	Construct'n Cost ($)
PCM	PF1	Recreation	City-wide	SN	0	2015	-	870,000
PCM	PF2	Recreation	District	SN	10	2016	120,000	1,083,648
PCM	PF3	Recreation	City-wide	SN	20	2016	240,000	2,619,524
PCM	PF4	Sport	District	SD	10	2016	120,000	3,866,832
PCA	PF5	Community	District	SD	0	2016	-	6,000
PCA	PF6	Recreation	Local	SD	2	Completed	756,000	375,908
PCA	PF7	Recreation	Local	D	0	Completed	-	72,000
PCA	PF8	Recreation	Local	SN	1	2016	420,000	232,958
PCA	PF9	Community	Local	D	0.6	2016	1,260,000	6,000
PCM	PF10	Recreation	Local	SN	1	2016	12,000	232,958
PCA	PF11	Recreation	Local	SN	2	2016	840,000	232,958
PCA	PF12	Sport	District	SD	0	2021	-	3,850,167
PCB	PF13	Recreation	Local	SN	2	Completed	84,000	232,958
PCB	PF14	Recreation	District	SN	0	2021	-	1,083,648
PCB	PF15	Recreation	District	SN	5	2021	210,000	1,083,648
PCB	PF17	Community	District	D	0.5	2021	420,000	6,000
PCB	PF18	Recreation	Local	SD	1	2021	840,000	375,908
PCB	PF20	Sport	District	SD	0	2021	-	624,540
PCB	PF21	Recreation	Local	SN	2	2016	84,000	232,958
PCC	PF22	Community	Local	D	0.6	2016	1,260,000	6,000
PCC	PF23	Community	District	D	1	2016	2,100,000	6,000
PCC	PF24	Recreation	Local	SN	2	2021	840,000	232,958
PCC	PF25	Recreation	Local	SD	0.5	Completed	210,000	375,908
PCC	PF26	Recreation	District	SD	0	2015	-	240,000
PCC	PF27	Sport	District	D	0	2021	-	1,729,884
PCC	PF28	Recreation	Local	SN	0.5	2016	210,000	232,958
PCD	PF29	Recreation	Local	SN	2	Completed	840,000	232,958
PCD	PF30	Sport	District	D	10	2021	4,200,000	4,084,392
PCD	PF31	Community	Local	D	0.6	2016	1,260,000	6,000
PCD	PF32	Recreation	Local	SD	0.5	2021	210,000	375,908
PCD	PF33	Recreation	District	D	0	2021	-	1,634,268
PCD	PF34	Recreation	District	SN	10	2021	4,200,000	1,083,648
PCD	PF35	Sport	District	D	0	2015	-	1,150,000
PCE	PF36	Recreation	Local	SN	1	Completed	240,000	232,958
PCE	PF37	Recreation	Local	SD	0	Completed	-	350,908
PCE	PF38	Recreation	Local	N	0	2021	-	179,810
PCE	PF39	Recreation	Local	SN	0	2021	-	232,958
PCE	PF40	Recreation	District	SD	5	2021	1,200,000	1,537,608
PCE	PF41	Sport	District	D	10	2021	360,000	4,084,392
PCE	PF42	Sport	District	D	0	2021	-	2,508,000
PCE	PF43	Community	Local	D	0.6	2021	144,000	6,000
PCF	PF44	Recreation	Local	SN	0.8	2016	126,000	232,958
PCG	PF45	Recreation	District	SD	3	2021	1,440,000	1,537,608
PCG	PF46	Sport	District	D	0	2021	-	1,704,000
PCH	PF47	Community	District	D	0.3	Completed	1,800,000	6,000
PCH	PF48	Recreation	District	SN	5	2021	7,500,000	1,083,648
PCH	PF49	Recreation	City-wide	SN	20	2016	30,000,000	2,619,524
PCH	PF50	Community	City-wide	D	0.8	2021	1,200,000	6,000
PCH	PF51	Sport	District	D	0	Completed	-	4,084,392
PCH	PF52	Recreation	Local	D	0.5	Completed	750,000	400,442
PCH	PF53	Recreation	Local	SD	0.5	Completed	750,000	375,908
PCH	PF54	Recreation	Local	D	0.5	Comp	3,000,000	400,442

