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EXECUTIVE SUMMARY...

Stormwater runoff from developed areas has the potential to cause a wide range of impacts on downstream waterways. If managed incorrectly, not only does it increase the likelihood of regional flooding, it also has the potential to transport high pollutant loads directly to rivers, streams and wetlands. This can have a variety of effects on public health and safety, local and regional infrastructure, and the ecological health and recreational amenity of waterways.

The purpose of the Caboolture Shire Council Urban Stormwater Management Strategy is to provide an understanding of the issues of urban stormwater and waterway management, and to provide Council with a comprehensive list of actions required to achieve appropriate stormwater management throughout the Shire.

Chapter 2 of this Strategy describes the general issues associated with urban stormwater management, the implications this has on the local environment and a description of modern stormwater management measures currently being promoted through legislation and national and regional strategies. Chapter 3 expands further on the relevant legislation and strategies, as well as outlining Council's intended approach to future waterway-related planning exercises.

Chapter 4 of the Strategy, the critical chapter of the document, is the Action Plan. This chapter describes 61 Actions for Council to undertake to allow it to meet statutory compliance, as well as engineering, environmental and social requirements related to stormwater management. The actions have been developed through extensive consultation with stakeholders, and have been grouped into four general action areas. These are:

1. Manage Stormwater Quantity.
2. Improve Stormwater Quality.
3. Maintain Stormwater Systems.
4. Preserve and Manage Waterway Health and Amenity.

The Actions have been prioritised, and assigned recommended timings and responsible units within Council. The successful completion of these Actions is dependent on adequate resources being available to the various units within Council.

It is recommended that internal reports on the progress of the implementation of the Strategy be undertaken every 6 months for the next 2 years. This Strategy should then be reviewed and updated at the completion of this initial 2 year period.

1.0 INTRODUCTION AND SCOPE

The management of urban stormwater has recently become recognised as a complex problem facing Local Governments. Historically, stormwater has been managed so that it is conveyed as quickly as possible to local gullies and waterways to reduce local flooding. It is now being recognised and accepted that this approach is contributing to both the increased likelihood of regional flooding as well as the degradation of water quality and the health of waterways.

The Caboolture Shire Council Corporate Plan 2001 – 2004 adopts the vision that the Shire be “...a vibrant and attractive place... where innovation and lifestyle really count”. The waterways of the Shire play an important role in assisting Council achieve this vision. They provide economic and social benefits to the region by supporting the local fishing, aquaculture, agriculture, commercial and tourism industries as well as providing residents with drinking water. Waterways also provide residents the opportunity to pursue a range of recreational activities common to the South East Queensland Region (eg. swimming, fishing, boating). As awareness increases of the problems associated with stormwater and its effects on the regional waterways, the impetus is becoming increasingly placed on Council to ensure that all potential impacts of stormwater runoff are appropriately managed in the future.

A more integrated approach to stormwater management is being taken throughout Australia. This approach maintains the traditional focus on preventing adverse flooding, but also includes protecting the ecological health of the surrounding waterways as well as maintaining their ability to provide the public with the appropriate recreational, commercial and lifestyle opportunities.

The need for Local Governments to adopt this approach is reflected in various pieces of State Government Legislation as well as national and regional strategies. These include the *Environmental Protection Act 1994*, the *Environmental Protection (Water) Policy 1997* (EPP Water) and the *Integrated Planning Act 1997*, the *National Water Quality Management Strategy* and the *South East Queensland Regional Water Quality Management Strategy* (SEQRWQMS).

In order to meet these requirements and to improve the overall stormwater management within areas under Council control (internally and externally), Council’s *Urban Stormwater Management Strategy* has been developed. This Strategy has been specifically designed to:

- Address existing National, Regional and Local Strategies and Studies. In particular, acknowledge the recent commitments made by Council to the South East Queensland Regional Water Quality Management Strategy (SEQRWQMS);
- Fulfil statutory requirements of the *Environmental Protection Act 1994*;
- Address the strategic issues outlined in Council’s Corporate Plan;
- Coordinate the operations of the various areas of Council to achieve an integrated approach to the management of urban stormwater quantity and quality.
- Ensure stormwater management is adequately addressed in Council’s Planning Scheme Review;
- Address the growing community awareness of stormwater and catchment management issues; and
- Communicate Council’s approach to urban stormwater management to key stakeholders to facilitate improved management of water quality throughout the Shire.

Various legislation and documents require Council to adequately minimise the impacts of stormwater on the regions waterways. In particular, the South East Queensland Regional Water Quality Management Strategy, which Council has recently made a formal commitment to, adopts the vision that:

“South East Queensland’s catchments and waterways will, by 2020, be healthy living ecosystems supporting the livelihoods and lifestyles of people in South East Queensland, and will be managed through collaboration between community, government and industry”. (Ref, SEQRWQMS, 2001).

The following Aim and Objectives for this Strategy have been prepared in order to support this vision.

Aim

To ensure that the environmental values for the Shire’s waterways (consistent with SEQRWQMS findings and community aspirations) are protected, and an adequate level of flood mitigation provided, through appropriate urban stormwater management practices and future land use allocations.

Objectives

To produce a set of practical and coordinated actions that provide for the improved and integrated management of stormwater quantity and quality in existing and future urban and residential areas in the entire Shire by providing appropriate mechanisms within Council for:

- Improving the planning and design of future stormwater systems for residential areas;
- Improving construction and maintenance practices throughout the Shire;
- Improving community awareness and practices to decrease the amount of pollutants entering stormwater; and
- Where necessary, upgrading the existing stormwater system in urban/residential areas.

Through consultation with various internal and external stakeholders, the general issues that need to be addressed by the Strategy were identified. These are summarised in *Table 1.1* below.

TABLE 1.1		STORMWATER MANAGEMENT ISSUES IDENTIFIED BY STAKEHOLDERS	
ISSUES			
<ul style="list-style-type: none"> • Adequate surface drainage and flood mitigation • Improved erosion and sediment control practices • Decreased pollutant transport • Managing acid sulphate soils • The adoption of and compliance with best stormwater management practices for all operations in the Shire 	<ul style="list-style-type: none"> • Protection of in stream ecological and hydrodynamic processes • Developing and implementing waterway management plans • Enhanced aesthetic and recreational opportunities associated with stormwater systems, waterways and facilities • Monitoring of stormwater management activities 	<ul style="list-style-type: none"> • Maintenance and management of stormwater management devices • Funding of stormwater management activities • Community/Industry/ Council awareness, education and ultimately action • Reuse and multiple use philosophy through water sensitive urban design 	

2.0 BACKGROUND

2.1 Overview of Urban Stormwater Issues

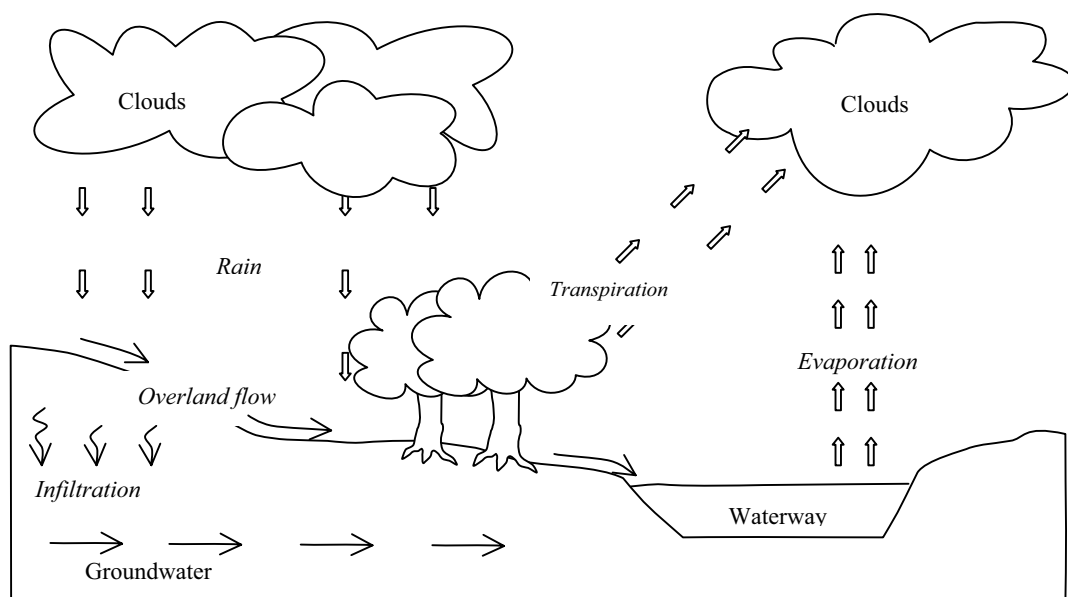
Definition of stormwater

Water flowing over land and into waterways during and following rainfall is called stormwater. In developed areas, stormwater is conveyed via a system of pipes and open channels to natural waterways to reduce the risk of localised flooding. For the purpose of this document, stormwater is defined as **all overland flow and other materials entering the stormwater system and ultimately the waterways.**

The impacts of urbanisation and land clearing on stormwater quantity

In an undeveloped environment, a catchment consists of a variety of vegetative covers and natural soils. In this environment, during a rainfall event, the majority of the rainfall will be “absorbed” by the environment through the processes of *infiltration* through the soils into the groundwater, and *evapotranspiration* (*transpiration* via vegetation and *evaporation*) into the atmosphere. This process is referred to as the Hydrologic Cycle. A simplified representation of this cycle is illustrated in *Figure 2.1*.

