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Ipswich City Council Pool Safety Program
Briefing Session
Vanessa Hicks
Building Manager
Planning and Regulatory Services
City of Ipswich

# Ipswich City Council Proactive Pool Program

- 860 immersions 2018-2019 – Under 5's most at risk
- Legislation –
  Queensland Development Code M.P. 3.4 Swimming Pool Barrier
- QBCC – 5200+ registered pools in Ipswich
- ICC – Internal Audit Report (A1718-16)
- ICC – Proactive Pool Program
  Trial Program & Approved Program


City of Ipswich

# RENEWED APPROACH – Pool Safety Program

- Organisational Restructure
- Program Review – What's industry's perspective?
  Keep Watch, Kids Alive, and Royal Life Saving promote Education and Awareness
- Opportunities and Benefits
- Engaging Community and Stakeholders, Partnerships and Best Value


City of Ipswich

## Summary

- Innovation - Pool Safety Program
  - Educating Kids on Water Safety through Swim Schools
  - Promoting Active Supervision and CPR
  - Partnering with Stakeholders
  - Pool Fence Compliance as last line defence

- Proposed Deliverables

**Ultimate Responsibility Rests at Home!**

**Questions?**

City of Ipswich

| Health, Security and Community Safety | |
|---|---|
| Mtg Date: 9/10/18 | OAR: Yes |
| ***Authorisation:*** Kylie Goodwin | |

JP:JP

28 September 2018

**M E M O R A N D U M**

TO: ACTING CHIEF OPERATING OFFICER
(HEALTH, SECURITY AND REGULATORY SERVICES)

FROM: PRINCIPAL OFFICER (INVESTIGATIONS, PROSECUTIONS AND TRAINING)

RE: SWIMMING POOL INSPECTION PROGRAM TRIAL

## INTRODUCTION

This is a report by the Principal Officer (Investigations, Prosecutions and Training) dated 28 September 2018 detailing the results of the Council Proactive Swimming Pool Inspection Program trial.

## HEALTH AND AMENITY PLAN PRIORITY:


## BACKGROUND

On 17 July 2018, a report (**Attachment A**) was presented to the Health, Security and Community Safety Committee and subsequent Council meeting on the Proactive Swimming Pool Inspection Program which forms part of the approved Health and Amenity Plan 2018-2019. Additionally, the requirement for a Proactive Swimming Pool Program is a legislative requirement and a recommendation of an internal audit business review. The objective of the proactive program is to reduce the risk of drowning for infants and young children within our community.

To assist with the rollout of the program, a trial was conducted in the suburbs of Camira and Wood End. The purpose of the trial was to test the inspection procedures and to determine the average time to conduct a pool inspection. This information was required to provide an estimate of the level of resourcing required to run the program longer term.

## PROCESS

A priority was placed on identifying pools with no record of any Council approval. Subject properties were identified from data analysis of Council's existing systems and a register of certified pools. A spatial search of a geographical information systems was then conducted to identify swimming pools that were not listed on any register.

A small sample of 20 pools within the trial suburbs were identified and inspections were conducted over a 4 week period commencing from 6 August 2018. A range of compliance issues were identified and appropriate enforcement action was taken.

**INSPECTION OUTCOMES**

At least one compliance issue was identified with every pool inspected. The most common of the compliance issues are listed in the following table:

| Issue | Description |
|---|---|
| **Gate** | Pool gate failed to self-close or had faulty latch. |
| **CPR signage** | Missing or out of date CPR signs. |
| **Climbable Objects** | Items placed within climbable zone of pool fence. |
| **Gaps** | Distance between ground and bottom of fence was greater than 100mm. |

**TIME TAKEN FOR INSPECTIONS**

Out of the 20 pools, 18 have been inspected. One pool was not inspected due to a locked gate and a non-responsive property owner. The other pool was not inspected due to cancellations of appointments made with the property owner. These two pools will be inspected in the future.

Only nine inspections had been finalised at the time of writing this report. A further nine inspections had not been completed. This was due to a range of follow up work that was required after the issue of statutory notices. Some properties required second and third follow up inspections to confirm that the pool fencing barriers were compliant.

The time taken for all activities relating to the inspections were recorded. The average time to conduct a pool inspection during our trial program was 230 minutes per inspection. This comprised of preliminary administration tasks including raising the service request (38 minutes) and performing the actual inspection and associated research and notices (192 minutes).

**RESOURCING**

The Development Compliance Team will require additional resources to enable the program to continue into the future. A contract compliance officer is currently being engaged to continue with the program on a temporary basis.

There are an estimated 8,000 swimming pools in the Ipswich local government area. These figures were derived from Council's records on building approvals and through the QBCC register of pools. Based on the data from the trial inspection program we know that one completed inspection takes 230 minutes on average. There are 450 minutes in normal working day. Therefore 1.87 pool inspections could be done each day by one compliance officer. This inspection rate has been rounded up for ease of calculation.

The table below provides an estimate based on and inspection rate 2 inspections per day. The calculations are based on one officer working 5 days per week and taking 4 weeks annual leave (240 working days). Other leave types and absences have not been taken into account.

| Number of Compliance Officers | Pools Inspected Daily | Pools Inspected Yearly (daily x 240) | Percentage of Pools Inspected Yearly |
|---|---|---|---|
| **1** | 2 | 480 | 6% |
| **2** | 4 | 960 | 12% |
| **3** | 6 | 1440 | 18% |
| **4** | 8 | 1920 | 24% |
| **5** | 10 | 2400 | 30% |

**Staff**

The number of staff required will be dependent upon the target agreed to by Council for the percentage of pools to be inspected each year. For example, if the annual inspection target is 6%, there would be a requirement for an additional 1 Full Time Equivalent (FTE) position to achieve this.

**Vehicle**

Depending on the inspection target, additional vehicle usage will be required to conduct the pool inspection program.

**Budget Impacts**

The base salary for a level 4.1 officer is $71,828 + 20% on costs total ($86,193.60) per person.

| Number of Compliance Officers | Salary |
|---|---|
| **1** | $86,193.60 |
| **2** | $172,387.20 |
| **3** | $258,580.80 |
| **4** | $344,774.40 |
| **5** | $430,968.00 |

Whilst a range of enforcement tools are available to ensure compliance (direction notices, fines, prosecution), the focus of this program is education and to achieve compliance so risks of drowning of infants and young children are reduced. This means there would be minimal revenue received. The trial resulted in direction notices being issued and follow up inspections required but all completed inspections have reached compliance.

Based on the trial it is recommended that two officers be appointed with a review of the program to be completed at the end of 12 months to determine how the program may continue.

**CONCLUSION**

The real value in the swimming pool inspection program is the awareness and education of the public in relation to the safety requirements for residential swimming pools. It is unrealistic to expect that the program could be sufficiently resourced to enable every pool in Ipswich to be inspected within a few years. However, knowledge that an inspection program is running should help to motivate members of the community to keep their pools compliant. This will be achieved through a comprehensive marketing campaign while the program is in operation.

It is important to again highlight the aim of the swimming pool inspection program. And that is to reduce the risk of drowning for infants and young children within our community.

**ATTACHMENT:**

| Description | Item |
|---|---|
| Previous Council Report | Attachment A |

**RECOMMENDATION**

Amended HSCS Ctee No. 2018(10) of 9 October 2018

That the Interim Administrator of Ipswich City Council resolve:

A. That Council provide in-principle approval to appoint two Full Time Equivalent (FTE) officers to the Health, Security and Regulatory Services Department for the Proactive Pool Inspection Program.

B. That subject to budget approval, Council approve ~~a budget of~~ $172,387.20 pa to the Health, Security and Regulatory Services Department budget for the costs of ~~2~~ two Full Time Equivalent (FTE) officers.

C. That the findings of a 12 month review of the Proactive Swimming Pool Fencing Program be presented to Council ~~at that time~~.

John Pukallus
**PRINCIPAL OFFICER (INVESTIGATIONS, PROSECUTIONS AND TRAINING)**

I concur with the recommendations contained in this report.

Kylie Goodwin
**ACTING CHIEF OPERATING OFFICER (HEALTH, SECURITY AND REGULATORY SERVICES)**

| Health, Security and Community Safety | |
|---|---|
| Mtg Date: 17.07.18 | OAR: YES |
| ***Authorisation:*** Graeme Kane | |

JP:JP

3 July 2018

**M E M O R A N D U M**

TO: ACTING CHIEF OPERATING OFFICER
(HEALTH, SECURITY AND REGULATORY SERVICES)

FROM: ACTING PRINCIPAL OFFICER (INVESTIGATIONS, PROSECUTIONS AND TRAINING)

RE: SWIMMING POOL INSPECTION PROGRAM

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## INTRODUCTION

This is a report by the Principal Officer (Investigations, Prosecutions and Training) dated 3 July 2018 detailing the ICC Proactive Swimming Pool Inspection Program.

## HEALTH AND AMENITY PLAN PRIORITY:

7 COMMUNITY SAFETY AND SECURITY
- Safe City Connect
- Swimming pool fencing

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## BACKGROUND

In Queensland, swimming pools are required to have a pool barrier that meet certain safety requirements, pursuant to the *Building Act 1975*. These requirements were mandated by the State Government primarily to reduce the risk of infants drowning in residential swimming pools. Ipswich is estimated to have over 8000 swimming pools within its local government area.

Local Governments have been given the responsibility to enforce the safety requirements under the Act. At Ipswich City Council, officers in the Development Compliance team in the Health, Security and Regulatory Services Department carry out this function as part of their duties. They respond to complaints and notifications from members of the public and other agencies in relation to non-compliant swimming pools and barriers. The response typically involves conducting an inspection of the subject pool and taking enforcement action where any non-compliance is identified.

In 2017 the Internal Audit Branch of Council conducted an audit (A1718-16 – Residential Swimming Pools) into the compliance performance of Council with regards to swimming pool safety. As a result of the audit, a number of recommendations were made. One of these recommendations was for HSRS to undertake a proactive swimming pool inspection program.

The aim of the swimming pool inspection program is to achieve compliance with the safety requirements to reduce the likelihood of infants drowning.

**LEGISLATIVE REQUIREMENTS**

The *Local Government Act 2009* (LGA) provides Council with the powers necessary for compliance officers to enter properties for various enforcement purposes. Section 134 of the LGA states that Council can, by resolution, approve inspection programs to allow officers to enter properties and conduct inspections. However, under section 134A of the Act, Council are already provided the powers of entry to inspect pools on residential properties. The swimming pool inspection program can be effectively conducted by using the powers under section 134A without the need for a formal resolution of Council pursuant to section 134.

Using section 134A to run the program negates the notification requirements under section 134 that is often required for other inspection programs. Even though it is not a formal requirement, it is planned to notify the community of the swimming pool inspection program in a similar way to that prescribed under section 134. This is acknowledged in the program and is included in the plan to advise the community about planned inspections.