Catchment	PFTI No.	Park Function	Hierarchy	Embellish-ment Setting	Land area (ha)	Year	Land Cost ($)	Construct'n Cost ($)
						leted		
PCH	PF55	Recreation	Local	SD	0.5	Completed	3,000,000	375,908
PCH	PF56	Recreation	Local	SD	1	Completed	1,500,000	375,908
PCH	PF57	Recreation	Local	D	0.5	Completed	750,000	400,442
PCH	PF58	Recreation	District	D	1	Completed	1,500,000	1,606,268
PCH	PF59	Recreation	Local	SD	2	2016	3,000,000	375,908
PCH	PF60	Sport	City-wide	SD	0	2016	-	6,474,328
PCH	PF61	Community	Local	D	0.8	2016	1,200,000	6,000
PCH	PF62	Recreation	Local	D	0.5	Completed	750,000	400,442
PCH	PF63	Recreation	Local	SD	0.5	Completed	750,000	375,908
PCH	PF64	Recreation	Local	SN	0.5	Completed	750,000	232,958
PCH	PF65	Recreation	Local	SD	1	Completed	1,500,000	375,908
PCH	PF66	Recreation	Local	SD	0.5	Completed	750,000	375,908
PCH	PF67	Recreation	Local	SD	2	2016	3,000,000	375,908
PCH	PF68	Recreation	Local	D	2	2016	3,000,000	400,442
PCH	PF69	Recreation	District	SD	1	2016	1,500,000	1,537,608
PCH	PF70	Recreation	Local	SD	1	2021	84,000	375,908
PCH	PF71	Recreation	Local	SD	1	2021	1,500,000	375,908
PCH	PF72	Recreation	Local	SN	0.5	2021	750,000	232,958
PCH	PF73	Recreation	Local	SD	0.5	2021	750,000	375,908
PCH	PF74	Community	Local	D	0.1	2021	150,000	6,000
PCH	PF75	Recreation	District	SD	0	Completed	-	1,537,608
PCH	PF76	Recreation	District	D	0	Completed	-	799,620
PCH	PF77	Recreation	District	D	0	Completed	-	1,634,268
PCH	PF78	Community	District	D	0.3	2016	450,000	6,000
PCH	PF79	Recreation	District	D	0	Completed	-	483,665
PCI	PF80	Community	Local	D	0.6	2021	990,000	6,000
PCI	PF81	Recreation	Local	SN	0.5	Completed	3,300,000	232,958
PCI	PF82	Recreation	Local	SD	0.5	Completed	3,300,000	375,908
PCI	PF83	Recreation	District	D	0	2021	-	1,634,268
PCI	PF84	Recreation	District	D	0	Completed	-	1,634,268
PCI	PF85	Recreation	District	D	0	Completed	-	1,634,268
PCI	PF86	Recreation	District	D	0	Completed	-	255,360
PCI	PF87	Recreation	Local	SD	0	Completed	-	375,908
PCI	PF88	Recreation	Local	SD	0	2021	-	375,908
PCJ	PF89	Recreation	District	SN	0	Completed	4,500,000	1,083,648
PCJ	PF90	Sport	District	D	0	Completed	9,000,000	4,084,392
PCJ	PF91	Community	Local	D	0.6	Completed	540,000	6,000
PCJ	PF92	Recreation	District	SN	5	2016	4,500,000	1,083,648
PCJ	PF93	Recreation	District	SN	0	Completed	-	1,083,648
PCJ	PF94	Recreation	District	SD	5	Completed	4,500,000	1,537,608
PCJ	PF95	Recreation	Local	N	0	2021	-	179,810

Catchment	PFTI No.	Park Function	Hierarchy	Embellish-ment Setting	Land area (ha)	Year	Land Cost ($)	Construct'n Cost ($)
PCJ	PF96	Community	District	D	1	2021	3,600,000	6,000
PCJ	PF97	Recreation	District	SN	14	Completed	9,000,000	1,083,648
PCJ	PF98	Recreation	District	D	0	Completed	-	1,634,268
PCJ	PF99	Recreation	District	SD	0	Completed	-	1,537,608
PCK	PF100	Recreation	District	D	0	2016	-	-4,249,150
PCK	PF101	Recreation	City-wide	D	0	2016	-	4,276,844
PCK	PF102	Recreation	City-wide	D	0	Completed	-	4,276,844
PCK	PF103	Recreation	Local	SN	0	Completed	-	690,043
PCK	PF104	Recreation	Local	SD	0.5	2021	4,200,000	375,908
PCK	PF105	Sport	City-wide	D	0	2016	-	2,545,683
PCK	PF106	Recreation	Local	SD	0.5	2021	4,200,000	375,908
PCK	PF107	Community	City-wide	D	1	2016	8,400,000	6,000
PCL	PF109	Recreation	District	SD	5	Completed	4,875,000	1,537,608
PCL	PF110	Recreation	District	D	10	2016	9,750,000	1,634,268
PCL	PF111	Community	District	D	0.6	2016	585,000	6,000
PCL	PF112	Community	Local	D	0.3	Completed	292,500	6,000
PCL	PF113	Sport	District	SD	0	2021	-	2,298,108
PCL	PF114	Community	District	D	0.6	2016	585,000	6,000
PCL	PF115	Recreation	District	D	0	Completed	-	573,600
PCL	PF116	Recreation	District	D	0	Completed	-	1,634,268
PCL	PF117	Recreation	Local	SD	0.5	2021	487,500	375,908
PCL	PF118	Recreation	District	D	0	2021	-	1,590,000
PCL	PF119	Sport	City-wide	SN	20	2021	240,000	2,816,564
PCM	PF120	Community	City-wide	D	0.1	2021	1,200	6,000
PCM	PF121	Recreation	District	SD	5	2021	60,000	1,537,608
PCM	PF122	Sport	District	D	0	2016	-	4,084,392
PCM	PF123	Sport	City-wide	D	0	2021	-	6,815,668
PCM	PF124	Recreation	City-wide	SD	0	2021	-	4,016,624
PCM	PF125	Recreation	Local	SD	0	2021	-	375,908
PCM	PF126	Sport	City-wide	SN	15	2021	180,000	2,816,564

Column 5 of Table 10.6.12 identifies the type of embellishments costed for the park where:
D = Developed setting
SD = Semi-developed setting
SN = Semi-natural setting
N = Natural setting

10.6.29 Stormwater Network

(1) The Stormwater Trunk Infrastructure for Caloundra City includes both quantity and quality infrastructure and is identified in Table 10.6.13 (Stormwater Trunk Infrastructure).

Table 10.6.13 Stormwater Trunk Infrastructure

Infrastructure network	Items included in trunk infrastructure
Stormwater Quantity Infrastructure	Retention and detention basins
	Lined drains/channels
	Unlined drains/channels
	Natural flow paths including channels, waterways, creeks & rivers
	All pipe and culvert infrastructure 450mm diameter/width and above
Stormwater Quality Infrastructure	Wetlands
	Stormwater Quality Improvement Devices
	Waterway bank stabilisation of riparian zones.