FIGURE 2.1: THE HYDROLOGIC CYCLE



The extent of these losses depicted above is dependent on the local climate, soil characteristics, land use, topography and vegetative cover. As a catchment is developed, the natural soils are covered by surfaces which do not allow water to be absorbed (impervious surfaces) such as roads, concrete and buildings, and the natural vegetation is replaced. Ongoing development therefore results in much higher volumes of stormwater being discharged directly to local waterways, as well as accelerating overland flow velocities.

Increase in stormwater volume and velocity via urbanisation poses a wide range of impacts on the Shire. These include:

- Increased magnitude of downstream *flood events*;
- Increased frequency of *floodplain inundation*;

- Higher velocities within waterways and overland flow paths, leading to an increase in *gully and streambank erosion*;
- Significantly *altered course* of waterways; and
- *Decreased baseflows* in waterways during dry periods due to decreased infiltration and subsequently lower groundwater discharges.

These changes in streamflow have further potential negative impacts on:

- Public health and safety;
- Infrastructure;
- Riparian and aquatic vegetation;
- Aquatic ecosystems; and
- Tidal conditions in estuaries.

The impacts of urbanisation and land clearing on stormwater quality

The natural processes of evapotranspiration and infiltration, apart from controlling the quantity of stormwater entering waterways, also assist in controlling stormwater quality. In an undeveloped catchment, stormwater contains low concentrations of various substances such as suspended solids (sediment), nutrients (Phosphorus and nitrogen) and faecal coliforms. Whilst these substances are essential for the function of aquatic ecosystems when at the correct concentrations, they are considered pollutants when present in excessive amounts. However, everyday chemical, physical and biological processes, such as evapotranspiration and infiltration, interact to recycle most materials found in stormwater run-off. This helps keep the concentrations of these 'pollutants' at natural levels. Therefore, as natural surfaces, channels and waterways are replaced by impervious surfaces, the ability of the natural environment to remove these potential pollutants is lost. In addition to this, as urbanisation increases, so does human presence and activity. The huge variety of land uses associated with this urbanisation potentially results in the added generation of a wide range of pollutants.

The potential pollutants found in stormwater, possible sources, and their impacts are summarised in *Table 2.1*. A comparison of the level of certain pollutants typically found in stormwater discharges from undeveloped and urban catchments is shown in *Table 2.2*. These levels are compared to average pollutant levels in sewage effluent from Caboolture Shire sewage treatment plants, which have been calculated from Cabwater effluent monitoring data in the 50 weeks to 28 November 2001.

The general increase in the quantity of stormwater due to urban development combines with this increase in the amount of pollutants present in stormwater to result in large loads of pollutants being discharged to waterways each year. An estimation of the annual loads of suspended solids and nutrients discharged in stormwater, and a comparison to those in sewage, is shown in *Table 2.3*.

Whilst the annual pollutant loads for stormwater shown in *Table 2.3* are based on very crude calculations, they provide an indication of the potential impacts associated with the discharge of stormwater to local and regional water quality. Sediment in particular poses a huge problem to the health and amenity of the Shire's waterways. It should however be realised that these figures only represent residential and urban areas, which comprise 14% of the total Shire area. Given that rural areas also have the potential to contribute significant amounts of stormwater pollution, the total loads of stormwater pollution within the Shire would be much higher than the figures given.

TABLE 2.1 POTENTIAL SOURCES AND IMPACTS OF POLLUTANTS TYPICALLY FOUND IN URBAN STORMWATER		
POLLUTANT	SOURCE	IMPACTS
Suspended Solids and Sediments	<ul style="list-style-type: none"> Erosion due to land clearing Pavement and vehicle wear Wind resuspension Poor construction site practices Organic matter Car washing 	<ul style="list-style-type: none"> Smothers seagrass and other aquatic habitats and life forms Reduces light penetration, reducing aquatic plant growth Fills holes in streams which act as habitats Fills wetlands Damages drainage infrastructure Impedes navigability of waterways
Solid Waste (Litter, debris, domestic and industrial waste)	<ul style="list-style-type: none"> Households Roadsides Commercial and industrial properties Construction sites 	<ul style="list-style-type: none"> Damages wildlife, with potentially lethal effects. Reduces visual and recreational amenity Possible illness in humans Reduces flow capacity
Nutrients (Nitrogen and Phosphorus)	<ul style="list-style-type: none"> Organic matter Fertilisers Release from sediments Sewer overflows/On-site sewage treatment plants Animal/bird faeces Detergents (car washing) Atmospheric deposition 	<ul style="list-style-type: none"> Increases algal blooms (eg Lyngbya) Encourages excessive aquatic plant and weed growth
Micro-organisms (Faecal coliforms)	<ul style="list-style-type: none"> Animal/bird faeces Sewer overflows/On-site sewage treatment plants 	<ul style="list-style-type: none"> Illness in humans Poisoning of shellfish
Trace Metals	<ul style="list-style-type: none"> Vehicle exhausts/wear Release from sediments Pesticides 	<ul style="list-style-type: none"> Toxic to humans and animals Bioaccumulates in the food chain
Toxic Organics	<ul style="list-style-type: none"> Pesticides Herbicides Sewer overflows/On-site sewage treatment plants 	<ul style="list-style-type: none"> Lethal to animals and plants Bioaccumulates in the food chain
Oxygen Demanding Substances	<ul style="list-style-type: none"> Organic matter decay Sewer overflows/On-site sewage treatment plants Animal/bird faeces 	<ul style="list-style-type: none"> Depletes oxygen in waterways, which is vital for fish, invertebrate and plant life
Oils and Surfactants	<ul style="list-style-type: none"> Vehicle leaks Car washing Spills/illegal discharge 	<ul style="list-style-type: none"> Reduces visual and recreational amenity Toxic to aquatic organisms
Increased Water Temperature	<ul style="list-style-type: none"> Runoff from warm impervious surfaces Removal of riparian vegetation 	<ul style="list-style-type: none"> Toxic to fish and invertebrates Increases algal blooms (eg blue-green algae) Reduces oxygen

concentrations

POLLUTANT	Stormwater Wet Weather Event Mean Concentration ¹		CSC Sewage Effluent
	Undeveloped Catchment	Urban Catchment	Mean Concentration ²
Suspended Solids (mg/L)	1 – 140	20 – 1 000	4.8
Total Phosphorus (mg/L)	0.01 - 0.42	0.12 – 1.6	0.75
Total Nitrogen (mg/L)	0.27 - 0.66	0.6 – 8.6	4.2
Faecal Coliforms (cfu/100mL)	260 – 4 000	4 000 – 200 000	340
Trace Metals (mg/L)			
Cadmium		0.01 – 0.09	N/A
Chromium		0.006 – 0.025	N/A
Copper		0.027 – 0.094	N/A
Lead		0.19 – 0.53	N/A
Nickel		0.014 – 0.025	N/A
Zinc		0.27 – 1.10	N/A

N/A – Not Available

1. Ref. NSW EPA, 1997.

2. Calculated from Cabwater effluent monitoring data, 50 weeks to 28 November 2001.

POLLUTANT	ANNUAL LOAD (TONNES/YR)	
	Urban Stormwater ¹	Treated Sewage ²
Suspended Solids	8, 200	45
Total Nitrogen	146	35
Total Phosphorus	22	6

1. Calculated using loading rates (kg/ha/yr) given in SEQRWQMS (2001) for Suburban and High Density Urban land uses, and CSC Strategic Plan land use areas. For the purposes of these calculations, rural residential and residential areas were considered suburban land uses, and industrial and commercial areas were considered high-density urban areas.