**PROPOSED INSPECTION PROGRAM:**

In response to the audit recommendations, a project group was established to determine the best method to conduct the program. It proposed a program that will be trialled by inspecting a sample number of swimming pools within two suburbs or areas. These locations will be identified from data analysis of Council's existing systems and from other data available, including certified pools (by age). A spatial search of geographical information systems will also be conducted to identify swimming pools that may not be otherwise identified, primarily because of how long ago they were constructed, through other available systems or information. The trial location selection will be based upon two differing scenarios. The reason for this is to better inform the way in which the ongoing program will be implemented. Of the two locations in the initial trial, one will be based on a higher population density per geographical area basis and the other will be of a less urban/larger property size nature. The final decision in relation to the trial areas will be made in consultation with the relevant divisional Councillors.

Pools to be inspected will be prioritised according to the level of risk as shown in Table 1.

**Table 1 – Inspection Prioritisation**

| Circumstances regarding the swimming pool | Priority |
|---|---|
| No building approval for a swimming pool | 1 |
| Pools on rental properties (no current safety certificate) | 2 |
| Pools on rental properties (not on QBCC register) | 3 |
| Pools on owner occupied properties (no current safety certificate) | 4 |
| Pools on owner occupied properties (not on QBCC register) | 5 |
| All other pools | 6 |

Swimming pools not having a building approval will be identified through using data held or identified by Council and cross referencing to the master swimming pool list.

**OUTCOMES**

The aim of the program is to reduce the risk of infant drowning.

The following outcomes are expected as a result of the implementation of this program:

- Illegal pools without building approval will be identified. The owners will obtain an approval or the pool will need to be decommissioned.
- Pools with non-compliant barriers will be identified and action taken to ensure compliance.
- The community will become more aware of the safety risks associated with swimming pools and the compliance requirements for them. Through an educative process owners will be more likely to take the initiative to meet the safety requirements for swimming pools without Council intervention.
- Where necessary, property owners will receive penalty infringement notices (e.g. if owners are given an enforcement notice but fail to make their pool safe without any reasonable excuse, or the owner is a repeat offender. )

It is not the intention of this program to issue penalties to every pool owner who has a non-compliant pool. That is a necessary component of a suite of compliance options, however that may be appropriate in some circumstances.

**EDUCATION AND MARKETING**

Educating pool owners on the safety requirements for swimming pools will be an important component of the compliance strategy to achieve success with this program. It is not practical for officers to inspect every swimming pool within Ipswich within a short time period, and reliance on responsible pool swimming owners doing the right thing will necessarily be a component of the program.

A marketing campaign will be developed to educate pool owners with the following key topics:

- Safety requirements for swimming pools
- Details of the proposed pool inspection program
- Powers of entry for compliance officers to inspect pools
- Assistance available to help owners achieve compliance

**TIMING**


**RESOURCES**

The initial trial will be undertaken using existing departmental resources.

The evaluation of the trial will include identification of any additional officer and/or physical resources required, and options for delivery of the program, including the estimated number of dwellings with pools to be inspected.

**CONCLUSION**

The Swimming Pool Inspection Program will identify non-compliance with the safety requirements for residential swimming pools and barriers. The program will ensure that any deficiencies in these safety requirements are rectified. This will lead to an overall increase in compliance which will contribute to a reduction in the risk of drowning for infants and young children within our community.

**RECOMMENDATION**

That the report be received and the contents noted.

Peter McBean
**ACTING PRINCIPAL OFFICER (INVESTIGATIONS, PROSECUTIONS AND TRAINING)**

I concur with the recommendation contained in this report.

Graeme Kane
**ACTING CHIEF OPERATING OFFICER (HEALTH, SECURITY AND REGULATORY SERVICES)**

# Local government swimming pool safety guideline

## To assist local governments in understanding and performing pool safety related functions

October 2016

Department of Housing and Public Works

Queensland Government

# Table of contents

# Purpose

The purpose of this guideline is to assist local governments in understanding and performing their pool safety related functions under the *Building Act 1975* (BA).

# Scope

This guideline covers a range of local government obligations, responsibilities and powers relating to Queensland's pool safety laws including:

- mandatory inspections
- information and record keeping
- pool safety register
- local laws
- deciding and revoking exemptions
- powers of entry
- declaration of remote areas
- cancelling pool safety certificates
- prosecution powers.

General and industry related information about pool safety laws is available on the Department of Housing and Public Works (the department) website www.hpw.qld.gov.au.

# Background

The Queensland Government introduced the current pool safety laws as a result of the most comprehensive review of Queensland's pool safety laws in nearly 20 years. Key stakeholders, including the Local Government Association of Queensland, were closely involved in the review. The pool safety laws aim to further reduce the incidences of drowning and serious immersion injuries of young children in swimming pools.

The laws were implemented in two stages. Stage one commenced on 1 December 2009 and applied mostly to new residential outdoor swimming pools. It included:

- introducing the latest swimming pool safety standards
- regulating temporary fencing for pools
- mandatory follow-up final inspections
- introducing the latest cardiopulmonary resuscitation (CPR) signage standards.

Stage two commenced on 1 December 2010 and mostly affected existing swimming pools. The stage two measures included:

- an independent Pool Safety Council

  Note: On 10 November 2014, the Pool Safety Council disbanded and the functions moved over to the Queensland Building and Construction Commission (QBCC).
- a training and licensing framework for pool safety inspectors
- replacing 11 different pool safety standards with one pool safety standard for all regulated pools—the Queensland Development Code Mandatory Part 3.4. Both new and existing pools

must comply with the standard within five years, or earlier if sold or a lease or other accommodation agreement is entered into prior to 1 December 2015

- a five-year phase out of child-resistant doors used as pool barriers for existing pools, or earlier if the property is sold or a lease or other accommodation agreement is entered into prior to 1 December 2015
- wider application of pool safety laws to include indoor pools, pools associated with class 3 and 4 buildings such as hotels, motels, caretaker residences, backpackers, hostels, mobile home and caravan park pools and home stay pools
- a sale and lease compliance system, requiring pool safety certificates to be obtained from a licensed pool safety inspector when a property with a pool is sold or a lease or other accommodation agreement is entered into. Pool safety certificates are valid for one year for a shared pool and two years for a non-shared pool.
- requiring all regulated pools to be included in a state-based pool register
- fencing for portable pools and spas deeper than 300 millimetres
- mandatory inspections by local governments for immersion incidents of children under five in swimming pools. These incidents must be reported by hospitals, including voluntary reporting by the Queensland Ambulance Service, to Queensland Health.

Under the laws, pool owners had until 30 November 2015 to meet the current pool safety standard or earlier if they sold or leased or entered into another accommodation agreement for their property before then. Since 1 December 2010, properties with a non-shared pool, such as houses, could not be leased or have another accommodation agreement entered into without a pool safety certificate.

Buyers of properties with a non-shared pool need to obtain a pool safety certificate within 90 days from settlement if the seller has not given them a certificate. Sellers need to notify prospective buyers that there is no certificate before entering into a contract of sale.

Similar requirements apply for properties sold or leased or other accommodation agreements entered into with shared pools, such as unit complexes and hotels. A two-year phase in period for obtaining certificates applied for bodies corporate and a six-month phase in period applied for short term accommodation.

## Queensland Building and Construction Commission

The QBCC is an independent statutory body which oversees the pool safety laws. The QBCC receives and investigates complaints, approves training courses and maintains the register of licensed pool safety inspectors.

The QBCC is responsible for the following in relation to pool safety inspectors:

- licensing
- receiving and investigating complaints
- auditing
- disciplinary action
- maintaining a register.

The QBCC is supported by departmental staff who attend to policy and legislation of the QBCC. The QBCC's contact details are:

**phone:** 139 333
**email:** poolsafety@qbcc.qld.gov.au
**post:** GPO Box 5099, Brisbane QLD 4001

# Legislation

The principal legislation regulating swimming pool safety in Queensland is the BA, which contains provisions about when barriers are required around a pool and refers to subordinate legislation for more technical requirements.

This guideline is made under section 258 of the BA, which allows guidelines to be made to help achieve compliance. Sections 133A and 246BF of the BA require pool safety inspectors and building certifiers to have regard for guidelines made under section 258 of the BA.

The following legislation is referred to or relevant to this guideline:

- *Acts Interpretation Act 1954*
- *Ambulance Service Act 1991*
- *Building Act 1975*
- *City of Brisbane Act 2010*
- *Local Government Act 2009*
- *Manufactured Homes (Residential Parks) Act 2003*
- *Residential Tenancies and Rooming Accommodation Act 2008*
- *State Penalties Enforcement Act 1999*
- *Sustainable Planning Act 2009*
- *Building Regulation 2006*
- *State Penalties Enforcement Regulation 2014*
- *Sustainable Planning Regulation 2009*
- Queensland Development Code Mandatory Part 3.4—Swimming pool barriers
- Building Code of Australia
- Australian Standard AS 1926-2007 Parts 1 and 2

# Interpretation

## *Acts Interpretation Act 1954*

Section 14A of the *Acts Interpretation Act 1954* provides that in interpreting a provision of any piece of legislation (including statutory instruments made under an Act, such as the *Building Regulation 2006* or the Queensland Development Code) the interpretation that will best achieve the purpose of the legislation is to be used over and above any other interpretation.

# Local government responsibilities

## Mandatory inspection after pool immersion incident notice

A pool immersion incident means an event involving the immersion or partial immersion of a young child (under the age of five) under the water in a swimming pool. The incident could result in the child dying, being deprived of air or the health or wellbeing of the child being adversely affected. Local governments are required to inspect a pool where a pool immersion incident has been reported to them. Local governments must take any enforcement action necessary to ensure the pool complies with the relevant standards.

When a pool immersion incident occurs, there is a requirement for the person in charge of a private or public hospital to report it to the chief executive of Queensland Health. The chief executive of Queensland Health must then give notice of the incident to the local government for the area in which the incident happened, the QBCC, and the Queensland Family and Child Commission.

As soon as practical after receiving the notice, the local government must inspect the pool for compliance with the relevant standards. If, following inspection, the local government finds the pool does not comply, then it must take the necessary enforcement action to ensure the pool is modified to comply.

When responding to pool immersion incidents—especially where a child has died or suffered serious injury—local government officers should exercise appropriate conduct having regard to the circumstances.

The legislation does not require these inspections to be carried out by a licensed pool safety inspector; however the inspecting officer should be appropriately competent to carry out the inspection. If the officer inspects the pool for the purpose of assessing compliance and issuing a pool safety certificate (i.e. Form 23), then they must be licensed.

Local governments are required to keep records of any pool immersion incident notices they receive for a period of at least five years. In addition, the details of the inspections undertaken and any enforcement action taken must also be retained for at least five years. Local governments can decide in what form these records are kept.

**Relevant sections**

Section 23 of the *Ambulance Service Act 1991*

Section 245G, 245I, 246ADA and 246AIA of the BA

## Mandatory inspection after pool safety complaint notice

If a local government receives a pool safety complaint notice for a regulated pool, it must inspect the pool for compliance with the relevant standards as soon as practical. The complaint notice must be in writing, be given to the local government and relate to the pool's safety. In instances where the local government reasonably considers the complaint to be vexatious, it does not need to inspect the pool.

An example of a vexatious complaint may be where the local government receives ongoing complaint notices about a pool from the same person within a short period of time. If the local government inspected the pool after the first complaint notice and found that the pool complies with the relevant standards, then the following complaint could potentially be considered vexatious. This is providing the ongoing complaints relate to the same incident or elements that have already been

inspected. Vexatious complaints may occur, for example, where neighbours are in an ongoing dispute about other matters that may not directly relate to the pool.