10.6.30 Description of Catchments

(1) The catchments for the stormwater infrastructure are based on the hydrologic catchments of the various creek and river systems within the local government area. Only those catchments that it is anticipated will have reasonable opportunity for growth, have been included at this time. These catchments are listed in Table 10.6.14 (Included Stormwater Catchments).

(2) As the catchment boundaries are topographically based, they generally do not align with the PIA or the planning area boundaries. The scope of the planning focuses on servicing the development within the PIA. The infrastructure has been sized to cater for all flows from the contributing catchments and may extend downstream of the PIA to obtain an acceptable point of discharge.

(3) It is further noted that the catchment boundaries are not necessarily cadastrally aligned, but may split allotments and a single property may fall within two or more catchments. This may be of significance in determining whether an application is consistent or inconsistent under the provisions of Section 10.3.3 (Inconsistent Development).

(4) Map SWEI shows the index for the stormwater networks and also shows the stormwater charge area boundaries. Individual catchment maps have also been produced.

(5) The infrastructure has been planned assuming full development of the catchments under the provisions of the Planning Scheme. This is considered to be the most cost effective approach to providing the infrastructure as the marginal costs of upsizing will be less than the cost of augmentation at a later date.

(6) As there is potential for development beyond 2016, parts of the network will have spare capacity when this milestone is reached. Furthermore, where development is likely to occur after 2016 or it is feasible for installation to lag demand, the construction may not be programmed until after 2016.

Table 10.6.14 Included Stormwater Catchments

Area	Catchment Name	Planning Areas within Catchment Boundaries
SWCA	Obi Obi & Walkers Creek	Maleny
SWCB	Mooloolah River (Township)	Mooloolah
SWCC	Mooloolah River Valley	Mooloolah
SWCD	Ewen Maddock	Landsborough
SWCE	Mellum A & Little Rocky Creek	Landsborough
SWCF	Mellum Creek B	Beerwah
SWCG	Coochin Creek	Beerwah
SWCH	Coonowrin Creek	Glass House Mountains
SWCI	Tooway Creek	Caloundra West, Eastern Beaches
SWCJ	Pumicestone	Caloundra South, Caloundra Central
SWCK	Caloundra West	Caloundra West
SWCL	Duckholes & Lamerough Creek	Caloundra West, Caloundra South, Caloundra Central
SWCM	Kings Beach	Caloundra Central

10.6.31 Assessment of the Stormwater Infrastructure Network

(1) Reports have been prepared for each catchment based on the methodology developed by John Wilson and Partners Pty Ltd sketch planning and are included in the extrinsic material for stormwater.

(2) In catchments where previous studies have been completed, this information has been used and updated as necessary to suit the specific requirements of the PIP. Otherwise, where this information is unavailable or incomplete, the sketch planning methodology referred to above has been employed to define the future trunk infrastructure.

(3) The infrastructure that has been identified within the planning reports has been used for the PFTI unless noted otherwise in the extrinsic material.

10.6.32 Proportion of External Use

(1) The broader catchments for some of the river systems do extend into neighbouring local government areas. However, these areas are external to, and do not contribute flows to the catchment areas that are serviced by the networks included in by the PFTI. Therefore the stormwater network is a closed system and has no external users.

10.6.33 Stormwater PFTI Maps

(1) Maps SWE1 to SWE18 show the existing stormwater Trunk Infrastructure.

(2) Maps SWFUI to SWFU12 show the future stormwater Trunk.

10.6.34 Stormwater Network Elements

(1) Tables 11.6.15 (Stormwater network elements – Quantity infrastructure) and 11.6.16 (Stormwater network elements – Quality infrastructure) identify the stormwater network Trunk Infrastructure items (quantity and quality respectively).