2. Calculated from mean concentrations in Table 2.2 and total flows from each STP for 2000/1 financial year.

2.2 Local Issues

The combination of Caboolture's sub-tropical climate and geography provides the potential for regional and localised flooding throughout the region. With a forecast growth rate of approximately 3% over the next 10 years, this potential for flooding will be greatly increased. Therefore sufficient planning is required on a catchment basis to ensure adequate local and regional flood mitigation is undertaken in developing areas.

The need to better manage water quality and waterways in the Shire is imperative and is also related to the values and uses associated with the receiving waters and the creeks themselves. The SEQRWQMS has identified draft environmental values for the Shire's waterways. These are outlined in Appendix A. All the waterways in the Shire are highly important to the Shire and its residents for their economic and social benefits. The majority of stormwater in the Shire is either drained to **local creeks** throughout the Shire, the ecologically sensitive and protected **Pumicestone Passage and Deception Bay** or to the drinking water supply catchments of the **Caboolture River or the Stanley River/Somerset Dam**.

The preservation of waterways used as drinking water supplies provides obvious commercial and public benefits by reducing the requirement for drinking water treatment and reducing public health risk. Healthy waterways also provide economic and social benefits to the local fishing, aquaculture, agriculture, grazing, commercial and tourism industries.

The South East Queensland Regional Water Quality Management Strategy (SEQRWQMS) provides annual economic values of activities benefiting from good water quality in the Moreton Bay Catchment Region. Whilst it is realised that these figures represent the entire Moreton Bay, and that these figures would obviously be significantly less when applied to Pumicestone Passage and Deception Bay, they provide an indication of the general worth of waterways to the Shire.

These figures are as follows:

- commercial fishing - \$33 million
- recreational fishing - \$200 million
- aquaculture - \$17 million
- water-based tourism - \$5 million

(Ref SEQRWQMS 2001)

The South East Queensland Regional Water Quality Management Strategy has also been undertaking an ongoing ecological health assessment of all major estuarine and freshwater ecosystems in South East Queensland. As a result of this monitoring program, a report card has been produced which provides a grading of the waterways. This is based on the following criteria:

- A = excellent
- B = good
- C = fair
- D = poor
- F = fail

The results for waterways in the Caboolture Shire are summarised in *Tables 2.4* and *2.5* below.

TABLE 2.4		ECOSYSTEM HEALTH MONITORING RESULTS FOR TIDAL WATERWAYS	
Tidal Waterway	2001 Grade	Report Card	
Pumicestone Passage	B	Extensive seagrass and mangroves. Black water runoff.	
Caboolture River estuary	C	High level of nutrient processing by phytoplankton. Persistent algal blooms in upper reaches. Seagrass loss from rivermouth.	
Northern Deception Bay	D-	Summer Lyngbya blooms cover important seagrass meadows and mangrove roots. Nuisance macroalgae present.	
Southern Deception Bay	D	Elevated turbidity, nutrients and phytoplankton. Impacted by flood runoff. No seagrass recovery. Seagrass loss.	

(Ref: SEQRWQMS 2001)

TABLE 2.5		ECOSYSTEM HEALTH MONITORING RESULTS FOR FRESH WATERWAYS	
Fresh Waterway	2001 Grade	Report Card	
Caboolture-Pumicestone	C	Headwaters have good riparian vegetation. Moderate riparian vegetation along lower reaches. Water murky due to suspended sediments. Aquatic life affected by acidity when acid sulphate soils exposed.	
Stanley-Kilcoy	B-	Upland streams in good condition with high diversity. Riparian vegetation good in some lowland areas. Other areas have degraded banks in riparian zones. Water generally clear with low sediment/nutrient levels. Fish communities affected by dams downstream.	

(Ref: SEQRWQMS 2001)

As can be seen from this, the major waterways in the Caboolture Shire are generally in a fair to poor condition. The ongoing Lyngbya blooms in Deception Bay, as well as the excessive sediment and nitrogen levels in the Caboolture River and Deception Bay can all be mainly attributed to stormwater runoff (Ref SEQRWQMS 2001).

2.3 Modern Urban Stormwater Management

Traditionally, the focus of managing urban stormwater has been to collect and convey the runoff as quickly as possible away from developed areas to local waterways. From the issues outlined in the sections above, it can be seen that this approach potentially poses a wide array of impacts not only on the environment, but also on public health and amenity and local and regional infrastructure. Therefore, as the ultimate authority responsible for stormwater management within its boundaries, Council must ensure that appropriate practices to minimise these impacts are implemented by all internal and external operators within its control.

The South East Queensland Regional Water Quality Management Strategy outlines priority management actions for stormwater management in the Pumicestone Region. These can be summarised as follows:

TABLE 2.6		PRIORITY STORMWATER MANAGEMENT ACTIONS FOR PUMICESTONE REGION		
Rural Areas		Established Urban Areas	Developing Urban Areas	
1. Rehabilitate riparian areas.	2. Use best management land use practices.	3. Use grass filter strips.	1. Restore riparian vegetation.	2. Improve land management practices.
			3. Retrofit natural channel design and stormwater management measures.	1. Use "soft" engineering approaches
				2. Use good land use management practices
				3. Use additional "hard" engineering approaches where warranted.

(Ref: SEQRWQMS 2001)

The objectives of this Strategy presented in Chapter 1.0 outline four general areas in which Council needs to concentrate its efforts to achieve improved and integrated stormwater management. These address the priority actions listed above, and are as follows:

- Improving the planning and design of future developments;
- Improving construction and maintenance practices;
- Increasing community and industry awareness and practices; and
- Upgrading existing stormwater systems.

Improving the planning and design of future developments

The most effective way for Council to achieve this is to facilitate the process of integrated planning for all development applications, and to encourage the adoption of the principles of Water Sensitive Urban Design (WSUD).

Integrated planning is promoted through the *Integrated Planning Act 1997* (IPA). It ensures that relevant Council staff from all disciplines (eg. urban and open space planning, civil and environmental engineering, ecology and environment and maintenance) are consulted in the initial phases of a development assessment. This will ensure that all flooding and water quality management issues associated with the development are adequately addressed by the developer's planning and design team.

The principles of Water Sensitive Urban Design are now being encouraged for new developments throughout Australia. WSUD involves the utilisation, where possible, of natural flow paths and drainage measures with non-impervious surfaces as well as stormwater re-use facilities ("soft" engineering principles). These systems are able to utilise natural processes and storage and reuse principles to reduce local and regional flooding and improve the quality of stormwater discharging from the site. The adoption of these design principles reduces the need for expensive, high maintenance 'end-of-pipe' ("hard") engineering structures aimed at treating stormwater quality.

The extent to which these measures and principles can be adopted will be limited by physical constraints of the development site such as size and the natural contours. In certain cases, 'end-of-pipe' solutions may be the only feasible pollution treatment available. However, provided that the integrated planning process described above is undertaken, then the extent of stormwater treatment required can be decided, and then the most cost effective and practical system can be designed.

Another important aspect that needs to be addressed in the planning and design of stormwater systems is the point of discharge. Inappropriate points of discharge can cause problems with visual amenity, bank erosion and pollution. Therefore, viable alternatives to discharges across beaches, into waters with poor circulation or directly onto unstable creek banks should be considered.

In order to facilitate the integrated planning process, Council needs to ensure that relevant Codes, Policies and Guidelines relating to stormwater management are developed in the process of reviewing the Planning Scheme. These Codes and Policies should reflect environmental values and water quality objectives for local waterways, so that water quality as an issue is squarely addressed when land use is proposed to be changed. Council also needs to produce catchment based stormwater management plans which identify specific future stormwater management requirements for the Shire's waterways. The scope and purpose of these plans are discussed in Section 3.5.

Improving construction and maintenance practices

Poor on-site practices on construction sites can often lead to large amounts of sediment and mud being transported off site during rainfall events. Apart from the impacts outlined in *Table 2.1* this can also lead to increased expenditure for Council for the removal of excess sediment from

roads, canals and stormwater infrastructure. The transport of this material off site can be minimised and/or avoided by simple site planning and the adoption of various measures. Apart from reducing impacts on the environment and Council infrastructure, adoption of these practices can also provide a range of other benefits such as improved wet weather working conditions and reduced stockpile losses and clean up costs. More information regarding this can be found in Council's *Best Practice Guidelines for the Control of Stormwater Pollution from Building Sites*.

Council must therefore encourage all external and internal construction operators and land managers to adopt best practice site management through ongoing education, monitoring and enforcement.

Increasing community and industry awareness and practices

The most effective method of stormwater pollution control is to prevent the pollutants from ever entering the stormwater system. Just as construction sites can prevent the transport of pollution to the stormwater system by adopting best practice, so too can commercial and industrial operators and the general public. Council already produces educational material aimed at raising the awareness of residents encouraging them to better manage their daily activities so as to reduce the amounts of pollutants entering the stormwater system. This educational program must continue to be expanded to ensure an increasing awareness amongst the general public. Commercial and licensed premises should also be targeted by future education and enforcement campaigns.