If, following an inspection, the pool is found not to comply with the relevant standards, then the local government must take the necessary enforcement action to ensure the pool is modified to comply with the relevant standards. This could include issuing an enforcement notice, issuing an infringement notice, prosecution and other legal proceedings, or carrying out remedial work in accordance with the *Local Government Act 2009* or *City of Brisbane Act 2010*.

The legislation does not require these inspections to be carried out by a licensed pool safety inspector, but the inspecting officer should be appropriately competent to carry out the inspection. If the officer inspects the pool for the purpose of assessing compliance and issuing a pool safety certificate (i.e. Form 23), then they must be licensed.

Local governments are required to keep records of any pool safety complaint notices which they receive for a period of at least five years. In addition, the details of the inspections undertaken and any enforcement action taken must also be retained for at least five years. Local governments can decide in what form these records are kept.

**Relevant sections**

Section 246ADA and 246AIA of the BA

## Mandatory inspection after notice from the Queensland Building and Construction Commission

If the QBCC reasonably suspects the fencing or other barriers for a regulated pool do not comply with the requirements of the BA, it may give a notice to the local government, informing the local government about its suspicions and giving information about the location of the pool.

This could occur, for example, where the QBCC receives a mandatory notice (i.e. Form 36) from a seller that they have sold a property with a regulated pool without a pool safety certificate in effect and a certificate is still not in effect more than 90 days after settlement. Once the QBCC receives a Form 36, a letter will generally be sent to the pool owner reminding them of their obligation to obtain a pool safety certificate within 90 days.

If a local government receives a notice from the QBCC, it must inspect the pool for compliance with the relevant standards as soon as practical. If, following inspection, the local government finds the pool does not comply with the relevant standards, it must take the necessary enforcement action to ensure the pool complies with the relevant standards. This could include issuing an enforcement notice, issuing an infringement notice, prosecution and other legal proceedings, or carrying out remedial work in accordance with the *Local Government Act 2009* or *City of Brisbane Act 2010*.

The legislation does not require these inspections to be carried out by a licensed pool safety inspector; however the inspecting officer should be appropriately competent to carry out the inspection. If the officer inspects the pool for the purpose of assessing compliance and issuing a pool safety certificate (i.e. Form 23), then they must be licensed.

Local governments are required to keep records of any such notices they receive from the QBCC for a period of at least five years. In addition, the details of the inspections undertaken and any enforcement action taken must also be retained for at least five years. Local governments can decide in what form these records are kept.

**Relevant sections**

Section 245UA, 246ADA and 246AIA of the BA

## Queensland Building and Construction Commission information requests

The QBCC can request information from a local government about the details of any inspection carried out in response to a pool immersion incident notice, pool safety complaint notice or QBCC notice. For example, the QBCC may request information on any enforcement action taken by local governments for the purposes of data collection, policy development, coronial reporting or targeted pool safety awareness.

**Relevant section**

Section 246AIB of the BA

## Four-yearly notifications

If a pool safety certificate has not been in effect for a pool for at least four years and the pool is on the pool safety register, then local government must, at least once every four years, give the owner the swimming pool safety advisory information prescribed under regulation. This is additional to any obligations the pool owner has to comply with the pool safety standard or obtain a pool safety certificate.

Local government can provide this information however it considers appropriate, such as information on rates notices or a separate flyer to all pool owners, or to all ratepayers, in the local government area. However, a newspaper advertisement would not be adequate, as the local government must ensure the information is given to each pool owner.

**Relevant sections**

Section 246ATC of the BA

*Building Regulation 2006*

## Pool safety register

The pool safety register is a single state-wide database of regulated pools in Queensland. The purpose of the register is to provide any interested party with a central source of information about regulated pools—including local governments, pool safety inspectors, the department, QBCC, pool owners and the general public. Access to enter data on the register is restricted to local governments, the QBCC, the department and pool safety inspectors. The QBCC has administrative access to the register to approve pool safety inspector licence applications and other key functions. The QBCC can also enter any record of disciplinary action taken against a pool safety inspector, including any tribunal order made against a pool safety inspector. This information is visible to the public.

When obtaining a pool safety certificate number, pool safety inspectors must enter the following information into the swimming pool register:

- the address and real property description of the land on which the pool is situated
- the day the pool safety certificate was given, the period it is to remain in force and its identification number

- alternative solutions approved (if known)
- exemptions granted (if known).

A pool safety inspector will not be given a pool safety certificate identification number until all required information is entered into the register. This is to help ensure that the pool safety certificate in the register is complete and accurate. Under section 246ATE of the BA, if the register shows a pool safety certificate is in effect for a pool, that information can be relied on in most cases.

Local governments have certain responsibilities relating to the register, and were required to provide records of known regulated pools for the register by 4 February 2011—three months after the commencement of section 246AQ of the BA.

**Relevant sections**

Section 246AQ, 246AS, 246AT, 246ATE and 246AR of the BA

### Local laws for pool safety

Local governments cannot make a local law that regulates the construction or maintenance of barriers for regulated pools, or a matter covered by the pool safety standard. For example, a local law cannot regulate safety barriers or CPR signage for regulated pools, as these matters are covered by the pool safety standard.

Any existing local law provisions of this type that were in force before 1 December 2010 must be repealed by 1 January 2017 and must not be amended.

For existing regulated pools, existing local law provisions continued to apply until the current pool safety standard took effect—1 December 2015 or earlier if the property where the pool is located was sold or a lease or other accommodation agreement was entered into.

Any local law that does not meet these requirements has no lawful effect.

Local governments can still have local laws for pools that are not regulated pools, such as public aquatic centres. To help promote consistency amongst local governments, the department is developing a model local law for these types of pools.

**Relevant sections**

Section 38A of the *Local Government Act 2009*

Section 41A of *City of Brisbane Act 2010*

## Exemptions and variations

### Previous exemptions and variations

Any fencing exemptions (excluding valid disability exemptions) that were granted for regulated pools by a local government were no longer valid once the current safety standard applied to the pool—1 December 2015 or earlier if the property where the pool is located was sold or a lease or other accommodation agreement was entered into. This applies to exemptions given under local laws and state laws.

Exemptions that were given solely on the basis of the occupier's inability to access the pool because of their disability continue to apply in accordance with the requirements of the BA. However if the person with the disability no longer occupies the property, the exemption automatically ends.

Any variations under section 41 of the BA (or under any similar previous provisions) relating to matters covered by the current pool safety standard no longer applied when the standard applied to the pool—1 December 2015 or earlier if the property where the pool is located was sold or a lease or other accommodation agreement was entered into.

**Relevant sections**

Section 245V and 41 of the BA

## Disability exemptions

Pool owners can apply to their local government for an exemption from complying with a part of the pool safety standard relating to barriers on the grounds of a disability.

To support a pool owner's application for an exemption, local governments can request medical evidence, which is strongly recommended. Medical evidence could include a medical certificate as well as a letter from a general practitioner or medical specialist that contains key information including:

- the form and extent of the disability
- whether the occupant is wheelchair-bound or mobile
- if wheelchair-bound, whether they are able to move the wheelchair unaided
- whether the occupant requires a full-time carer.

Local governments are required to consider the exemption application and provide a decision within five business days. The exemption can be granted subject to reasonable conditions the Local government considers necessary or desirable to prevent a young child accessing the pool.

Written notice of the decision must then be given to the pool owner and any information on an exemption granted must be provided to the QBCC within 10 business days after the exemption is granted. The exemption notice must include the address and real property description of the land where the pool is located.

The exemption can only be granted if the local government is satisfied that a person with a disability is, or is to become, an occupier of land on which the regulated pool is situated and it would be physically impracticable for the person to access the pool if it had barriers complying with the pool safety standard.

Local governments can only grant a disability exemption to the extent reasonably necessary to allow the person with the disability to access the pool. For example, if the person's disability only prevented them from opening a pool gate, the exemption could not extend to matters not relating to the gate.

If the occupant with the disability has a full-time carer, careful consideration should be given as to whether it is appropriate to grant a disability exemption at all. Careful consideration would also need to be given to any proposal to allow a child-resistant door to form part of the pool safety barrier, due to the significantly increased risk of child drowning associated with such doors.

As disability exemptions are specific to a person, the exemption ends if the applicant stops being the pool owner or the person with the disability is no longer occupies the property or has recovered

sufficiently to enable them to access the pool if it complied with the pool safety standard (e.g. if the person recovered from a temporary disability).

Local governments must keep a record of each exemption that is granted, although the legislation does not stipulate the form in which the record must be kept.

**Relevant sections**

Sections 235 to 244 of the BA

## Impracticality exemptions

Pool owners can apply to their local government for an exemption from complying with a part of the pool safety standard relating to barriers on the grounds of impracticality.

The application must be accompanied by details identifying which part of the pool safety standard the owner is seeking exemption from and showing that compliance is not practical. Local governments can ask for more information to establish that compliance is not practical. Impracticality exemptions cannot, for example, be given just because of aesthetics, because no children reside on or visit the property, because the pool is near to another body of water such as a canal or dam, or because the property is rural or remote.

Local governments can only grant an impracticality exemption to the extent reasonably necessary to overcome the impracticality associated with compliance. For example, if the only impracticality issue related to space for a gate to open outwards, the exemption could not extend to matters not relating to the gate.

The legislation gives local governments a range of considerations when assessing these exemptions, including whether compliance would require the owner to:

- move or demolish a building or part of a building
- change the location or size of the pool
- remove vegetation protected from removal under an Act or a local law.

Local governments can also consider the cost of the barriers or work required to comply with the pool safety standard, having regard to the nature of any existing barriers for the pool. Local governments should carefully consider whether the cost of installing the barriers is significant enough to warrant an exemption at all.

The legislation also provides scope for local governments to consider any other matters they think are relevant.

Unlike disability exemptions, impracticality exemptions continue until the exemption is revoked by the local government. Any conditions applicable to the exemption are also binding on the successors in title.

Local governments are required to consider the exemption application and provide a decision within 40 business days. The exemption can be granted subject to reasonable conditions the local government considers necessary or desirable to prevent a young child accessing the pool.

Written notice of the decision must then be given to the pool owner and any information on an exemption granted must be provided to the QBCC within 10 business days after the exemption is granted. The exemption notice must include the address and real property description of the land where the pool is located.

Local governments must keep a record of each exemption that is granted, although the legislation does not stipulate the form in which the record must be kept.

**Relevant sections**

Sections 245 to 245FA of the BA

### Revoking exemptions

Local governments have the power to revoke an exemption under particular circumstances, including where there has been a contravention of conditions imposed on the exemption or the original exemption decision was based on false or misleading information given by the applicant.

In these circumstances, the local government must issue a show cause notice to the pool owner. After consideration of any representations made under the show cause notice, the local government may issue a revocation notice to revoke the exemption. The revocation notice must include:

- information outlining that the pool owner must ensure the pool safety barrier complies with the pool safety standard
- the day by which the owner must comply.