Table 10.6.15 Stormwater Network Elements – Quantity Infrastructure

Area	PFTI No.	Description	Size	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCA	SWF1	Maleny Rd Obi Obi bridge - widen channel	Earthworks	Volume (m^3)	540	-	51,546	Post 2016
SWCA	SWF2	Pipe Upgrade - Maleny Showgrounds	600 Ø RCP	Length (m)	210	-	181,741	Post 2016
SWCA	SWF3	Pipe Upgrade - Wattle & Flame St	600 & 1050Ø RCPs	Length (m)	800	-	1,344,478	Post 2016
SWCA	SWF4	Pipe Upgrade - Myrtle St/Bicentenary Ln	450 - 900 Ø RCPs	Length (m)	920	-	1,393,991	Post 2016
SWCB	SWF5	RCBC Upgrade - Paget St	3660 x 3350 RCBC	Length (m)	45	-	284,808	Post 2016
SWCB	SWF6	RCBC Upgrade - Niell Rd 13	3660 x 3350 RCBC	Length (m)	105	-	592,186	Post 2016
SWCB	SWF7	RCBC Upgrade - Niell Rd12	1500 x 1500 RCBC	Length (m)	12	-	62,056	Post 2016
SWCB	SWF8	RCBC Upgrade - Kings Rd 11	2440 x 1200 RCBC	Length (m)	12	-	69,325	Post 2016
SWCC	SWF9	RCBC Upgrade - Woodlands Court 1	1200 x 900 RCBC	Length (m)	12	-	38,903	Compl eted
SWCC	SWF10	RCBC Upgrade - Valley Rise 2	1050 Ø RCP	Length (m)	24	-	54,884	Post 2016
SWCC	SWF11	RCBC Upgrade - Valley Rise 3	525 Ø RCP	Length (m)	12	-	30,102	Post 2016
SWCC	SWF12	RCBC Upgrade - Connection Rd 4	1500 Ø RCP	Length (m)	24	-	93,565	Post 2016
SWCC	SWF13	RCBC Upgrade - Tolson Rd 5	1350 Ø RCP	Length (m)	12	-	53,504	Post 2016
SWCC	SWF14	RCBC Upgrade - Glenview Rd 7	2440 x 1200 RCBC	Length (m)	36	-	124,619	Post 2016
SWCC	SWF15	RCBC Upgrade - Evans Grove Rd 11	600 Ø RCP	Length (m)	12	-	31,400	Post 2016
SWCC	SWF16	RCBC Upgrade - Glenview Rd 14	1050 Ø RCP	Length (m)	48	-	107,687	Post 2016
SWCC	SWF17	RCBC Upgrade - Glenview Rd 15	525 Ø RCP	Length (m)	12	-	30,102	Post 2016
SWCC	SWF18	RCBC Upgrade - Glenview Rd 18	900 Ø RCP	Length (m)	24	-	55,906	Post 2016
SWCC	SWF19	RCBC Upgrade - Glenview Rd 19	1050 Ø RCP	Length (m)	12	-	44,441	Post 2016
SWCC	SWF20	RCBC Upgrade - Glenview Rd 23	900 Ø RCP	Length (m)	48	-	88,318	Post 2016
SWCC	SWF21	RCBC Upgrade - Glenview Rd 31	900 Ø RCP	Length (m)	12	-	39,676	Post 2016
SWCC	SWF22	RCBC Upgrade - Glenview Rd 34	900 Ø RCP	Length (m)	24	-	55,906	Post 2016
SWCD	SWF23	RCBC Upgrade - Cribb St 1	825 Ø RCP	Length (m)	12	-	38,098	Post 2016
SWCD	SWF24	RCBC Upgrade - Tytherleigh Av 4	700 x 600 RCBC	Length (m)	12	-	32,506	Post 2016
SWCD	SWF25	RCBC Upgrade - Tytherleigh Av 5	1050 Ø RCP	Length (m)	12	-	44,441	Post 2016
SWCD	SWF26	RCBC Upgrade - Myla Rd 6	1200 Ø RCP	Length (m)	12	-	49,024	Post 2016
SWCD	SWF27	RCBC Upgrade - Calderwood Rd 10	750 Ø RCP	Length (m)	12	-	35,475	Post 2016
SWCD	SWF28	RCBC Upgrade - Gattera Rd 13	1500 Ø RCP	Length (m)	24	-	96,384	Post 2016
SWCD	SWF29	RCBC Upgrade - Annie St 14	675 Ø RCP	Length (m)	12	-	34,662	Post 2016
SWCD	SWF30	RCBC Upgrade - Mary St 17	525 Ø RCP	Length (m)	12	-	30,279	Post 2016
SWCD	SWF31	RCBC Upgrade - Bella St 19	1050 Ø RCP	Length (m)	12	-	44,769	Post 2016
SWCE	SWF32	RCBC Upgrade - Whites Rd 19	2440 x 2130 RCBC	Length (m)	24	-	106,662	Compl eted
SWCF	SWF33	RCBC Upgrade - Simpson Rd 1	1050 Ø RCP	Length (m)	24	-	65,268	2016
SWCF	SWF34	RCBC Upgrade - Simpson Rd 2	900 Ø RCP	Length (m)	12	-	39,498	Post 2016
SWCG	SWF35	RCBC upgrade - Roberts Rd	1200 Ø RCP	Length (m)	24	-	74,554	Post 2016
SWCG	SWF36	RCBC upgrade - Peachester Rd	1200 Ø RCP	Length (m)	12	-	48,697	Post 2016
SWCG	SWF37	RCBC upgrade - Old Gympie Rd	3660 x 3660 RCBC	Length (m)	12	-	95,648	Post 2016