Upgrading existing stormwater systems

In developed areas of the Shire, there may be a necessity to upgrade the existing stormwater systems to incorporate treatment methods or more appropriate points of discharge. This could involve implementing any of the principles of WSUD mentioned above. In particular, opportunities often exist for the rehabilitation of constructed open drains to natural channels or wetland/pond systems. In many situations, physical constraints will make these options impractical. Therefore physical structures such as trash racks and GPTs may be necessary. Generally, this process of drain rehabilitation or retrofitting with end-of-pipe devices is extremely expensive. Therefore, whilst still important, it is seen as being a lower priority to the three management issues previously discussed.

3.0 CONTEXT OF THIS DOCUMENT

There are already numerous documents and legislation from a variety of sources in existence that address the issues of stormwater management. These all provide Local Governments with invaluable information and guidance in this area. However, a more specific document that addresses issues on a Shire-wide and strategic basis is required for Council, as other related documents do not give the detail needed to cover all issues or clearly describe the actions that are needed. The *Urban Stormwater Management Strategy* extracts relevant information and recommendations from significant documents, studies and legislation and determines specific and coordinated actions required to be undertaken by Caboolture Shire Council. These action statements are designed to adequately address these documents on a local basis, as well as coordinate all relevant operations within Council related to stormwater management.

In addition to these documents, Council's Corporate Plan 2001 – 2004 adopts the vision that the Shire be "...a vibrant and attractive place... where innovation and lifestyle really count". Various strategies within the Corporate Plan also promote the preservation of waterways, the identification of long term infrastructure and service requirements, and the economic development compatible with the Shire's environmental initiatives. This Strategy assists Council in addressing these requirements.

A summary of the overall context of the Strategy is shown in *Figure 3.1*.

3.1 National Context

Relevant national documents include:

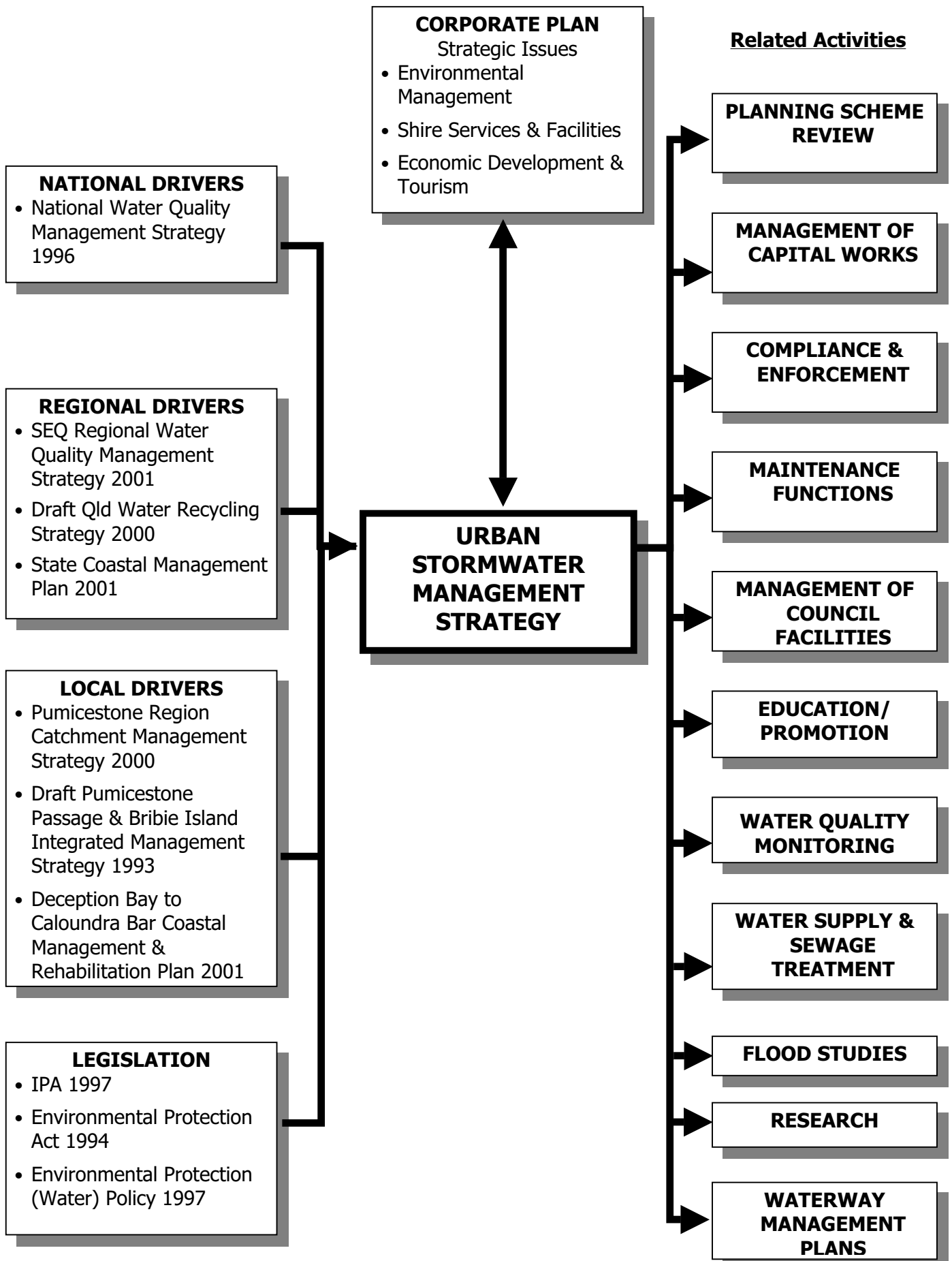
- The *National Water Quality Management Strategy*. This encompasses the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000*, the *Australian Guidelines for Water Quality Monitoring* and the *Guidelines for Urban Stormwater Management*. The first two documents provide direction for undertaking water quality monitoring programs and the assessment of the results, whilst the last document provides a national framework for managing urban stormwater.

3.2 Regional Context

Relevant regional documents include:

- The Draft *South East Queensland Regional Water Quality Management Strategy 2001*. This strategy has been prepared to provide good scientific information to decide values and objectives and management actions for water quality management in South East Queensland. Council has made a recent commitment to carry out the relevant actions recommended in this Strategy. In particular, there is a commitment to produce stormwater management plans.
- The *Stormwater Quality Control Guidelines for Local Government 1998* and the *Queensland Model Urban Stormwater Management Plan and Guidelines 1999*. These guidelines recommend approaches that local governments can use to manage stormwater quality to meet legislative requirements under the EPP Water.
- The *Queensland Water Recycling Strategy 2001*. This document proposes actions to promote the reuse of urban stormwater through the use of rainwater tanks, water sensitive urban design (WSUD) and waterharvesting.
- The *State Coastal Management Plan – Queensland's Coastal Policy 2001*. Establishes principles and policies for stormwater and land use management which will assist in the protection of Queensland's coast.

FIG 3.1: CONTEXT OF THE URBAN STORMWATER MANAGEMENT STRATEGY



3.3 Local Context

Relevant local documents include:

- The *Pumicestone Region Catchment Management Strategy 2000*. This document draws extensively from the 1993 Draft Integrated Management Strategy, and proposes specific actions for the implementation of better stormwater management as well as improved community awareness.
- The *Deception Bay to Caloundra Bar Coastal Management and Rehabilitation Plan 2001*. Provides specific recommendations for Council relating to stormwater management including the development of water quality objectives, improved erosion and sediment control practices, the retrofitting of stormwater quality improvement devices, and the development of catchment and stormwater management plans.
- The *Draft Pumicestone Passage, its catchment & Bribie Island Integrated Management Strategy 1993*. This report provides an assessment of the water quality in Pumicestone Passage, and recommends Best Management Practices for all land uses including urban stormwater.

3.4 Relevant Legislation

Relevant legislation includes:

- *Environmental Protection Act (1994)*. Places a legal duty on Council to prevent or minimise environmental harm.
- *Environmental Protection (Water) Policy (1997)*. A regulation of the *Environmental Protection Act*. Requires Councils to produce an urban stormwater quality management plan. Also defines specific offences for the contamination of stormwater.
- *Integrated Planning Act (1997)*. Facilitates the integrated planning process and provides a means for Council to place infrastructure charges for stormwater management systems and devices.

These Acts are discussed further in Appendix B.