The pool owner has a right to appeal the local government decision to revoke the exemption to a building and development dispute resolution committee under the *Sustainable Planning Act 2009*.

Notice of the revocation must be given to the QBCC within 10 business days after the revocation notice is given.

**Relevant sections**

Sections 242 to 243 and 245E to 245F of the BA

## Other local government powers

### Outstanding nonconformity notices

If a pool safety inspector inspects a regulated pool and is not satisfied it complies, they must issue a nonconformity notice (Form 26) within two business days of the inspection. The nonconformity notice advises pool owners precisely, and in a standard way, how their pool does not comply and what needs to be done to make it comply with the pool safety standard to receive a pool safety certificate.

The pool safety inspector is not required to give the pool owner a nonconformity notice if:

- they reinspect the pool within the two days after initial inspection and are satisfied that the pool now complies
- where there is an agreement that the pool safety inspector will carry out minor repairs within 20 business days of the original inspection.

If the agreed minor repairs are not undertaken by the pool safety inspector within the 20 business day period, or if the pool safety inspector reinspects the pool within the two day period and is not satisfied it complies, the pool safety inspector must, within a further two business days, give a nonconformity notice to the pool owner.

The owner may appeal the pool safety inspector's decision in the nonconformity notice to a building and development committee under the *Sustainable Planning Act 2009*. The appeal must be made within 20 business days after the nonconformity notice is given.

If the owner fails to ask the pool safety inspector to reinspect the pool within three months of being given the nonconformity notice, the pool safety inspector must, within five business days, notify the local government and give the local government a copy of the nonconformity notice.

If a local government receives a nonconformity notice from a pool safety inspector, it is expected that the local government will contact the pool owner as soon as practical and, if necessary, inspect the pool for compliance with the relevant standards.

If, following inspection, the local government finds the pool does not comply with the relevant standards, it is expected they will take the necessary enforcement action to ensure the pool complies with the relevant standards. This could include issuing an enforcement notice, issuing an infringement notice, prosecution and other legal proceedings, or carrying out remedial work in accordance with the *Local Government Act 2009* or *City of Brisbane Act 2010*.

Provisions have been included in the BA to restrict pool owners from shopping around for another pool safety inspector just because they disagree with the first pool safety inspector's decision. Following the issue of a nonconformity notice, it is an offence under the BA for the pool owner to ask a different pool safety inspector to inspect the pool for a period of three months. However, a pool owner may apply to the QBCC to approve another person to inspect the pool and issue a pool safety certificate. The QBCC will assess the particular circumstances and, if approved, issue a notice agreeing to this request. The nonconformity notice includes this information for pool owners.

For example, if the licence of the first pool safety inspector was suspended or cancelled before giving a pool safety certificate, the QBCC could agree to the pool owner engaging another pool safety inspector.

**Relevant sections**

Section 246AB and 246AC of the BA

## Powers of entry

The *Local Government Act 2009* and *City of Brisbane Act 2010* have been amended to provide the power for an authorised person from a local government to enter a property (other than a home on the property) without permission from the occupier of the property, to inspect a swimming pool and barriers or fencing for the pool, for compliance purposes.

This may be used, for example, where a local government receives a pool safety complaint notice and needs to urgently inspect the pool, but cannot get in contact with the owner or occupier.

This provision has been included to assist local governments in carrying out its pool safety responsibilities.

**Relevant sections**

Sections 134A and 135 of the *Local Government Act 2009*

Sections 123A and 124 of *City of Brisbane Act 2010*

Section 246AE of the BA

## Ability to declare areas as remote

Specific local governments that are prescribed under Schedule 2A of the *Building Regulation 2006* have the ability to declare particular areas within their local government area as remote, by passing a local government resolution.

The prescribed local governments have been identified as those classified as either remote or very remote under the Accessibility/Remoteness Index of Australia (ARIA). ARIA measures the remoteness of a point based on the physical road distance to the nearest urban centre in one of five size classes. Using the ARIA, local government areas have been given a score between 0 and 15 based on accessibility of goods and services amongst other criteria.

Local governments cannot declare an area as remote unless it is satisfied that the area is remote from the business premises of persons who perform pool safety inspection functions. For a local government to declare an area as remote, the area should be either:

- more than 100 kilometres from the nearest office of the local government or a populated place of more than 48,000 residents
- reasonably difficult to access.

For example, in a large local government area where a home is being sold that is more than 100 kilometres from the nearest local government office, but is within 100 kilometres of a large urban centre of more than 48,000 residents, it would reasonably be assumed that a pool safety inspector could be engaged to inspect a pool and a remote area declaration would not be appropriate.

As section 246AH of the BA requires each local government to provide a pool safety inspection service, if asked, this service must be provided from each of a local government's offices. It would therefore not generally be appropriate to declare an area as remote if it is within 100 kilometres of an office of the local government.

An area that is reasonably difficult to access could be an island which has limited vehicular ferry service or subject to seasonal accessibility problems. This may especially be the case in Far North Queensland.

There is no obligation on prescribed local governments to declare any areas as remote—local governments can only choose to opt-in by passing a local government resolution.

Where a pool safety inspector is engaged to inspect a pool in a declared remote area, the pool safety inspector does not need to carry out an on-site inspection of the pool, and may inspect the pool using documents (e.g. detailed photographs) or technology (e.g. streamed video footage). The pool safety inspector must still be satisfied that the pool complies using these methods.

**Relevant sections**

Section 246ACA and 246AH of the BA

Section 15 and schedule 2A of the *Building Regulation 2006*

## Ability to cancel pool safety certificates

If a local government inspects a regulated pool that has a pool safety certificate and reasonably believes the pool does not comply with the pool safety standard, it can cancel the pool safety certificate. Local governments must still comply with the show cause procedure before cancelling a certificate.

This power recognises the traditional local government regulatory role of monitoring swimming pool safety compliance within their local government area. The show cause procedure ensures that local governments properly document the grounds for any decision to cancel a pool safety certificate and that the pool owner is given notice of the proposed cancellation with an opportunity to respond. Cancellation of a certificate takes effect either at the end of the 10 business day appeal period unless the owner appeals the decision sooner.

Grounds to cancel a pool safety certificate could include where a pool has not been adequately maintained since the pool safety certificate was given and therefore no longer complies with the pool safety standard.

The pool owner has a right to appeal the local government decision to revoke the exemption to a building and development dispute resolution committee under the *Sustainable Planning Act 2009*. Notice of the revocation must be given to the QBCC within 10 business days after the revocation notice is given.

After cancellation, notice must be given to the QBCC within 10 business days to allow the QBCC to record the cancellation in the pool safety register.

These cancellation powers do not limit the power of local governments to issue an enforcement notice under the BA.

**Relevant sections**

Section 246AF and 246AG of the BA

## Prosecution powers

Local government prosecution powers have been expanded to include offences across a broad range of provisions. Local governments also have the power to issue infringement notices under the *State Penalties Enforcement Regulation 2014* against many of these offences.

Local governments have prosecution powers under the following sections of the BA:

| Section | Topic |
|---|---|
| 232 | Compliance with pool safety standard—regulated pool |
| 233(2) | Constructing regulated pool—requirement for warning sign |
| 233(3) | Constructing regulated pool—requirement for warning sign |
| 234(2) | Constructing regulated pool—requirement for compliance with pool safety standard |
| 237(4) | Decision on application—applicant must comply with exemption conditions |
| 242(5) | Local Government may revoke exemption |
| 245B(4) | Decision on exemption application (impracticability) |
| 245E(5) | Local Government may revoke exemption |
| 245G(1) | Requirement for person in charge of a hospital to a report pool immersion incident to the chief executive of Queensland Health |
| 245K | Requirement to have pool safety management plan |
| 245L | Requirement to comply with approved pool safety management plan |
| 245T | Access to regulated pool to be kept secure |
| 246AC(5) | Steps after non-conformity notice |
| 246AD(2) | Record-keeping requirements for inspections |
| 246AJ(4) | Identification number for pool safety certificate |
| 246AP(2) | Building certifier's obligation to give notice of existing regulated pool |
| 246AR(2) | Owner's obligation to give notice of existing regulated pool |
| 246ATF | Offence about sale of regulated premises |
| 246ATG | Offence about entering into accommodation agreement—regulated pool that is not a shared pool |
| 246ATH(2) | Offences about entering into accommodation agreement—pool safety certificate in effect for shared pool |
| 246ATH(4) | Offences about entering into accommodation agreement—pool safety certificate in effect for shared pool |
| 246ATI(2) | Offences about entering into accommodation agreement—pool safety certificate not in effect for shared pool |
| 246ATJ(2) | Requirement to obtain pool safety certificate for regulated pool that is not a shared pool |
| 246ATK(2) | Requirement to obtain pool safety certificate for regulated pool that is a shared pool |
| 246ATK(4) | Requirement to obtain pool safety certificate for regulated pool that is a shared pool |
| 246AU | Person must not perform pool safety inspection functions without licence |
| 246AV | Person must not perform pool safety inspection functions without prescribed professional indemnity insurance |
| 246AW(1) | Giving pool safety certificates and nonconformity notices |
| 246AW(2) | Giving pool safety certificates and nonconformity notices |

## Building certifier role

Under the BA, pool safety inspectors only have certain designated responsibilities relating to pool safety, known as pool safety inspection functions. These include inspecting regulated pools to

decide whether to give a pool safety certificate, giving pool safety certificates, giving nonconformity notices and carrying out minor works prescribed under the *Building Regulation 2006* if necessary.

The traditional role of building certifiers remains basically unchanged under the laws, including deciding building development applications for new pools, inspecting new pools and enforcing pool safety laws.

All licensed building certifiers in Queensland were automatically licensed as pool safety inspectors free of charge for one year from 5 November 2010. Building certifiers do not need to undertake a training course or the government test. If a building certifier's licence is cancelled, suspended or surrendered, the same will automatically occur to their pool safety inspector licence. For renewals of their pool safety inspector licence, building certifiers must apply to the QBCC and pay the licence renewal fee.

The pool safety register contains a publicly accessible register of licensed pool safety inspectors, including those building certifiers who are also licensed pool safety inspectors. The register includes the inspector's name, licence number, date of licence issue and expiry and the inspector's contact details. The register also includes a record of any disciplinary action taken against a pool safety inspector, including any tribunal order made against them, and this is visible to the public.

### Building certificates in place of pool safety certificates

A final inspection certificate given by a building certifier for building work that includes the construction of, or alteration to, a regulated pool can be used instead of a pool safety certificate. This is also the case for a certificate of classification given for a building that includes a regulated pool or on land where a regulated pool is situated. Both certificates are valid for the same period of time as a pool safety certificate, i.e. one year for shared pools or two years for non-shared pools.

However, this is only allowed if the certificate was issued against the current pool safety standard. If the certificate was issued against an older pool safety standard, it cannot be used instead of a pool safety certificate. In this case, a separate pool safety certificate is required.

Building certifiers must enter details of final inspection certificates and certificates of classification they issue for swimming pools onto the pool safety register within five days of issuing the certificate.

## Pool safety inspector role

Under the BA, pool safety inspectors only have certain designated responsibilities relating to pool safety, known as pool safety inspection functions. These are:

- inspecting regulated pools to decide whether to give a pool safety certificate
- giving pool safety certificates
- giving nonconformity notices
- carrying out minor works as prescribed under the *Building Regulation 2006* if necessary.