Area	PFTI No.	Description	Size	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCH	SWF38	RCBC Upgrade - Jefferies Rd	2130 x 900 RCBC	Length (m)	24	-	92,481	Post 2016
SWCI	SWF54	Pipe Upgrade - Catchment 1A	450 - 1350 Ø RCPs	Length (m)	550	-	877,309	Post 2016
SWCI	SWF55	Pipe Upgrade - Catchment 2A	450 - 1350 Ø RCPs	Length (m)	1151	-	1,475,598	Post 2016
SWCI	SWF56	Pipe Upgrade - Catchment 6A	450 - 1050 Ø RCPs	Length (m)	98	-	155,764	Post 2016
SWCI	SWF57	Pipe Upgrade - Catchment 7A	450 - 2250 Ø RCPs	Length (m)	753	-	2,333,270	Post 2016
SWCI	SWF58	Pipe Upgrade - Catchment 8A	450 Ø RCPs	Length (m)	104	-	62,644	Post 2016
SWCI	SWF59	Pipe Upgrade - Catchment 9A	600 - 900 Ø RCPs	Length (m)	507	-	470,486	Post 2016
SWCI	SWF60	Pipe Upgrade - Catchment 10A	600 Ø RCPs	Length (m)	45	-	36,725	Post 2016
SWCI	SWF61	Pipe Upgrade - Catchment 11A	600 Ø RCPs	Length (m)	57	-	45,748	Post 2016
SWCI	SWF62	Pipe Upgrade - Catchment 12A	600 - 675 Ø RCPs	Length (m)	155	-	142,630	Post 2016
SWCI	SWF63	Pipe Upgrade - Catchment 13A	675 - 750 Ø RCPs	Length (m)	42	-	46,019	Post 2016
SWCI	SWF64	Pipe Upgrade - Catchment 14A	675 Ø RCPs	Length (m)	128	-	123,069	Post 2016
SWCI	SWF65	Pipe Upgrade - Catchment 15A	675 Ø RCPs	Length (m)	83	-	93,875	Post 2016
SWCI	SWF66	Pipe Upgrade - Catchment 16A	600 - 900 Ø RCPs	Length (m)	235	-	266,229	Post 2016
SWCI	SWF67	Pipe Upgrade - Catchment 17A	600 - 750 Ø RCPs	Length (m)	228	-	220,248	Post 2016
SWCI	SWF68	Andrea Ahern Park Channel Modifications	Item	Volume (m^3)	1,749	-	211,657	Compl eted
SWCJ	SWF69	Pipe Upgrade - Minchinton to Bicentennial Park	1050 Ø RPC	Length (m)	190	-	325,379	Post 2016
SWCJ	SWF70	Pipe Upgrade - Gregory, Burke, Golden Beach Esp	450 - 1200 Ø RCPs	Length (m)	847	-	882,433	Post 2016
SWCJ	SWF71	Detention Basin - Oval Ave	Area (m2)	Area (m^2)	6,210	-	1,966,901	Post 2016
SWCK	SWF72	Detention Basin A - Caloundra West	Area (m2)	Area (ha)	2.50	192,677	1,154,209	Post 2016
SWCK	SWF73	Detention Basin B - Caloundra West	Area (m2)	Area (ha)	2.36	181,826	1,089,204	Compl eted
SWCK	SWF74	Detention Basin C - Caloundra West	Area (m2)	Area (ha)	1.77	136,129	815,463	Post 2016
SWCK	SWF75	NCD Catchment A - Caloundra West	12m to 20 m wide	Area (ha)	2.06	1,696,400	1,103,873	Post 2016
SWCK	SWF76	NCD Catchment B - Caloundra West	11m to 21 m wide	Area (ha)	2.44	2,013,084	1,469,018	2016
SWCK	SWF77	NCD Catchment C - Caloundra West	22m wide	Area (ha)	2.62	2,159,944	737,241	2016
SWCK	SWF78	NCD Catchment D - Caloundra West	14m to 26 m wide	Area (ha)	2.49	2,050,950	980,129	Compl eted
SWCK	SWF79	NCD Catchment E - Caloundra West	14m to 21m wide	Area (ha)	2.09	1,726,589	1,571,815	Post 2016
SWCL	SWF80	Channel Works - Daniel to Bronwyn Sts	Lower invert 600mm	Volume (m^3)	1,296	-	449,969	Compl eted
SWCL	SWF81	RCBC Upgrade - Latcham Drive	1800 x 900 RCBC	Length (m)	72	-	183,544	Compl eted
SWCL	SWF82	RCBC Upgrade - Helen Street	2100 x 1200 SLBC	Length (m)	72	-	214,488	Compl eted
SWCL	SWF83	RCBC Upgrade - Daniel Street	2100 x 1500 RCBC	Length (m)	43	-	151,854	Compl eted
SWCL	SWF84	RCBC Upgrade - Deefa Street	2400 x 1500 SLBC	Length (m)	65	-	223,371	Compl eted
SWCL	SWF86	Channel Works to Protect Koala Court		Volume (m^3)	1,800	-	182,926	Post 2016
SWCL	SWF87	Detention Basin upstream of Mark Road	Area (m2)	Volume (m^3)	34,320	-	1,583,041	Compl eted
SWCL	SWF88	Channel Works to protect Mark Rd		Volume (m^3)	11,880	-	541,374	Compl eted
SWCL	SWF89	Channel Works - Detention upstream of Latcham Dr		Volume (m^3)	8,200	-	412,155	Compl eted
SWCM	SWF90	Pipe Upgrade Network 2 - Moreton to Merrima Ave	600 Ø RCPs	Length (m)	275	-	186,731	Post 2016
SWCM	SWF91	Pipe Upgrade Network 3 - Upper Gay to Ormonde Tce	750-1200Ø RCPs	Length (m)	515	-	609,402	Post 2016