3.5 Regional Approach to Stormwater Planning

The development of catchment based stormwater management plans will assist Council with the facilitation of the integrated planning process, and will help avoid the current problems associated with existing developed areas. Apart from being able to identify all future local stormwater management requirements, they will also provide a means to identify opportunities for the use of sub-catchment or regional treatment facilities in developing catchments. This approach of utilising regional facilities provides numerous benefits to the entire community. Not only will it ensure that appropriate stormwater management is practised for all future developments, it will reduce the number of treatment facilities required, reducing the capital costs for developers and maintenance costs for Council.

The land and capital required for these facilities needs to be nominated as early as possible so that it can be purchased or allocated as part of developer contributions. In consideration of this the need to rapidly commence stormwater management planning from a cost benefit perspective is paramount. In addition to this, through the South East Queensland Regional Water Quality Management Strategy, Council has a commitment to implement catchment management plans for the entire Shire by 2007.

Catchment and Stormwater Management Plans should be initially produced where urban growth is expected to be substantial, as this will also ensure maximum developer contribution as well as the best overall ecological, economical and social solution for the community and the natural environment.

A variety of stormwater management planning frameworks have been developed for use. The most commonly used framework involves the development of a catchment management plan, then a municipal stormwater management plan and consolidated through the use of local stormwater investigations or plans to address specific local issues. The general scope of these plans can be summarised as follows:

- *Catchment Management Plans* evaluate the state of the catchment with respect to waterway-related issues and produce an action plan to manage high priority issues.
- *Stormwater Management Plans* recommend stormwater management measures for developing areas.
- *Local Stormwater Management Plans* outline necessary requirements to resolve specific water quantity or quality problems on a local scale in highly urbanised catchments.

However, it is recommended that the process of stormwater management planning be rationalised in order to avoid duplication of planning effort and to reduce costs. This would result in the production of one document, titled a **Waterway Management Plan (WMP)**. A possible conceptual model for these Waterway Management Plans is shown in *Figure 3.2*. The advantages of adopting this approach include:

- An integrated community consultation program.
- A more cost efficient process, as overlap between the three levels of plans would be removed.
- More integrated outcomes which address the environmental, social and engineering considerations.
- Reduced number of waterway related documents, thereby helping users of documents, such as development assessment staff and development consultants.

As can be seen from *Figure 3.2*, one of the components of the WMP is the production of Infrastructure Charges Plans (ICPs). The concept of Infrastructure Charges Plans is discussed further in Appendix B. However, these WMPs must identify all local and regional stormwater treatment facilities required for new developments, as well any land required for these facilities and the overall management of the waterway. Appropriate charges can then be placed on developers to cover the costs of these facilities. It is also possible to place charges on existing landowners to fund improvements to the general catchment if necessary. It is recommended that Council adopt a general Infrastructure Charges Plan for stormwater management infrastructure. This Plan would initially outline the purpose and the means for collection of infrastructure charges for stormwater management, and as the WMPs are completed, the information from these plans could be progressively inserted into the ICP. This is illustrated in *Figure 3.3*.

It is also recommended that the WMPs address the issue of future land zoning/use. As discussed in section 2.1, the conversion of land from bushland to rural and rural to urban will typically involve an increase in magnitude of loadings of pollutants on waterways. Whilst the potential for this pollutant transport can be greatly reduced by the utilisation of WSUD and 'best practice' engineering solutions, the problem cannot be totally alleviated. Therefore the WMPs should recommend what land within the catchment is unsuitable for future development given the characteristics of the land and the current pressures on the waterways, as well as what parcels of land within future developments are to be allocated for stormwater management systems or riparian protection.

FIGURE 3.2: CONCEPTUAL MODEL FOR WATERWAY MANAGEMENT PLANS

CONTENTS OF A WATERWAY MANAGEMENT PLAN

MAJOR SUPPORTING INVESTIGATIONS/PROGRAMS

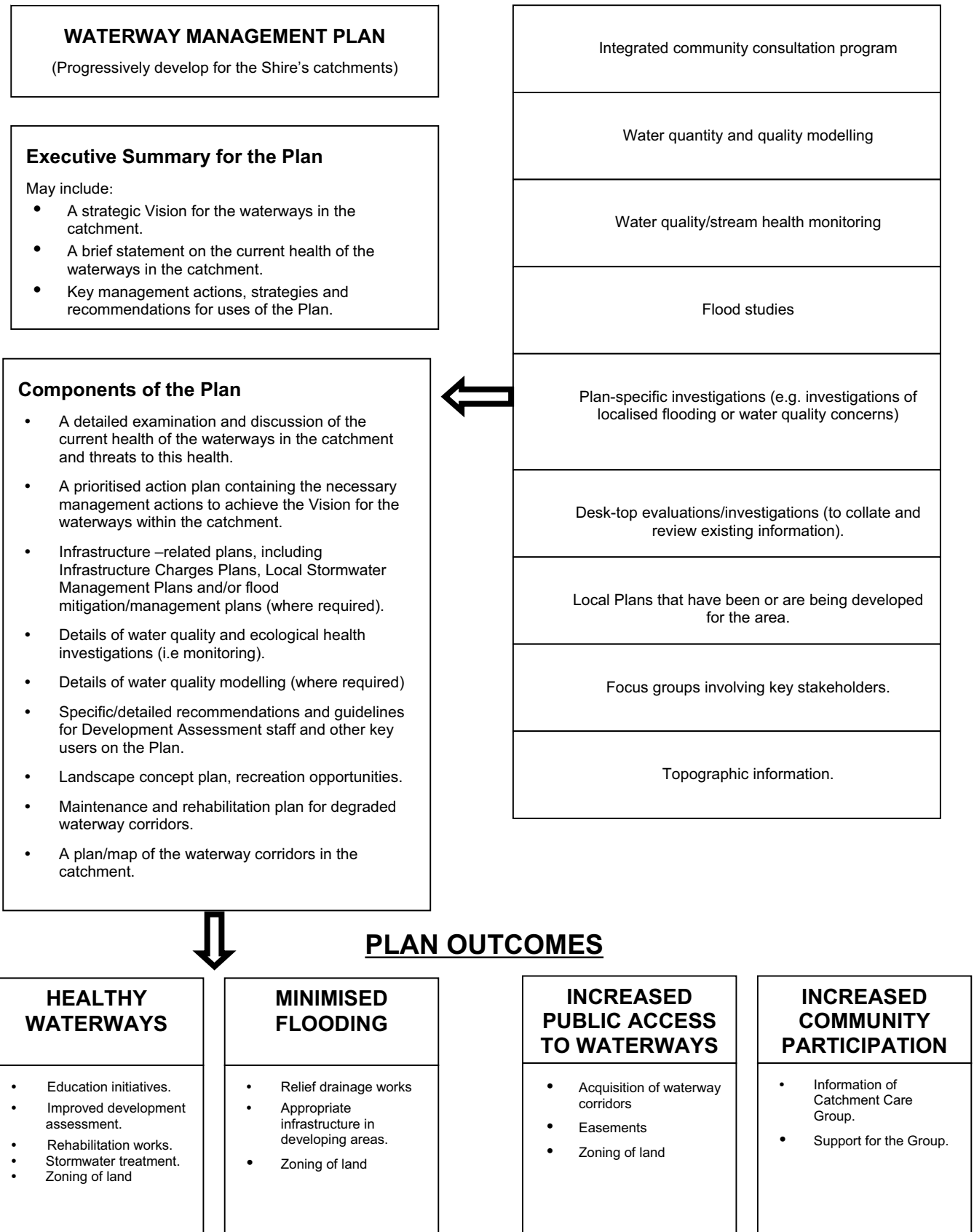
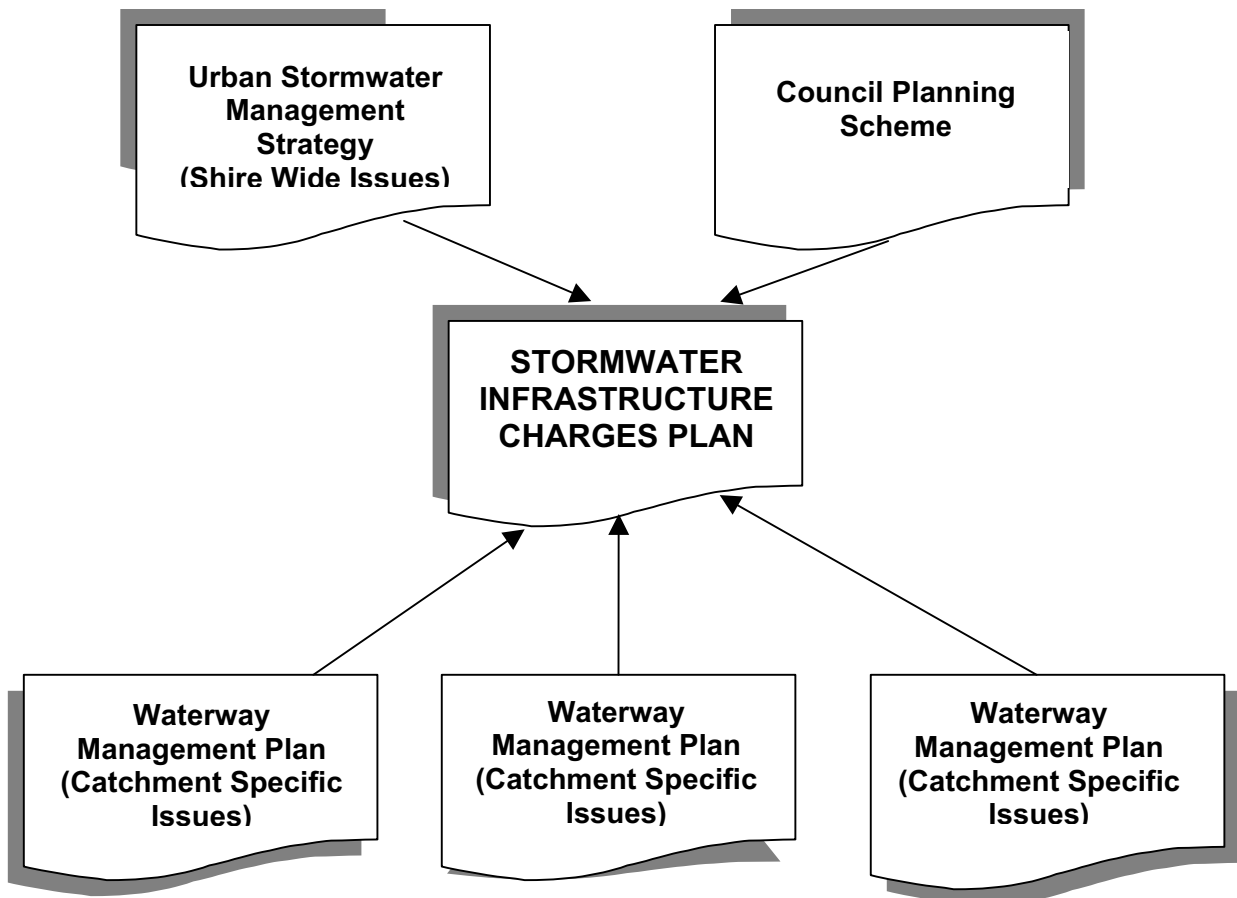