A pool safety inspector carries out these functions under an agreement with the pool owner. The practical details of the agreement including the cost, time of the inspection and whether the pool safety inspector undertakes minor repairs are a matter of negotiation between the pool safety inspector and the pool owner. Inspection costs are not specified in the laws and are left to be determined by the market. A pool safety inspector does not have any specific right of entry powers and may only enter onto land to inspect a pool if invited by the pool owner or their agent.

A pool safety inspector cannot refuse to give a pool safety certificate only on the grounds that there is no development approval for the pool or barriers or only on the grounds that the pool or barriers do not comply with the development approval.

## Local government pool safety inspectors

Local governments are required to, if asked, provide an inspection service by a licensed pool safety inspector. Local governments can meet this requirement in various ways, such as:

- employing a licensed pool safety inspector in-house
- employing a licensed pool safety inspector on a share arrangement amongst several local governments
- contracting a private licensed pool safety inspector.

It is strongly recommended local governments employ at least one licensed pool safety inspector to respond to public enquiries, undertake mandatory local government inspections and enforcement action and carry out pool safety inspection functions for pool owners. The latter is especially important for local government areas not serviced by private pool safety inspectors.

## Fees

Local governments have a range of legislative tools available to help recover the cost of performing their pool safety responsibilities under the current pool safety laws. The *Local Government Act 2009* and *City of Brisbane Act 2010* allow local governments to charge cost recovery fees for performing their pool safety responsibilities under the BA. The only exception to this under the BA is for carrying out an inspection in response to an immersion notice or complaint notice. Local governments can charge a fee for performing mandatory inspections after they receive a notice from the QBCC.

In addition, local governments can impose infringement notices under the *State Penalties Enforcement Regulation 2014*, or undertake prosecutions, for an expanded range of pool safety offences. Local governments are able to retain money received from infringement notices and prosecutions.

It is expected that the vast majority of owners will obtain a pool safety certificate prior to settlement or entering into a lease or other accommodation agreement. In the limited circumstances where this does not occur, the BA provides the QBCC with prosecution powers for owners not obtaining the required pool safety certificate. The QBCC is also able to impose infringement notices under the *State Penalties Enforcement Regulation 2014* for these offences.

**Relevant sections**

- Section 246ADA and 256 of the BA
- Section 97 of the *Local Government Act 2009*
- Section 99 of the *City of Brisbane Act 2010*
- *State Penalties Enforcement Regulation 2014*

# Links and more information

## Fact sheets

www.hpw.qld.gov.au/construction/BuildingPlumbing/PoolSafety/Pages/default.aspx

## Legislation

www.legislation.qld.gov.au

## Swimming pool safety guidelines

www.hpw.qld.gov.au/aboutus/ReportsPublications/Guidelines/Pages/PoolSafetyGuidelines.aspx

## Code of conduct for swimming pool safety inspectors

www.hpw.qld.gov.au/SiteCollectionDocuments/pool-safety-inspector-code-of-conduct.pdf

## Queensland Development Code Mandatory Part 3.4

www.hpw.qld.gov.au/construction/BuildingPlumbing/Building/BuildingLawsCodes/QueenslandDevelopmentCode/Pages/QueenslandDevelopmentCodeCurrentParts.aspx

## The Queensland Family and Child Commission

www.qfcc.qld.gov.au

## Queensland Injury Surveillance Unit

www.qisu.org.au

## Forms under the *Building Act 1975*

www.hpw.qld.gov.au/aboutus/ReportsPublications/FormsTemplates/Pages/default.aspx

ITEM: [No.]

SUBJECT: PROACTIVE POOL INSPECTION PROGRAM

AUTHOR: MANAGER, BUILDING AND PLUMBING

DATE: 22 JULY 2020

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**EXECUTIVE SUMMARY**

This report provides an overview of Council's Proactive Pool Inspection Program adopted by Council in October 2018 and explores contemporary practices with respect to pool safety and awareness regarding childhood drownings and immersion incidents.

**RECOMMENDATION/S**

The following recommendations are listed in preferential order (OPTIONS 1-3):

**OPTION 1 - That:**

a) **Council authorise the Manager, Building and Plumbing to develop and implement a Residential Swimming Pool Safety Education and Awareness Program; and**
b) **Council undertake recruitment for a Program Officer – Regulated Pools (Level 4-5) which is within the existing staff establishment and funded at Level 2.1 requiring a budget amendment of $12,355.50 (including on-costs) for the 2020/2021 financial year.**

**OR**

**OPTION 2 – That:**

c) **Council authorise the Manager, Building and Plumbing to implement a Residential Swimming Pool Inspection Program; and**
d) **Council undertake recruitment for two Regulated Pool Inspectors (Level 4-5) which are not within the existing staff establishment and unfunded requiring a budget amendment of $148,773.33 (Level 4 including on-costs) for the 2020/2021 financial year.**

**OR**

**OPTION 3 - That Council not deliver a Proactive Pool Inspection Program and instead rely upon Council's reactive compliance inspections as well as legislative obligations for pool owners to ensure routine maintenance and required inspections are performed under Queensland's sale/lease system.**

**RELATED PARTIES**

- Chief Audit Executive
- Manager Regulatory Services
- There was no declaration of conflicts of interest.

**ADVANCE IPSWICH THEME LINKAGE**
Caring for our Community
Listening, Leading and Financial Management

**PURPOSE OF REPORT/BACKGROUND**

Ipswich City Council Pool Safety Inspection Program

A Final Internal Audit Report (A1718-16) - "Residential Swimming Pools" dated 16/11/2017 was presented to Council with audit findings and four (4) recommendations (**Attachment 2**):

1. Establish a Proactive Pool Inspection Program
2. Establishing a service code and reporting for pool immersion incidents
3. Issuing 4 yearly notifications to pool owners of their responsibilities
4. Accessing and monitoring the State's Pool Safety Register

A Council Report dated 28/9/2018 - Swimming Pool Inspection Program Trial (**Attachment 1**) was approved based on the trial findings from the Swimming Pool Inspection Program detailed in report dated 3 July 2018 (**Attachment 3**), resulting in approval for two Level 4 Officers at a cost of $172,387.20 (with on costs) in the 2017/2018 to inspect 12% of the 8000+ estimated pools (including spas) every year.

On 1 July 2019, the Proactive Pool Inspection Program and responsibilities were transferred from the former Health Security and Regulatory Services Department Compliance Team to the Planning and Regulatory Services, Building and Plumbing Branch as part of Council's restructure. This included one full time contractor who had been appointed to undertake pool inspections. However, as this program and positions were unfunded, the contactor ceased employment with Council in October 2019.

**Legislation and legislative responsibilities**

All residential swimming pools in Queensland **must** have compliant pool fencing. This includes portable pools and spas continually filled with water to a depth of more than 300mm. All pools must be registered and have a CPR (cardio-pulmonary resuscitation) sign nearby.

The Queensland swimming pool legislation (Building Act 1975) requires pool and spa owners to register their pool/spa and maintain their fence at all times to the pool safety and fencing standards.

The pool owner must hold a valid pool safety certificate at the time of construction and when a property is sold, leased or an accommodation agreement signed. All pool safety certificates must be registered on the State Government's Pool Safety Register which is maintained by the Queensland Building and Construction Commission (QBCC). As a result, the State's sale and lease compliance system captures a bulk of pools/spas in Ipswich through these routine inspections.

The Department of Housing and Public Works administers the Queensland Building Act 1975 which prescribes Local Government's responsibilities targeting swimming pool safety and pool fence compliance. This includes immersion incident response, complaint investigation and referrals, enforcement and appeals which is delivered by Council's Development Compliance team.

**Pool Safety Industry Research Findings**

Upon transfer to the Building and Plumbing Branch, comprehensive research was undertaken to ensure Council was delivering a consistent and innovative pool safety program with industry bodies and other local governments. The Queensland Family and Child Commission confirms that children under five (5) are most at risk of immersion due to their innocence and fearlessness around water as well as limited swimming and survival techniques.

Whether it's the backyard pool, public pool, dams, fish ponds, creeks or a bucket, swift water/flooding, young children (under 5) are naturally fascinated by water yet don't understand the dangers. The ***Royal Life Saving*** advocate that a compliant pool barrier is only a secondary defence to effective adult supervision and learning basic CPR which has a greater likelihood in reducing immersions and saving lives.

Compliant pool fencing does not guarantee kids are safe. Children are resourceful, and can use objects to help them climb the fence or open the gate. Even shallow wading pools are a drowning hazard.

Furthermore, the research revealed that education and awareness programs, strategies and events were far more likely to deliver the key messages more widely and to all ages. The advantage is that the positive messages extend to the Ipswich community reaching those who do not have a regulated pool rather than individual pools under a Proactive inspection regime.

Promoting the main pool fence breaches and how to fix those items by using media and marketing campaigns in the lead up to the summer months as well as educational and awareness programs, partnering with key stakeholders, swim schools and schools will reach a broader audience.

Feedback was sought from other south east Queensland local governments on current pool inspection programs and combined with research studies by water safety and government organisations. This revealed an emphasis on active adult supervision and water safety above pool fence inspections to reduce drowning and immersions.

Brisbane City Council for example deliver an "Improving Water Safety Outcomes" program which focuses on increasing community awareness of the risks and dangers associated with water and promoting responsible pool ownership through education campaigns, partnering with industry and undertaking proactive and reactive residential pool inspections.

Whilst other local governments such as Sunshine Coast Council, City of Gold Coast and City of Logan have run similar Proactive Pool Inspection programs in the past, they have shifted back to reactive programs with inspections by field officers.

**Collaboration and Partnerships**

A clear outcome of the review was that collaboration, partnering and advocating with water safety organisations to deliver consistent strategies and a collective message can enhance Council's commitment to prevention of childhood drowning within the Ipswich region.

Ipswich City Council can take an active role in reducing residential swimming pool immersion incidents by boosting awareness of water safety initiatives, delivering prevention strategies and promotion through Council's marketing, media and educational teams.

Kids Alive and Poolwerx advocate on water safety through initiatives such as Kids Alive Do the Five, Free learn to swim school during spring school holidays, Free basic CPR sessions and educational programs. This has ongoing effects and message retention relating to water safety as opposed to pool fence compliance which only assures compliance at the time of pool inspection and for a brief time where the child is left unsupervised.

Swim and Survive is a comprehensive swimming and water safety initiative of Royal Life Saving that seeks to increase the swimming and water safety skills of all Australian children in order to prevent drowning and increase participation in safe aquatic activity. Similar programs extend to adult learn to swim programs where adults are unfamiliar with swimming and water safety to enable parents and those who supervise to educate all family members on water safety in all aquatic locations.

During the September school holidays, Kids Alive and Poolwerx provided free swimming lessons through approximately 500 registered swim schools across Queensland. In 2018, the Red Cross partnered with them to deliver free CPR sessions for anyone in Queensland who registered during the April Pools Day campaign.