Area	PFTI No.	Description	Size	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCM	SWF92	Pipe Upgrade Network 4 - Orvieto to Ormonde Tce	600 Ø RCPs	Length (m)	150	-	106,735	Post 2016
SWCM	SWF93	Pipe Upgrade Network 5 - Verney St to Esplanade	525 & 900Ø RCPs	Length (m)	610	-	688,593	Post 2016
SWCA	SWF94	NCD A - Walkers Ck	20m wide	Area (ha)	0.97	28,009	-	Post 2016
SWCA	SWF95	NCD B - Obi Obi Ck	30m wide	Area (ha)	3.46	99,908	-	Post 2016
SWCA	SWF96	NCD C - Obi Obi Ck	20m wide	Area (ha)	0.78	22,523	-	Post 2016
SWCA	SWF97	NCD D - Obi Obi Ck	15m wide	Area (ha)	0.19	5,486	-	Post 2016
SWCA	SWF98	NCD E - Obi Obi Ck	25m wide	Area (ha)	1.50	43,313	-	Post 2016
SWCA	SWF99	NCD F - Obi Obi Ck	40m wide	Area (ha)	1.78	51,398	-	Compl eted
SWCA	SWF100	NCD G - Obi Obi Ck	40m wide	Area (ha)	2.20	63,525	-	Post 2016
SWCA	SWF101	NCD H - Obi Obi Ck	30m wide	Area (ha)	1.38	39,848	-	2016
SWCA	SWF102	NCD I - Obi Obi Ck	35m wide	Area (ha)	4.04	116,655	-	Post 2016
SWCA	SWF103	NCD J - Obi Obi Ck	40m wide	Area (ha)	7.97	230,134	-	Post 2016
SWCB	SWF104	NCD A - Mooloolah (township)	15m wide	Area (ha)	1.42	41,003	-	Post 2016
SWCB	SWF105	NCD B - Mooloolah (township)	20m wide	Area (ha)	2.70	77,963	-	2016
SWCB	SWF106	NCD C - Mooloolah (township)	25m wide	Area (ha)	0.44	12,705	-	2016
SWCB	SWF107	NCD D - Mooloolah (township)	17.5m wide	Area (ha)	0.71	20,501	-	Compl eted
SWCB	SWF108	NCD E - Mooloolah (township)	17.5m wide	Area (ha)	0.54	15,593	-	Compl eted
SWCB	SWF109	NCD F - Mooloolah (township)	15m wide	Area (ha)	0.20	5,775	-	Compl eted
SWCB	SWF110	NCD G - Mooloolah (township)	15m wide	Area (ha)	0.52	15,015	-	2016
SWCC	SWF111	NCD A - Mooloolah East	40m wide	Area (ha)	4.68	135,135	-	2016
SWCC	SWF112	NCD B - Mooloolah East	35m wide	Area (ha)	2.93	84,604	-	2016
SWCC	SWF113	NCD C - Mooloolah East	10m wide	Area (ha)	0.36	10,395	-	2016
SWCC	SWF114	NCD D - Mooloolah East	40m wide	Area (ha)	7.16	206,745	-	2016
SWCC	SWF115	NCD E - Mooloolah East	25m wide	Area (ha)	4.49	129,649	-	2016
SWCC	SWF116	NCD F - Mooloolah East	35m wide	Area (ha)	2.79	80,561	-	2016
SWCD	SWF117	NCD A - Ewen Maddock	Varies	Area (ha)	1.80	51,975	-	2016
SWCD	SWF118	NCD B - Ewen Maddock	17m wide	Area (ha)	0.90	25,988	-	2016
SWCD	SWF119	NCD C - Ewen Maddock	Varies	Area (ha)	5.55	160,256	-	2016
SWCD	SWF120	NCD D - Ewen Maddock	Varies	Area (ha)	6.44	185,955	-	2016
SWCD	SWF121	NCD E - Ewen Maddock	25m wide	Area (ha)	1.22	35,228	-	2016
SWCD	SWF284	RCBC Upgrade - Mary St 16	675mm RCP	Length (m)	12	-	34,662	Post 2016
SWCE	SWF122	NCD A - Mellum Ck	20m wide	Area (ha)	0.87	24,977	-	Post 2016
SWCE	SWF123	NCD B - Mellum Ck	10m wide	Area (ha)	0.36	10,395	-	2016
SWCE	SWF124	NCD C - Mellum Ck	25m wide	Area (ha)	2.51	72,476	-	2016
SWCE	SWF125	NCD D - Mellum Ck	27.5m wide	Area (ha)	2.81	81,139	-	2016
SWCE	SWF126	NCD E - Mellum Ck	15m wide	Area (ha)	0.65	18,769	-	Compl eted
SWCE	SWF127	NCD F - Mellum Ck	30m wide	Area (ha)	0.67	19,346	-	2016
SWCE	SWF128	NCD G - Mellum Ck	35m wide	Area (ha)	5.12	147,840	-	2016

Area	PFTI No.	Description	Size	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCE	SWF285	RCBC Upgrade - Old Gympie Rd	2700 x 1200 RCBC	Length (m)	45	-	160,360	Post 2016
SWCF	SWF129	NCD A - Mellum Ck B	42.5m wide	Area (ha)	2.83	81,716	-	2016
SWCF	SWF130	NCD B - Mellum Ck B	20m wide	Area (ha)	0.68	19,670	-	2016
SWCG	SWF131	NCD A - Coochin Ck	17.5m wide	Area (ha)	0.81	23,389	-	2016
SWCG	SWF132	NCD B - Coochin Ck	25m wide	Area (ha)	4.39	126,761	-	2016
SWCG	SWF133	NCD C - Coochin Ck	20m wide	Area (ha)	1.74	50,243	-	2016
SWCG	SWF134	NCD D - Coochin Ck	10m wide	Area (ha)	0.21	6,064	-	Post 2016
SWCG	SWF135	NCD E - Coochin Ck	12.5m wide	Area (ha)	0.16	4,620	-	2016
SWCG	SWF136	NCD F - Coochin Ck	12.5m wide	Area (ha)	0.10	2,888	-	Compl eted
SWCG	SWF137	NCD H - Coochin Ck	12.5m wide	Area (ha)	0.19	5,486	-	2016
SWCG	SWF138	NCD I - Coochin Ck	17.5m wide	Area (ha)	0.34	9,818	-	Post 2016
SWCG	SWF139	NCD J - Coochin Ck	20m wide	Area (ha)	0.68	19,635	-	2016
SWCG	SWF140	NCD K - Coochin Ck	22.5m wide	Area (ha)	1.30	37,538	-	2016
SWCG	SWF141	NCD L - Coochin Ck	30m wide	Area (ha)	2.99	86,336	-	2016
SWCG	SWF142	NCD M - Coochin Ck	30m wide	Area (ha)	0.68	19,635	-	2016
SWCG	SWF143	NCD N - Coochin Ck	12.5m wide	Area (ha)	0.41	11,839	-	Post 2016
SWCH	SWF144	NCD A - Coonowrin Ck	15m wide	Area (ha)	0.40	6,600	-	Compl eted
SWCH	SWF145	NCD B - Coonowrin Ck	40m wide	Area (ha)	2.38	39,270	-	2016
SWCH	SWF146	NCD C - Coonowrin Ck	25m wide	Area (ha)	0.90	14,850	-	Post 2016
SWCH	SWF147	NCD D - Coonowrin Ck	22.5m wide	Area (ha)	0.42	6,930	-	Post 2016