FIGURE 3.3: CONTEXT OF THE STORMWATER INFRASTRUCTURE CHARGES PLAN



4.0 ACTION PLAN

This section of the Strategy outlines the specific actions that Council will undertake to achieve the aim and objectives and address the issues specified in Section 2.3. These have been prepared through consultation with internal and external stakeholders, and have been grouped into 4 broad action plan areas listed below:

1. Manage Stormwater Quantity.
2. Improve Stormwater Quality.
3. Maintain Stormwater Systems.
4. Preserve and Manage Waterway Health and Amenity.

These actions have been prioritised as high, medium or low, allocated a desired timeframe for completion, and been assigned to the appropriate unit within Council. **It should be noted that these actions have not currently been resourced, but merely identified by stakeholders as being necessary, with a desired timeframe included. The ability to meet these timeframes is dependent on adequate allocation of funding and personnel resources.** The units that have been assigned responsibilities through this Strategy are:

- Transport Planning (T.P.)
- Planning & Strategy (P & S)
- Water & Sewerage Planning (W.A.S.P.)
- Information Services (I.S.)
- Compliance Services (C.S)
- Corporate Development (C.D)
- Plant & Fleet (P & F)
- Public Affairs, Economic Development & Tourism (P.A.E.D.T)
- Community Services (Cy.S.)
- Works
- Cabwater
- Facilities

4.1 Manage Stormwater Quantity

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
1. Continue to monitor and investigate localised flooding complaints and take appropriate remedial action.	Ongoing	High	T.P.	Works
2. Continue to develop and implement local Stormwater Management Plans in situations where serious sub-regional flooding issues are identified.	Ongoing	High	T.P.	
3. Refine Council's Floodplain Management Policy consistent with various other policy documents.	June 2002	High	T.P	P & S
4. Develop a policy for hydraulic requirements for inclusion in the Planning Scheme Review.	June 2002	High	T.P.	P & S
5. Continue to undertake detailed flood studies on waterways within the Shire.	Ongoing	High	T.P.	P & S
6. Develop practical guidelines for stormwater management issues for new developments to support relevant Codes and Planning Scheme Policies consistent with Design Specifications.	Dec 2002	Medium	T.P.	
7. Monitor progress of the Queensland Water Recycling Strategy 2001 and the development of Codes, Policies and Guidelines relating to use of rainwater tanks and stormwater recycling. Include this information into above Guidelines where appropriate.	Ongoing	Medium	W.A.S.P	P & S T.P.

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
8. Promote within the Development Industry innovative development designs with respect to stormwater management, reuse and recycling throughout the region.	Ongoing	Medium - Low	T.P. P & S	
9. Incorporate future Flood Studies into Waterway Management Planning processes.	2002	High	P & S T.P.	
10. Liaise with Information Services to ensure the incorporation of priority flood information into the GIS System.	2002	Medium	T.P.	I.S.

4.2 Improve Stormwater Quality

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
Development Assessment				
1. Review existing subdivision Policies relating to stormwater management (eg. Subdivision – Construction of Open Drains and Parkland Stormwater Drainage) and develop further policies as part of Council's Planning Scheme Review, including riparian vegetation protection.	June 2002	High	T.P. P & S	Works
2. Develop practical guidelines for stormwater management issues for new developments to support relevant Codes and Planning Scheme Policies consistent with Design Specifications. These guidelines to address all stormwater management issues (eg. water sensitive urban design, car washing and bin storage areas, stormwater quality improvement device selection and maintenance, site based stormwater management plans, soil type and dispersion, and erosion and sediment control).	Dec 2002	Medium	P & S T.P.	C.S.
3. Incorporate requirements of the proposed State Planning Policy on Acid Sulphate Soils into Council's Planning Scheme.	June 2002	High	P & S	
4. Foster further cooperation with developers regarding best stormwater management practices by: <ul style="list-style-type: none"> Providing educational material and further educational programs for developers and contractors operating in the Shire regarding stormwater management and erosion and sediment control as well as legislative requirements. Promoting within the Development Industry innovative development designs with respect to stormwater management throughout the region. 	Ongoing	Medium	P & S T.P. P & S	T.P. C.S.
5. Incorporate erosion hazard mapping data into planning requirements by the development of an Erosion and Sediment Control Code.	June 2003	High	P & S	T.P.
6. Continue to undertake compliance monitoring of stormwater/E&SC/ASS related development conditions and Codes and Policy during the on-maintenance period.	Ongoing	Medium	P & S	T.P. C.S.

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
Construction/Building				
7. Provide further educational programs for builders operating in the Shire regarding stormwater management and erosion and sediment control as well as legislative requirements.	Ongoing	Medium	P & S. C.S.	
8. Continue to disseminate Council's Best Practice Guidelines for the Control of Stormwater Pollution from Building Sites to builders and private building certifiers operating within the Shire.	Ongoing	High	C.S.	P & S
9. Undertake and promote through the local media regular advertised enforcement blitzes on compliance with the EPP (Water) on building sites within the Shire	Ongoing	Medium	C.S.	PAEDT P & S
10. Investigate ways to reduce erosion and sediment transport from building sites/driveways.	Dec 2002	Medium	P & S C.S.	T.P.
Council Operations				
11. Provide more detailed Erosion and Sediment Control (E&SC) details for Council designs by: <ul style="list-style-type: none"> Developing a generic detailed E&SC Plan for all design works. Ensuring that more site specific E&SC Plans are developed from the generic plan for certain works, and providing subsequent quantities for all erosion control measures. Ensure that all issues regarding the implementation of E&SC issues are adequately addressed at joint Design/Works pre-start meetings. 	March 2002 Ongoing Ongoing	High High High	T.P. T.P. Works	P & S T.P.
12. Undertake erosion and sediment control works on construction and maintenance sites internally through the procedures mentioned above.	Dec 2002	Medium	Works P & F	T.P
13. Continue to provide all new Council staff with environmental and stormwater education during the induction process.	Ongoing	High	P & S	All
14. Reinforce the issues of E&SC and Best Practice Stormwater Management for construction/maintenance staff at pre-start meetings, site meetings and post construction reviews.	Ongoing	High	Works P & F	T.P. P & S
15. Continue to implement Council's internal Code of Practice for minor works in areas of potential Acid Sulphate Soils	Ongoing	High	P & S	Works T.P
16. Incorporate a requirement for an understanding of general environmental issues and the compliance with any relevant environmental standards into the position descriptions of relevant staff.	Dec 2002	Medium	C.D.	Works P & F P & S
17. Continue to undertake environmental audits of Council operations to identify specific problem areas.	Ongoing	Medium	C.S.	Works P & F
18. Continue to develop Environmental Management Plans which adequately address on-site stormwater management issues for all Council Works	Ongoing	High	Works	