Council has the opportunity to promote water safety and foster partnerships with similar initiatives, such as:

- Identify all water hazards – pools, baths, beach, creek, dams, ponds, buckets
- Advocate for active adult supervision
- Water familiarisation, school, public and private swimming lessons
- Promote Community wide CPR and rescue skills
- Partner with water safety advocates and organisations, partner with pool shops, St Johns/Qld Ambulance
- Educate the community on water and pool safety and pool barrier compliance
- Annual Campaigns - April Pools Day – 1 April, Check the Gate Day – 1 December, Spring/Summer School Holidays Free Swim and CPR sessions

**FINANCIAL/RESOURCE IMPLICATIONS**

The Proactive Pool Inspection Program was not fully funded in the 2019/2020 budget and therefore an amendment to the 2020/2021 budget will be required. An amount of $20,000

has been allocated in the 2020/2021 budget for the Spring/Summer media and marketing pool safety campaign.

**RISK MANAGEMENT IMPLICATIONS**

1. Risks associated with Council's legislative responsibilities continue to be addressed through a reactive compliance program including customer requests, QBCC referrals and Queensland Health immersion incidents, as well as building development approvals.

2. Non-compliant barrier risks are also further mitigated through opportunistic inspections that occur as part of any building inspections on residential properties where a swimming pool exists.

3. Although not legislatively required the risks associated with not undertaking any proactive approach to Residential Swimming Pool Safety and Awareness arises in relation to public perception that Council is not doing enough to mitigate the dangers of childhood drownings.

4. Industry research including that of the peak body ***Royal Life Saving***, identified that education and awareness strategies such as free learn to swim programs, CPR training sessions, stakeholder partnering strategies and pool fence community information sessions were the best options in trying to decrease the likelihood and risk of childhood immersions.

**LEGAL/POLICY BASIS**

The report and its recommendations are consistent with the following legislative provisions:
*Planning Act 2016*
*Building Act 1975*
*Building Regulation 2006*
*Local Government Act 2009*

**COMMUNITY AND OTHER CONSULTATION**

The Chief Executive Officer and Interim Administrator were consulted. The Chief Executive Officer requested a report to Council regarding the current Proactive Pool Inspection Program.

Manager Regulatory Services was consulted and raised no objections.

The Chief Audit Executive continues to hold the views raised in the Internal Audit Report A1718-16 "Residential Swimming Pools".

No community consultation was carried out as the Proactive Pool Inspection Program was devised from recommendations detailed in Internal Audit Report A1718-16 "Residential Swimming Pools".

**CONCLUSION**

Whilst a Proactive Pool Inspection Program targets swimming pool barriers, industry programs focus on water safety and awareness coupled with training as a priority for the reduction in swimming pool drowning incidents. Opportunistic proactive swimming pool inspections currently take place, alongside the pool safety certificate inspections in respect of property sales and leases and reactive inspections. It is believed that additional improved outcomes can be achieved by Council in delivering a Residential Swimming Pool Safety and Awareness Program targeted at partnering with organisations and industry to deliver proactive initiatives such as:

- Kids Alive Do the Five – Living with Water Program, Learn to Swim Programs
- Royal Life Saving Australia– Keep Watch and Swim and Survive programs
- Poolwerx – Free Learn to Swim Week, National Check your Pool Gate Day (1 December)
- Red Cross/ Poolwerx/ Kids Alive – April Pools Day (1 April) Free CPR First Aid Course 2019
- Poolwerx and Kids Alive – Responsible Pool Person Day (Australia Day Long Weekend)
- Swim Australia – Swim Safer Week (19-24 November 2019)
- Surf Life Saving Queensland – Ready Set Rescue Program

**Recommendation**

Adopting the water safety organisations perspective of a supervisory, education and awareness first position would ultimately reach a greater proportion of the Ipswich community and pool owners. Also, by acknowledging that tenanted and transferred properties with swimming pools and spas in Ipswich are already routinely inspected in the State Government's sale/lease regime and Council maintains their legislative duty in reactive and opportunistic proactive inspections, the following recommendations are listed in preferential order:

**OPTION 1 - That:**

a) **Council authorise the Manager, Building and Plumbing to develop and implement a Residential Swimming Pool Safety Education and Awareness Program; and**
b) **Council undertake recruitment for a Program Officer – Regulated Pools (Level 4-5) which is within the existing staff establishment and funded at Level 2.1 requiring a budget amendment of $ (including on-costs) for the 2020/2021 financial year.**

**OR**

**OPTION 2 – That:**

c) **Council authorise the Manager, Building and Plumbing to implement a Residential Swimming Pool Inspection Program; and**
d) **Council undertake recruitment for two Regulated Pool Inspectors (Level 4-5) which are not within the existing staff establishment and unfunded requiring a budget amendment of $ (including on-costs) for the 2020/2021 financial year.**

**OR**

**OPTION 3 - That Council not deliver a Proactive Pool Inspection Program and instead rely upon Council's reactive compliance inspections as well as legislative obligations for pool**

**owners to ensure routine maintenance and required inspections are performed under Queensland's sale/lease system.**

**ATTACHMENTS AND CONFIDENTIAL BACKGROUND PAPERS**

| | | |
|---|---|---|
| 1. | Swimming Pool Inspection Program Trial Committee Report dated 28/09/2018 | Attachment 1 Swimming Pool Insp |
| 2. | Residential Swimming Pools (A1718-16) Audit Report dated 16/11/2017 | Attachment 2 - Final Audit Report 1 |
| 3. | Proactive Pool Inspection Program Council report dated 03/07/2018 | Attachment 3 - Swimming Pool Insp |
| 4. | Local Government Swimming Pool Safety Guideline – Department of Housing and Public Works dated October 2016 | Attachment 4 - Local Government S |

Michael Bond
**MANAGER, BUILDING AND PLUMBING**

Peter Tabulo
**GENERAL MANAGER – PLANNING AND REGULATORY SERVICES**

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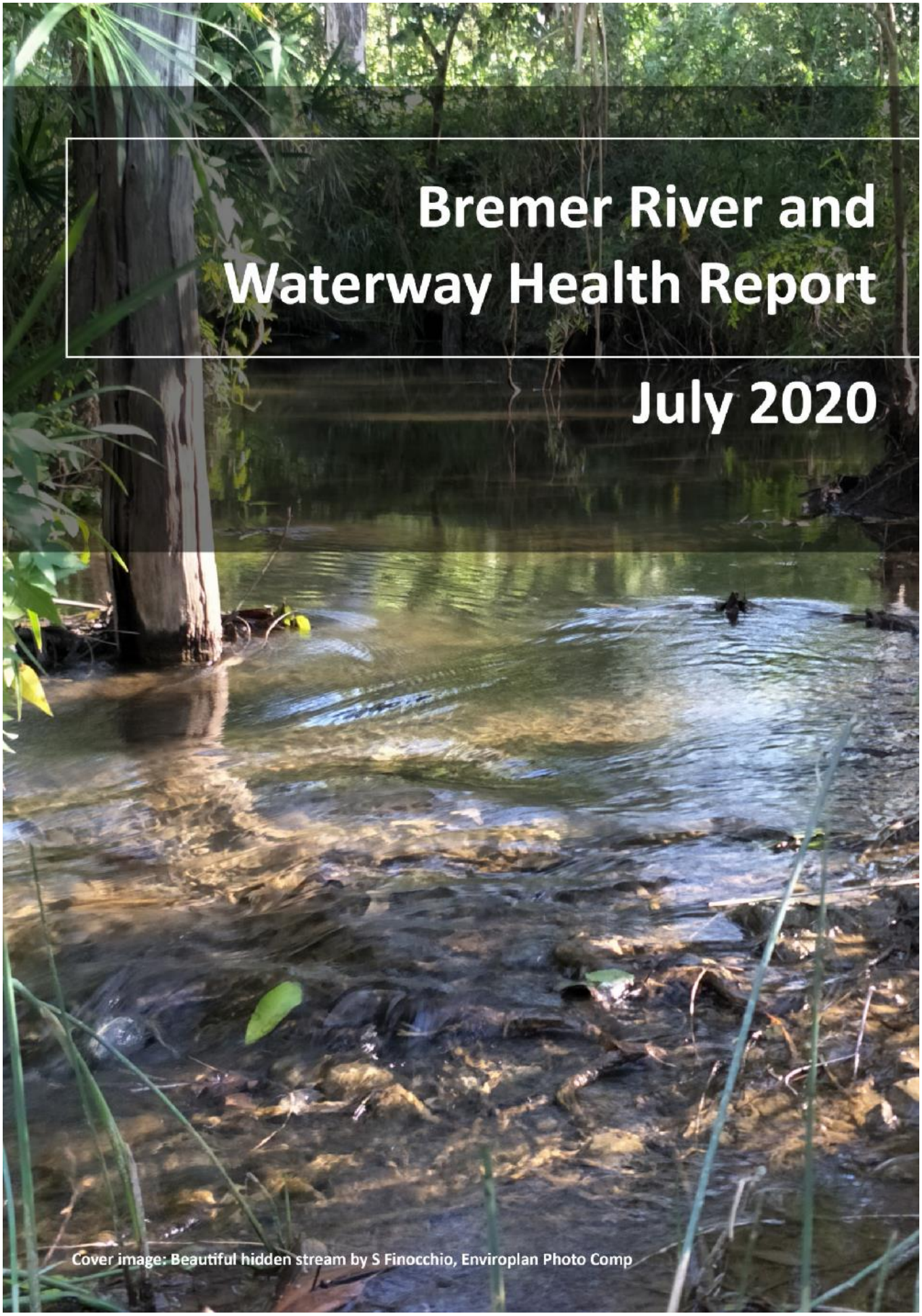
Bremer River and Waterway Health Report
July 2020
Cover image: Beautiful hidden stream by S Finocchio, Enviroplan Photo Comp

# Introduction

The ***Bremer River and Waterway Health Report*** provides an overview of the legislative framework, the key stakeholders and their roles and responsibilities, the health status, and the priority investment actions for waterways in Ipswich. This report responds to the Mayoral Minute presented by Mayor Harding in May 2020 seeking a full report on Council's roles and responsibilities in the management of the Bremer River and Ipswich waterways, and the consideration of future actions and investment priorities.

Supplementing this Report is the renewed ***Waterway Health Strategy 2020*** and a detailed ***Background Report*** outlining the city-wide strategic priorities and sub-catchment based actions to improve the health and function of the Bremer River and Ipswich waterways. The Waterway Health Strategy 2020 builds on the best available science and past actions to set the investment priorities for the next 3-5 years. Implementation of the Strategy will support Council's achievement of the Corporate Plan Strategy Priority for *protecting and preserving the natural environment*, and provide a framework for Council to meet the relevant legislative requirements for waterway protection.

## Waterway Context

The challenges and opportunities that are faced by the Bremer River are also relevant to other major waterways and tributaries across Ipswich. Moreover, the Bremer River is a product of the inputs, including sediment, pollutants, and organic material, that are derived from its contributing tributaries and catchments.

The Bremer River is approximately 120 km in length and has a catchment area of around 2030km$^2$ across two local government boundaries. Approximately one third of the Bremer River catchment lies within the Ipswich LGA. The Bremer River joins the Brisbane River at Barellan Point where the tidal influence of the Brisbane River becomes the dominating factor on the condition and behaviour of the Bremer, extending all the way up to the CBD reach.