Table 10.6.16 Stormwater Network Elements – Quality Infrastructure

Area	PFTI No.	Description	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCA	SWF201	Wetland - Maleny catchment A	Area (ha)	2.2	853,182	1,326,391	Post 2016
SWCA	SWF202	Wetland - Maleny catchment B	Area (ha)	2.7	1,047,599	1,628,638	Post 2016
SWCA	SWF203	Wetland - Maleny catchment C	Area (ha)	3.2	1,233,352	1,917,417	2016
SWCA	SWF204	Wetland - Maleny catchment D	Area (ha)	1.2	468,017	727,597	Post 2016
SWCA	SWF205	SQID - Maleny Catchment	Imperv. Area (ha)	42.9	-	1,478,938	Post 2016
SWCB	SWF206	Wetland - Mooloolah catchment A	Area (ha)	1.4	536,775	834,492	Post 2016
SWCB	SWF207	Wetland - Mooloolah catchment B	Area (ha)	1.7	656,322	1,020,344	Post 2016
SWCB	SWF208	Wetland - Mooloolah catchment C	Area (ha)	0.9	353,854	550,116	Post 2016
SWCB	SWF209	Wetland - Mooloolah catchment D	Area (ha)	0.4	172,754	268,570	Post 2016
SWCB	SWF210	Wetland - Mooloolah catchment E	Area (ha)	1.0	369,606	574,604	Post 2016
SWCB	SWF211	Wetland - Mooloolah catchment F	Area (ha)	1.1	433,013	673,179	Post 2016
SWCB	SWF212	Wetland - Mooloolah catchment G	Area (ha)	2.0	757,473	1,177,597	Post 2016
SWCC	SWF213	Wetland - Mooloolah East catchment A	Area (ha)	0.5	194,824	302,881	Post 2016
SWCC	SWF214	Wetland - Mooloolah East catchment B	Area (ha)	0.6	230,729	358,701	Post 2016
SWCC	SWF215	Wetland - Mooloolah East catchment C	Area (ha)	0.6	241,879	376,034	Post 2016
SWCC	SWF216	Wetland - Mooloolah East catchment D	Area (ha)	0.4	164,686	256,028	Post 2016

Area	PFTI No.	Description	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCC	SWF217	Wetland - Mooloolah East catchment E	Area (ha)	0.4	156,281	242,960	Post 2016
SWCC	SWF218	Wetland - Mooloolah East catchment F	Area (ha)	0.7	257,058	399,632	Post 2016
SWCC	SWF219	Wetland - Mooloolah East catchment G	Area (ha)	1.6	622,454	967,692	Post 2016
SWCC	SWF220	Wetland - Mooloolah East catchment H	Area (ha)	0.5	183,353	285,048	Post 2016
SWCC	SWF221	Wetland - Mooloolah East catchment I	Area (ha)	0.2	80,285	124,814	Post 2016
SWCC	SWF222	Wetland - Mooloolah East catchment J	Area (ha)	0.2	86,555	134,561	Post 2016
SWCD	SWF223	Wetland - Ewen Maddock catchment A	Area (ha)	1.6	635,053	987,279	Post 2016
SWCD	SWF224	Wetland - Ewen Maddock catchment B	Area (ha)	3.3	1,255,586	1,951,983	Post 2016
SWCE	SWF225	Wetland - Mellum A catchment A	Area (ha)	1.8	685,152	1,065,164	Post 2016
SWCE	SWF226	Wetland - Mellum A catchment B	Area (ha)	0.7	273,917	425,842	Post 2016
SWCE	SWF227	Wetland - Mellum A catchment C	Area (ha)	0.6	217,003	337,361	Post 2016
SWCE	SWF228	Wetland - Mellum A catchment D	Area (ha)	1.8	685,335	1,065,449	Post 2016
SWCE	SWF229	Wetland - Mellum A catchment E	Area (ha)	1.2	481,205	748,101	Post 2016
SWCF	SWF230	Wetland - Mellum B catchment A	Area (ha)	1.7	666,681	1,036,449	Post 2016
SWCF	SWF231	SQID - Mellum B catchment B	Imperv. Area (ha)	12.5	-	429,784	Post 2016
SWCF	SWF232	SQID - Mellum B catchment C	Imperv. Area (ha)	17.7	-	610,136	Post 2016
SWCF	SWF233	SQID - Mellum B catchment D	Imperv. Area (ha)	13.6	-	468,645	Post 2016
SWCG	SWF234	Wetland - Coochin catchment A	Area (ha)	3.0	1,149,622	1,787,248	Post 2016
SWCG	SWF235	Wetland - Coochin catchment B	Area (ha)	6.9	2,654,570	4,126,899	Post 2016
SWCH	SWF236	Wetland - Coonowrin catchment A	Area (ha)	0.3	58,484	159,112	Post 2016
SWCH	SWF237	Wetland - Coonowrin catchment B	Area (ha)	0.6	124,867	339,716	Post 2016
SWCH	SWF238	Wetland - Coonowrin catchment C	Area (ha)	3.4	757,558	2,061,027	Post 2016
SWCH	SWF239	Wetland - Coonowrin catchment D	Area (ha)	0.4	79,792	217,083	Post 2016
SWCH	SWF240	Wetland - Coonowrin catchment E	Area (ha)	0.8	182,769	497,246	Post 2016
SWCI	SWF248	SQID - Tooway catchment A	Imperv. Area (ha)	64.9	-	2,238,509	Post 2016
SWCI	SWF249	SQID - Tooway catchment B	Imperv. Area (ha)	22.6	-	780,683	Post 2016
SWCI	SWF250	SQID - Tooway catchment C	Imperv. Area (ha)	5.5	-	188,096	Post 2016
SWCI	SWF251	SQID - Tooway catchment D	Imperv. Area (ha)	35.9	-	1,240,050	Post 2016
SWCI	SWF252	SQID - Tooway catchment E	Imperv. Area (ha)	17.4	-	600,870	Post 2016
SWCI	SWF253	SQID - Tooway catchment F	Imperv. Area (ha)	9.5	-	326,838	Post 2016
SWCJ	SWF254	SQID - Pumicestone catchment A	Imperv. Area (ha)	34.8	-	542,889	Post 2016
SWCJ	SWF255	SQID - Pumicestone catchment B	Imperv. Area (ha)	85.6	-	2,062,493	Post 2016
SWCJ	SWF256	SQID - Pumicestone catchment C	Imperv. Area (ha)	127.6	-	1,805,717	Post 2016
SWCJ	SWF257	SQID - Pumicestone catchment D	Imperv. Area (ha)	43.6	-	984,654	Post 2016
SWCJ	SWF258	SQID - Pumicestone catchment E	Imperv. Area (ha)	22.4	-	446,597	Post 2016
SWCJ	SWF259	SQID - Pumicestone catchment F	Imperv. Area (ha)	20.3	-	371,359	Post 2016
SWCJ	SWF260	SQID - Pumicestone catchment G	Imperv. Area (ha)	31.9	-	554,623	Post 2016
SWCJ	SWF261	SQID - Pumicestone catchment H	Imperv. Area (ha)	12.9	-	196,724	Post 2016