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
Environmentally Relevant Activities & Commercial Premises				
19. Develop an educational program for Council controlled Environmentally Relevant Activities and commercial premises regarding best stormwater management practices and existing legal requirements and penalties.	Ongoing	Medium	C.S.	P & S Cabwater
20. Incorporate into Codes for commercial premises requirements for best stormwater management practices.	June 2002	High	C.S.	P & S Cabwater
Developed Areas				
21. Review Council's street sweeping program.	June 2002	Medium	Works	P & S
22. Develop a list of prioritised existing stormwater 'hot-spots' in the Shire, and provide recommendations for the retrofitting of stormwater quality improvement devices (SQIDS) through the Capital Works Program.	June 2002	High	P & S	Works T.P.
23. Participate in and support SQID monitoring programs throughout the region to ensure that future SQID selection is as appropriate as possible.	Ongoing	High	P & S	
24. Include the retrofitting of SQIDS as part of a community education program.	Ongoing	High	P & S	Works T.P.
Community Education				
25. Continue to promote Caboolture Shire's Catchment-Wise education program in conjunction with other regional Councils.	Ongoing	High	P & S	
26. Identify existing stormwater educational material from different sources and develop an educational "toolbox" relating to all stormwater management issues to support internal and external stakeholders.	June 2002	High	P & S	T.P. Works C.S.
27. Review existing educational materials and identify needs for new stormwater education material.	Ongoing	High	P & S	T.P. Works C.S.

4.3 Maintain Stormwater Systems

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
1. Continue to undertake maintenance and desilting of existing stormwater drainage and devices to maximise performance and minimise risk of flooding.	Ongoing	High	Works P & F	
2. Include a requirement in stormwater management guidelines/codes/policies for comprehensive maintenance schedules to be included in development applications for all SQIDs. These should include inspection and maintenance frequency, collection/storage requirements, clean-out procedures, SQID design details and supplier contacts.	Dec 2002	High	T.P. P & S	Works P & F

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
3. Ensure that existing maintenance staff are consulted during the development of guidelines for selection of SQIDS.	Ongoing	High	T.P. P & S Works	
4. Identify current open drains, easements and SQIDS including wetlands, ponds and sediment basins so that formal internal maintenance/work manuals and procedures can be developed in the future.	Dec 2002	High	Works T.P. P & S	
5. Identify all issues and legalities regarding the compliance monitoring of maintenance procedures of SQIDS on private property and subsequently develop appropriate procedures for undertaking this monitoring.	Dec 2002	Medium	C.S. P & S	
6. Develop an asset management policy for stormwater.	2003	High	T.P.	
7. Identify requirements for the inclusion of open drainage networks and SQIDS into the existing HANSEN Asset Management System.	Dec 2002	High	W.A.S.P	T.P.
8. Investigate the possibility of purchasing an orthophoto layer to assist in capturing open drains for inclusion in the Asset Management System.	Dec 2002	High	W.A.S.P	
9. Define responsibility for the maintenance of open drains in Park/Open Space.	Dec 2002	High	Works	Facilities

4.4 Preserve and Manage Waterway Health and Amenity

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
1. Develop and implement water quality and ecological health monitoring programs for fresh and estuarine waterways consistent with the principles of ecological health monitoring as specified in the SEQRWQMS (2001).	2002-2003	High	P & S	Cabwater
2. In conjunction with the community and the Environmental Protection Agency, develop a set of environmental values for all waterways within the Shire, and from these, produce specific water quality objectives.	Ongoing	High	P & S	Cabwater
3. Incorporate environmental values into Open Space Planning and the Planning Scheme.	Ongoing	High	Cy. S. P & S	Facilities
4. Ensure that Codes, Policies and Guidelines related to stormwater management adequately address community needs, recreational amenity, aesthetic considerations and safety issues.	June 2002	High	Cy. S. P & S	Facilities

Preliminary Actions	Timing	Priority	Responsibility	
			Lead Unit	Support Unit
5. Develop an Infrastructure Charges Plan for stormwater management in new developments as part of Council's Planning Scheme.	June 2003	High	P & S	T.P.
6. Prioritise all 32 of the Shire's sub-catchments to determine which areas are most urgent for the development of Waterway Management Plans.	Feb 2002	High	P & S	T.P.
7. Develop Waterway Management Plans for all waterways in the Shire as per the prioritised list above.	2002 - 2007.	High	P & S	T.P.
8. Identify, prioritise and purchase land required for regional stormwater management facilities as identified in Waterway Management Plans, and incorporate these costs into the Infrastructure Charges Plan mentioned above.	Implement as WMPs are completed	Medium	P & S	T.P. Cabwater
9. Develop a program for the acquisition of waterway corridors to facilitate greater public access and enhance the ecology of the area through waterway management planning, and incorporate these costs into the Infrastructure Charges Plan mentioned above where appropriate.	Implement as WMPs are completed	Medium	P & S Cy. S.	T.P. Facilities
10. Investigate alternative options for the funding of SQIDS in existing areas.	2002	Medium	P & S T.P.	
11. Develop a system to identify high priority waterways for rehabilitation, and develop a program for the implementation and funding of this rehabilitation.	Implement as WMPs are completed.	Low	P & S Cy.S.	Cabwater
12. Continue to support community involvement in riparian rehabilitation programs.	Ongoing	Medium	P & S Facilities	
13. Investigate different options for programs and subsequent funding for riparian rehabilitation in Shire headwater streams.	June 2002	High	P & S	Cy. S.
14. Support existing local waterway/catchment related community groups and encourage the formation of future local groups.	Ongoing	High	P & S Facilities	
15. Support projects targeted towards the quantification of the impacts of development in areas of acid sulphate soils on stormwater (including the Lyngbya Management Strategy).	Ongoing	High	P & S	

5.0 IMPLEMENTATION AND PERFORMANCE REPORTING

The Urban Stormwater Strategy is fundamentally a document that contains actions for Council to deliver in order to address Shire wide stormwater management issues. Planning & Strategy Unit, as Council's responsible unit for strategic development, is responsible for the implementation and regular updating of the Strategy. It is proposed that regular performance reporting also be undertaken by Planning & Strategy, as this will ensure that the coordination of activities within Council is not lost as time goes on.

In order to facilitate the implementation of the proposed actions, the continued operation of an internal workgroup consisting of key staff members from the major units outlined in the Action Plan is proposed. Planning & Strategy will coordinate this workgroup.

Section 39 of the EPP Water requires Council to report to the Environmental Protection Agency on the progress of the Strategy's implementation before 1 September every year. To ensure that Council meets this requirement, it is recommended that internal reports on the progress of the implementation of the Strategy be undertaken every 6 months for the next 2 years. This Strategy should then be reviewed and updated at the completion of this initial 2 year period.

6.0 CONCLUSIONS

The Shire's waterways are a valuable asset to Council and residents. They provide economic and social benefits to the region by supporting the local fishing, aquaculture, agriculture, commercial and tourism industries as well as providing residents with drinking water. Waterways also provide residents the opportunity to pursue a range of recreational activities common to the South East Queensland Region (eg. swimming, fishing, boating).

Urban Stormwater has the potential to pose a variety of impacts on the Shire's waterways if inappropriately managed. These impacts threaten public health, local and regional infrastructure and the ecological health of these waterways.

These issues and the requirement for improved and integrated stormwater management are addressed in various pieces of State legislation and strategies. In particular, these include the *South East Queensland Regional Water Quality Management Strategy*, which Council has made a recent commitment to, and the *Environment Protection (Water) Policy 1997*.

A variety of actions are required by Council to coordinate all Council's activities related to stormwater management, as well as to ensure best stormwater management is practised by all internal and external stakeholders. This report contains 61 actions recommended for Council to implement during the next two years. The successful implementation of these actions will assist Council to achieve statutory compliance and meet engineering, environmental and social requirements.

7.0 REFERENCES

Agriculture & Resource Management Council of Australia & New Zealand and Australia & New Zealand Environment and Conservation Council (1996). *National Water Quality Management Strategy - Draft Guidelines for Urban Stormwater Management.* Commonwealth of Australia, Canberra.