The condition and health of the many tributaries and sub-catchments that flow into the Bremer River have a significant influence on its overall health and aesthetics. As such, the actions listed in this report and the Waterway Health Strategy predominantly focus on the mid to lower reaches of the Bremer River and the freshwater tributaries that flow into the Bremer, and the mid to lower Brisbane River.

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# Relevant legislation

Council has an obligation to meet a number of statutory requirements and regional targets for the protection and management of water quality, aquatic ecosystems and riparian vegetation. It also has to fulfil State Government devolved responsibilities through regulatory enforcement on public and private land.

Navigating through the State and Commonwealth Government legislative framework for managing water and waterways is often complex and can lack hierarchical clarity. For the purposes of this report, below is a brief summary of the most relevant legislation and their relevance to Council.

*Environmental Protection and Biodiversity Conservation Act 1999 (Cth)*

The EPBC Act provides a framework for the protection and conservation of nationally significant ecological communities, wetlands and species, including: world heritage properties, national heritage properties and Ramsar wetlands. The Bremer River follows into the Brisbane River and subsequently into Moreton Bay which is a Ramsar listed wetland.

*Water Act 2000 (Qld)*

The Water Act provides a framework for the planning, allocation and use of surface water and groundwater in Queensland, including regulating major water impoundments (such as dams and weirs) and extraction through pumping for irrigation and other uses. The Water Act provides a system of interrelated plans, licences and permits for the regulation of in-stream (watercourses, lakes and springs) and overland water flow and groundwater.

The Act controls the removal of native vegetation from non-tidal watercourses through Riverine Protection Permits. The Act includes sub-ordinate legislation and plans, including:

- Water Regulation 2002
- Moreton Resource Plan - which incorporates the Bremer River catchment and Warrill Creek
- Resource Operations Plans
- Drought Management Plans
- System Leakage Management Plans

Council is required to develop and implement operational plans that meet requirements of the act such as Water Efficiency Management Plans and Drought Management Plans.

*Planning Act 2016 (Qld)*

The Planning Act provides the planning framework for ecological sustainable development across Queensland. This includes: planning, development assessment, infrastructure (charging), offences and enforcement, and dispute resolution. Council is required to develop local planning instruments (planning scheme, planning scheme policies, etc). This includes requirements for development to protect the natural environment, waterways and wetlands.

The Planning Regulation covers development involving taking or interfering with water as assessable or self-assessable development. This includes, amongst other things:

- all work in a watercourse, lake or spring that involves taking or interfering with water (e.g. a pump, gravity diversion, stream redirection, weir or dam); and
- all artesian bores anywhere in the State, no matter what their use.

An owner of land adjoining a watercourse, lake or spring may take water for stock or domestic purposes but this is subject to self-assessment under the Planning Act and Water Act and with this

right of trespass comes implied riparian responsibilities around maintenance and up keep of the waterway.

*Fisheries Act 1994 (Qld)*

The Fisheries Act provides the State's legislative framework for the regulation of fisheries, fish resources and coastal areas that are important as fisheries habitat and marine plants. The Act provides a range of mechanisms aimed at the sustainable management of fisheries including management plans, quotas, offences, licences and declarations of closed seasons, closed waters and fisheries habitat areas. Council is required to comply with the Fisheries Act for any works that impact on freshwater and marine fish habitats, fish movement or the clearing of marine plants in tidal areas.

*Biosecurity Act 2014 (Qld)*

This Act provides biosecurity measures for regulating pests (e.g. riparian weeds and fish), diseases, and some contaminants (e.g. lead on grazing land) that pose a biosecurity threat. It is administered by the Department of Agriculture and Fisheries with some powers and responsibilities devolved to Council.

*Environmental Protection Act 1994 (Qld)*

The Environmental Protection Act is a major component of the Queensland environmental legal system. Its objective is environmental protection within the context of ecologically sustainable development. The Act includes sub-ordinate legislation and requirements, including environmental protection policies, environmental values and water quality objectives, and state of the environment reporting. Council is required to develop plans and address compliance to the Act, through regulatory enforcement of environmentally relevant activities (ERA's).

The most relevant environmental protection policy for waterway health is the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. This policy identifies environmental values for waters and wetlands, including all catchments within Ipswich, and provides a framework for making consistent, equitable and informed decisions about waters.

*Local Government Act 2009 (Qld)*

The Local Government Act contains powers for local governments to pass local laws, which apply within a local government area. This may include a range of minor environmental issues through to the ability to regulate more serious environmental issues such as vegetation clearing.

*Native Title (Queensland) Act 1993 (Qld)*

Past acts attributable to the Queensland Government that may have affected or extinguished native title are declared to be valid by this Act, which was enacted after the recognition of native title by the High Court in 1992. Importantly for environmental law, s17 declares that the State Government owns all natural resources and has the right to use, regulate and control the flow of waters and fishing access rights. Council is required to comply with the Act in recognition of Native Title matters.

*Aboriginal Cultural Heritage Act 2003 (Qld)*

The Aboriginal Cultural Heritage Act recognises, protects and conserves Aboriginal cultural heritage values and landscapes in Queensland. Council recognises waterways and wetlands have deeply embedded significant value as part of cultural landscapes and places.

*Nature Conservation Act 1992 (Qld)*

The Nature Conservation Act provides a framework for the creation and management of protected areas (such as nature reserves and state parks) and the protection of native flora and fauna (protected wildlife). Council's Nature Conservation Strategy sets the direction for the protection and enhancement of Ipswich's natural areas, and recognises waterways as significant corridors for native fauna and flora across the city. In addition, the Nature Conservation Strategy recognises iconic species and vegetation communities, such as platypus, for protection.

*Coastal Protection and Management Act 1995 (Qld)*

This Act provides for the protection, conservation, rehabilitation and management of the coast, coastal zone and its resources. It seeks to restrict the type and amount of development within the Coastal Management Districts. Parts of the Bremer River estuary and the Lower Brisbane River are mapped as a coastal management district. Council meets requirements under the Act through referral of relevant development applications that impact on tidal waterways.

*Rivers Improvement Trust Act 1940 (Qld*

The object of the Rivers Improvement Trust Act is to provide responsible management of river catchment areas through planning for and implementing measures that improve the protection, health and resilience of rivers and their catchments. This is achieved through the establishment of River Improvement Trusts, and areas in which they have powers and functions as a statutory body. Council works closely with the Ipswich Rivers Improvement Trust (IRIT).

Of note, only two (2) River Improvement Trusts exist in SEQ with both covering the entire Bremer River catchment area. The Bremer River is the only catchment in SEQ to be covered in full by 1 or more River Improvement Trusts, being Ipswich RIT and Scenic Rim RIT.

# Roles and Responsibilities

## Ipswich City Council

Council's primary role in waterway health management is to meet community expectations through policy, planning and management actions. Council's responsibilities are guided by Commonwealth and State legislation as well as regional and local policies.

While Council is only one player within the broader context of waterway and catchment management, it is well positioned to lead, advocate and implement for real change at a local level. Council fulfils its role in waterway health management by working across four broad areas:

- Developing and implementing planning documents and management activities to fulfil legislative requirements.
- Supporting regional natural resource management as a stakeholder in regional planning, operational programs and education initiatives.
- Delivering on-ground natural resource management, stormwater improvement and floodplain management activities.
- Supporting local groups and landholders in waterway improvement initiatives.

These activities are done as components of Council's core activities and functions, including:

- **Strategic land use planning and development assessments** – Land use planning and the approval of development assessments are key activities that Council can use to influence waterway health and water quality (stormwater management) outcomes by ensuring that the development of Ipswich is undertaken in a way which embraces the natural environment and aims to mimic the natural water cycle.
- **Regulation of environmental risks** – Council's responsibility to monitor environmental compliance is another key function which can directly protect waterway health, including responding to breaches of erosion and sediment control requirements in new development and council projects.
- **Acquisition, protection and management of publicly owned land** – Council can protect and manage key areas, such as riparian corridors and floodplains, through voluntary acquisition or developer contributed open space. Publicly owned land can then be managed and enhanced as natural areas.
- **Construction and maintenance of public infrastructure** – New public infrastructure planned, designed and delivered by Council (such as parks, roads, bike paths, bridges, drainage infrastructure, and stormwater assets) can be undertaken in a coordinated approach which aims to provide multiple outcomes, including waterway health improvements.

Waterway health management is also achieved, directly or indirectly, through a number of projects and programs between Council and external organisations, landholders and the general community, such as:

- Private landholder support programs (Land for Wildlife, Partnership Agreements)
- Environmental education material, workshops and events
- Support to local and regional natural resource management groups
- Investigating opportunities in market-based mechanisms for on-ground outcomes such as vegetation and water quality offsets

- Sourcing external funding for riparian protection and rehabilitation projects and devolved grants.

## Department of Environment and Science (DES)

DES is responsible for the administration of the *Environmental Protection Act 1994* and the associated Environmental Protection Policies. The Act places a general environmental duty on everyone in Queensland not to harm the environment.

In the workplace, companies must ensure they are operating with 'due diligence', by taking all practical steps towards meeting their environmental responsibilities. This also applies to local and state governments and their agencies.

### *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*

The Environmental Protection (Water and Wetland Biodiversity) Policy 2019 gives finer detail on how the measures under the Environmental Protection Act should be implemented to protect waterways.

It seeks to protect and maintain environmental values in waterways including:

- aquatic ecosystem health
- aquaculture and human consumption of aquatic foods
- agricultural uses (e.g. stock watering and irrigation)
- recreational uses (e.g. swimming, wading, boating, fishing and aesthetic)
- drinking water (raw water supply)
- industrial uses (e.g. power generation and manufacturing, mining and minerals refining/processing)
- cultural and spiritual values.

The Policy also outlines specific Water Quality guidelines/standards for given systems. These Water Quality Objective (WQOs) are based on best-available science and are developed under the processes outlined in the Australian and New Zealand Water Quality Guidelines (ANZECC Guidelines).

WQOs are long-term goals for water quality management. They are measures, levels or narrative statements of particular indicators of water quality (such as salinity or turbidity) that protect the Environmental Values of a system. WQO's have been set for all waterways found within Ipswich LGA.

### *Licensing*

Under the Environmental Protection Act, activities which have the potential to damage the environment are known as environmentally relevant activities (ERAs). Anyone carrying out an ERA must be licensed under the Act. Many industries are required to obtain a licence before they are allowed to discharge to waterways.

Licensing point source discharges is an important part of water quality management. Licences limit the discharges to specific levels, taking into account the waterway uses. Each licence is specific to the discharge and the waterway which will receive the discharge. The quantity, type, frequency and place of discharge is stated on each licence. Operators discharging without a licence will be prosecuted.

*Enforcement and prosecution*

The Department uses a range of enforcement methods to ensure water pollution problems are corrected and do not recur. Prosecution is usually seen as a last resort. However, some companies and individuals have been prosecuted for offences, leading to substantial fines.

## Department of Natural Resources Mines and Energy (DNRME)

DNRME have a guiding and regulatory role in the management of both water as a resource from waterways, dams and groundwater and also in the management of other resource industries and their impact on the environment, including waterways.