Area	PFTI No.	Description	Unit	Qty	Land Cost ($)	Construct -ion Cost ($)	Year
SWCJ	SWF262	SQID - Pumicestone catchment I	Imperv. Area (ha)	11.7	-	107,335	Post 2016
SWCJ	SWF263	SQID - Pumicestone catchment J	Imperv. Area (ha)	9.8	-	129,424	Post 2016
SWCK	SWF264	Wetland - Caloundra West catchment G	Area (ha)	7.7	6,352,500	4,654,034	Post 2016
SWCK	SWF265	Wetland - Caloundra West catchment C	Area (ha)	2.4	1,951,125	1,977,965	2016
SWCK	SWF266	Wetland - Caloundra West catchment D	Area (ha)	0.8	680,625	686,470	Post 2016
SWCK	SWF267	Wetland - Caloundra West catchment E	Area (ha)	1.5	1,243,275	1,163,509	Compl eted
SWCK	SWF268	Wetland - Caloundra West catchment F	Area (ha)	1.6	1,352,175	1,279,859	Post 2016
SWCL	SWF269	Wetland - Duckholes Lamerough catchment H	Area (ha)	0.6	491,563	491,565	Post 2016
SWCL	SWF270	Subsurface Wetland - Duckholes Lamerough catchment I	Area (ha)	0.3	294,938	135,702	Post 2016
SWCL	SWF271	Wetland - Duckholes Lamerough catchment K	Area (ha)	0.4	393,250	294,939	Post 2016
SWCL	SWF272	Wetland - Duckholes Lamerough catchment L	Area (ha)	2.2	1,966,250	1,966,260	Post 2016
SWCL	SWF273	Subsurface Wetland - Duckholes Lamerough catchment La	Area (ha)	0.3	294,938	135,702	Post 2016
SWCL	SWF274	Wetland - Duckholes Lamerough catchment O	Area (ha)	0.3	294,938	393,252	Post 2016
SWCL	SWF275	Wetland - Duckholes Lamerough catchment S	Area (ha)	1.0	884,813	884,817	Post 2016
SWCL	SWF276	Subsurface Wetland - Duckholes Lamerough catchment Sa	Area (ha)	0.2	196,625	90,468	Post 2016
SWCL	SWF277	Wetland - Duckholes Lamerough catchment DC	Area (ha)	1.2	1,081,438	1,081,443	Post 2016
SWCM	SWF278	SQID - Kings Beach catchment A	Imperv. Area (ha)	2.9	-	101,472	Post 2016
SWCM	SWF279	SQID - Kings Beach catchment B	Imperv. Area (ha)	3.9	-	133,980	Post 2016
SWCM	SWF280	SQID - Kings Beach catchment C	Imperv. Area (ha)	5.7	-	197,712	Post 2016
SWCM	SWF281	SQID - Kings Beach catchment D	Imperv. Area (ha)	6.8	-	236,231	Post 2016
SWCM	SWF282	SQID - Kings Beach catchment E	Imperv. Area (ha)	10.8	-	374,429	Post 2016
SWCM	SWF283	SQID - Kings Beach catchment F	Imperv. Area (ha)	8.9	-	306,410	Post 2016