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3. **Department of Environment & Heritage (1993).** *Pumicestone Passage, its Catchment and Bribie Island: Draft Integrated Management Strategy – Main Report.* DEH, Brisbane.
4. **Department of Natural Resources and Department of Environment (1998).** *Stormwater Quality Control Guidelines for Local Government.* DNR, Brisbane.
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8. **New South Wales Environment Protection Authority (1997).** **Series: Managing Urban Stormwater: Strategic Framework, Council Handbook.** NSW EPA, Sydney.
9. **Pumicestone Passage Catchment Coordination Association.** *Pumicestone Region Catchment Management Strategy*
10. **South East Queensland Regional Water Quality Management Strategy (2001).** *South East Queensland Regional Water Quality Management Strategy.* Brisbane City Council, Brisbane.

APPENDIX A

***Draft Environmental Values and Goals for the Pumicestone
Region (Ref: SEQRWQMS 2001)***
















(cont ...) – Draft Environmental Values and Goals for the Pumicestone Region

Draft Environmental Values		Aquatic ecosystems	Wildlife Habitat	Human consumer	Primary recreation	Secondary recreation	Visual recreation	Cultural heritage	Industrial use	Aquaculture	Drinking water	Irrigation	Stock water	Farm supply	Oystering	Seagrass
Sub-catchments																
Borpengary Creek Little Borpengary Creek		M	H	L ¹	??	M	M	M	L??	M		M	M		M??	?? ⁵
Bribie Island		H	H			H	H	H	L??		H ³					?? ⁵
Pumicestone Passage		H	H	H	H	H	H	H		H					H	H
Coasts and beaches		H	H	H	H	H	H	H		H						H
Deception Bay		H	H	H	H	H	H	H		M??					??	H

Notes

- ¹ = refers to tidal waters ² = refers to freshwaters ³ = relates to groundwater ⁴ = refers to Ningi Creek ⁵ = some seagrass may have occurred at the mouths of all creeks
- H, M or L indicate that stakeholders place a high (H), medium (M) or low (L) importance on protecting the environmental value.
- Blank indicates that the environmental value is not chosen for protection.
- Shaded columns represent the basic set of environmental values.
- ?? Indicates protection of value requires further investigation.

5 – Draft Environmental Values for the Somerset Stanley River Catchment

Draft Environmental Values	Aquatic ecosystems	Wildlife Habitat	Human consumer	Primary recreation	Secondary recreation	Visual recreation	Cultural heritage	Industrial use	Aquaculture	Drinking water	Irrigation	Stock water	Farm supply	Oystering	Seagrass
Sub-catchments															
Stanley-Somerset	●	●			●	●	●	●			●	●	●		
Eastern Stanley River Stony Creek Upper Stanley River Neurum Creek Delaney Creek	●	●			●		●	●			●	●	●		
Western Stanley River Sheep Station Creek Kilcoy Creek Sandy Creek	●	●			●	●	●	●			●	●	●		
Southern Stanley River Reedy Creek															
Lake Somerset															

Notes

1. Shaded columns represent the basic set of environmental values.
2. Dots indicate the environmental value is chosen for protection.
3. Blank indicates that the environmental value is not chosen for protection. Blanks for entire sub-catchment means values have not been determined yet.

APPENDIX B

Relevant Legislation

Environmental Protection Act (1994)

Under the *Environmental Protection Act (1994)*, Council has a legal duty to take 'reasonable and practicable measures' to prevent or minimise environmental harm. However, it is the Act's associated *Environmental Protection (Water) Policy (1997)* (EPP Water) that has major impacts for Council in relation to stormwater management.

Section 42 of the EPP Water requires all councils in Queensland that have an urban stormwater system to develop, implement and report on an urban stormwater quality management plan. It also states issues that must be considered in developing the plan and furthermore "to prioritise the plans and determine a timetable for developing and implementing such plans".

A local government's environmental plan for urban stormwater quality management must consider:

- a) measures to minimise the contamination of waters by stormwater, maximise the infiltration of water into the ground, reduce the velocity of stormwater and remove contaminants from stormwater, including, for example, the following:
 1. flow rate mitigation, erosion control and infiltration areas;
 2. grassed or vegetated drainage lines, vegetated water buffers and conservation or restoration of riparian vegetation;
 3. artificial wetlands and stormwater quality improvement devices (gross contaminant traps, retention basins and trash racks); and
- b) planning and design approaches for its stormwater system that have regard to the needs of the local community, including, for example, for the following:
 1. minimising ecological impacts on waters in the region;
 2. acceptable health risks, aesthetics, protection from flooding, public safety and other social concerns;
 3. making use of stormwater for recycling and water conservation;
 4. making use of drainage corridors for improved recreational values and open space or landscape areas; and
- c) investigation of opportunities to build contaminant control measures and re-establish riparian vegetation and aesthetically pleasing environments in degraded drainage corridors; and
- d) integration of the plan with catchment based planning and land use planning; and
- e) implementation of viable alternatives to the release of stormwater through outlets across beaches or into waters with poor circulation.

It is also required that local governments must develop and start implementing at least one urban stormwater quality management plan by June 2002.

In addition to these requirements, Sections 31 and 32 of the EPP Water define specific offences for the contamination of stormwater.

The Queensland Government has also produced “Stormwater Quality Control Guidelines for Local Governments” and “Model urban stormwater quality management plans and guideline” to assist in the development and implementation of Urban Stormwater Quality Management plans. These guidelines recommend, amongst other issues, to “prepare a series of strategies and action plans incorporating a suite of planning, structural, administrative, and management practices to address the identified problems and issues based on a cost-effective ranking, within a specified time-frame” – **an Urban Stormwater Management Strategy.**

Thus, this Strategy is seen as the first step for Council to fulfil its regulatory requirements to prepare an urban stormwater quality management plan. It contains actions that address those issues stated above that are nominated in Section 42 of the EPP Water. It also outlines a framework for developing specific waterway action plans throughout the Shire, which when completed and implemented, will complete Councils requirements under this legislation.

Integrated Planning Act (1997)

Chapter 5 of the *Integrated Planning Act (1997)* (IPA) provides a means for Council to place infrastructure charges for all stormwater management structures and devices on future developments. This is to be achieved by the development of infrastructure charges plans for all development infrastructure items. A development infrastructure item is defined as ‘land, capital works or land and capital works for any of the following infrastructure –

- a) urban water cycle management infrastructure (including infrastructure for water supply, sewerage, collecting water, treating water, stream managing, disposing of waters and flood mitigation);
- b) transport infrastructure (including roads, vehicle lay-bys, traffic control devices, dedicated public transport corridors, public parking facilities predominantly serving a local area, cycle ways, pathways and ferry terminals);
- c) infrastructure for local community purposes.’

The Act states that ‘an infrastructure charge must not be fixed for a development infrastructure item unless the item is identified in an infrastructure charges plan’. Additionally, ‘an infrastructure charges plan must: -

- a) explain why an infrastructure charge is intended for the items;
- b) state the estimated proportion of the capital cost of the items to be funded by the charge;
- c) include a schedule stating the estimated timing for, and estimated capital cost of, the items;
- d) state the method or methods by which the charge must be calculated;
- e) state each area in which the charge applies;
- f) identify each type of lot, work or use, in respect of which, the charge applies;
- g) for each type of lot, work or use in an area stated under paragraph (v) – calculate the rate at which the charge applies using a method stated under paragraph (iv); and
- h) if the charge is payable by a person other than an applicant for a development approval – state when the charge is payable.’

The capital cost mentioned in subsection (c) must be calculated so as to minimise the life cycle cost for the desired standard of service for the network.

Thus the Act provides a means for Council to fund stormwater management in future urban and residential developments. In order to produce infrastructure charges plans, the amount of stormwater infrastructure required to adequately manage stormwater quantity and quality needs to be determined on a catchment wide basis. Therefore, the production of catchment specific stormwater management plans needs to be undertaken so that appropriate charges can be fixed on future developments. These plans are discussed further in Section 3.5.

As a result of the IPA, Council is also undertaking a review of its Planning Scheme. The production of this Strategy will assist in this review, as it outlines specific Codes, Policies and Technical Guidelines required for stormwater management that will need to be incorporated into the new Planning Scheme.

NOTES

<i>For more information:</i>		
Telephone:	Or write to:	
Caboolture Shire Council on (07) 5420 0100 or visit Council's website at: www.caboolture.qld.gov.au	The Chief Executive Officer Caboolture Shire Council Attn: Planning & Strategy Unit PO Box 159 Caboolture Qld 4510	