Broadly they have within their remit

- Water monitoring (levels, quantities and quality through the Ecological Health Monitoring Program [EHMP] which it funds the regional NRM body to carry out)
- Water licences and permits for industry and other purposes.
- Catchment and resource planning such as the Murray Darling basin plan and Moreton resource plan
- Water access (including bores, metering and water sharing)
- Water and sewerage provider regulation
- Issuance and enforcement of Riverine Protection Permits

## Department of Agriculture and Fisheries (DAF)

DAF manages the sustainability and allocation of fisheries and forestry resources, to remain sustainable and productive by:

- monitoring, determining and controlling access and development as needed
- providing education and enforced fishing regulations to promote equitable access to fisheries resources
- maintaining supplies of state owned forest products and quarry materials to industry

DAF are also response for the administration of Biosecurity Queensland.

## Natural Resource Management Bodies – Healthy Land and Water (HLW)

Healthy Land and Water is an independent organisation established under the Commonwealth's framework for Natural Resource Management bodies.

HLW works in partnership with Traditional Owners, government, private industry, utilities and the community to deliver innovative and science-based solutions to challenges affecting the environment. They undertake activities in research, monitoring, analysis, engagement and project management to restore waterways and landscapes, improve native habitats, manage weeds, protect native species and educate communities on the best ways to improve and protect the environment for future generations.

Healthy Land and Water is also the lead organisation in the development and implementation of the SEQ Natural Resource Management Plan.

## Council of Mayors SEQ (CoMSEQ)

CoMSEQ launched the Resilient Rivers Initiative (RRI) in December 2014, with the aim of improving the health of SEQ waterways by delivering a coordinated approach to catchment management. Signatories to the Resilient Rivers Initiative include the Council of Mayors (SEQ), Queensland Government, Seqwater, Healthy Land and Water, Unitywater and Queensland Urban Utilities.

The Resilient Rivers Initiative was founded on the recognition that a coordinated approach to catchment management is vital to ensure future economic, social and environmental health of the region. The initiative aims to improve the health of SEQ waterways by achieving the following goals:

- To promote partnerships with strong leadership to deliver a coordinated approach to catchment management in SEQ.
- To keep soil on our land and out of our waterways.
- To help protect our region's water security so it can support the current and future population of SEQ.
- To improve the climate resilience of our region.

Under the Resilient Rivers Initiative banner Council has been involved in the development and implementation of the Mid Brisbane River and the Lower Brisbane River Catchment Action Plans, and was the lead organisation in the development of the Bremer River Catchment Action Plan (CAP). The CAP's set a range of management actions to achieve the goals of the RRI by all relevant stakeholders.

## Ipswich Rivers Improvement Trust (IRIT)

The function of the IRIT is to carry out works designed to improve the flow of water in the rivers and tributaries within the City of Ipswich, and to correct erosion and provide flood mitigation. The Trust is a statutory body and operates in accordance with the powers and responsibilities of the *River Improvement Trust Act 1940*.

The IRIT receives an annual precept payment from Council, which is mandated under the Act, as well as subsidies from DNRME.

## Seqwater

Seqwater's primary responsibility is the management and operations of water supply across south east Queensland. Seqwater also has a focus on the protection and management of water supply catchments, and has established a funding program to support landholders within the Mid-Brisbane River catchment. The program supports landholders to manage bank stability and reduce sediment inputs into the river above the Mt Crosby weir, the primary off-take for drinking water supply to 3 million people living in Ipswich and Brisbane.

## Landcare and Community Groups

Landcare, bushcare and catchment community groups provide an essential connection between communities, natural assets and landscapes. Ipswich has a number of landcare, bushcare and catchment groups that play a key role in the enhancement of waterway health across Ipswich, undertaking weed control, revegetation and habitat restoration projects.

## International RiverFoundation (IRF)

Based in South Brisbane, the International RiverFoundation (IRF) has a national and international focus on supporting river managers to improve the sustainable management of river basins all over the world. In 2010, Ipswich City Council partnered with IRF in the establishment of the Bremer River Fund. The Bremer River Fund has successful received funding over the past decade to implement a number of on-ground actions across the Ipswich, primarily focussed on the revegetation of Bundamba Creek.

## Australian Rivers Institute (ARI – Griffith University)

The Australian Rivers Institute (ARI) is a world leader in research and education on rivers, coasts and catchments. The ARI provides a creative and collaborative environment that fosters the next generation of ecosystem scientists, supports sustainability and promotes conservation of the world's natural resources. The ARI receives funding from the Ipswich Rivers Improvement Trust towards research on weed impacts and native vegetation benefits within riparian corridors in Ipswich. In addition, the ARI are looking to undertake research to monitor the benefits and outcomes of Council's Franklin Vale Initiative which seeks to improve the health and resilience of Franklin Vale Creek.

# Waterway condition and health

The two primary river catchments within the Ipswich Local Government Area are the Bremer River and the Brisbane River (Mid and Lower) catchments.

Currently the Bremer River is considered as the worst performing catchment in SEQ according to the 2017, 2018 and 2019 Healthy Land and Water report card (grade D). This is concluded through the accumulation and interrogation of annualised data which examines a range of parameters including Total Suspended Solids, Fish and Invertebrates numbers, nutrient loads, plus others.

The Mid Brisbane fairs slightly better than the Bremer by regularly receiving a C grade, generally as a result of the upstream section being managed as the drinking water catchment for the Greater Brisbane area.

The key drivers of the poor health in the Bremer River are high Nitrogen, Phosphorous and Turbidity (mainly from Suspended solids/sediments), and the resulting low dissolved oxygen levels. In addition, poor habitat and bankside vegetation found at the monitoring sites contribute towards the low report card grade.

In the early 2000's, significant multi-agency investment was provided to address the water quality issues associated with high nutrient and low oxygen levels. The investment focused on major upgrades of Sewage Treatment Plants (STPs) across South-East Queensland. Within Ipswich, the Goodna and Bundamba STP's received upgrades, and the Tivoli STP was decommissioned. Treatment standards and the associated point source contamination entering waterways were improved over a comparatively short period of time. Since then, the Ecosystem Health Monitoring Program has shown an improvement in the nitrogen levels within Moreton Bay, and a reduction in the frequency of algal blooms.

Studies undertaken within the Bremer River estuary show that the alteration of tidal regime and the strong influences in the lower reaches by the Brisbane River result in a lack of flushing. These influences contribute towards the current health and state of the Bremer River in the lower estuary and CBD reaches. In addition, the Bremer River estuary receives high sediment and nutrient loads from Deebing and Bundamba Creeks, particularly during wet weather events. These tributaries pass through existing suburbs, industrial areas, and major urban developments of Ripley Valley and Deebing Heights, contributing addition sediment and nutrient loads from these areas which become trapped in the lower estuary.

Upstream of the tidal reaches and the Deebing and Bundamba creek confluences, the Bremer River changes substantially, where it is dominated by fresh water, generally flows 'clear' and has reasonable native bankside vegetation. The freshwater reaches of the Bremer River have historically scored better in the EHMP than the lower estuary.

Figure 1 shows a modest trend of improving water quality scores contrasted against the rapid population growth in the City of Ipswich since 2001. While the major pressures and challenges that the river faces are almost entirely anthropogenic in origin (both legacy/historically and presently) the trends in water quality and corresponding marginal improvement in overall EHMP report card grade over the past 10 years is certainly a positive. This should however be caveated with the fact that some of the recent pressures including the current PFAS data provided by the Department of Defence has not been factored as a specific parameter in this assessment. However it is strongly asserted that any impacts that the PFAS has had on the broader health of the waterway through fish

or invertebrate ecology would have been collected and inherent within the results of the monitoring program since its inception.

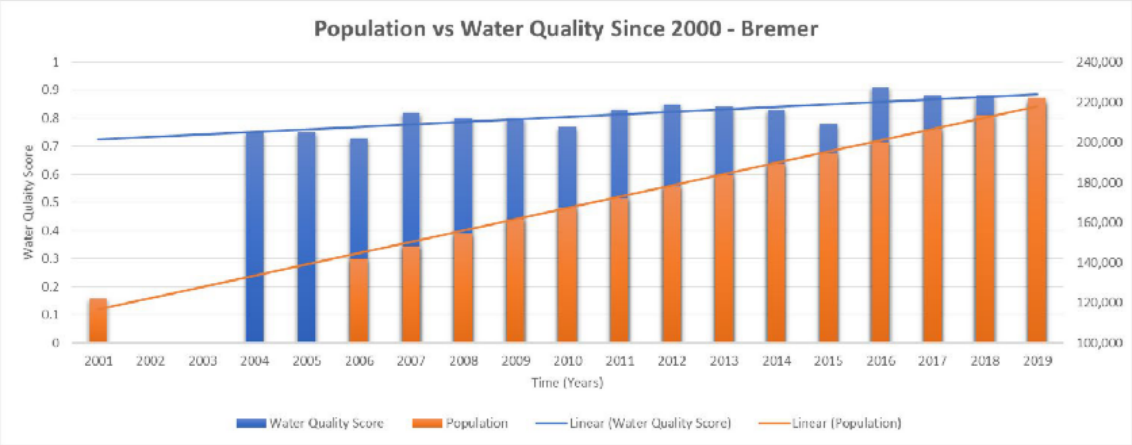



*Figure 1 Water Quality compared with Population 2001 -2020*

Note: Water quality score is the rating within the EHMP report grade – specifically for water quality parameters including: dissolved oxygen, pH, nutrients, and turbidity – and compared to the ANZECC Guidelines.

Given the historic and current catchment conditions, for example urban drainage, altered hydrological regime and the hydraulic limitation of the tidal reaches in the lower section, it should be kept in mind that the Bremer catchment will not be able to achieve scorecard ratings for water quality and waterway health comparable with less modified catchments such as the Noosa River (which regularly scores A or B in the EHMP report card).

It would be reasonable, through targeted long-term investment, to aspire to achieving a report card grade of C to C+ in the Bremer. Based on an understanding of previous actions, this may take at least 20-30 years for actions now to come to fruition. The previous Waterway Health Strategy lists a vision to improve the health of Ipswich waterways to achieve and maintain a 'D+' rating for the Bremer River estuary and a 'C' rating for the freshwater tributaries, by 2031. To date, this has largely been achieved as evidenced in the EHMP data.

Table 1. Report Card Grades since the commenced of the EHMP program in 2001.

| YEAR | CATCHMENT | | | |
|---|---|---|---|---|
| | ESTUARY | | FRESHWATER | |
| | BREMER | LOWER BRISBANE | BREMER | MID BRISBANE |
| 2001 | F | D- | F | C |
| 2002 | F | D- | F | C |
| 2003 | F | D- | D- | C |
| 2004 | F | D- | D- | B- |
| 2005 | F | D- | D- | C+ |
| 2006 | F | D- | D- | C+ |
| 2007 | D- | D+ | D | B- |
| 2008 | F | D+ | D- | B |
| 2009 | F | D | D+ | C+ |
| 2010 | F | D | D+ | C |
| 2011 | F | D | C | D- |
| 2012 | F | D+ | C | F |
| 2013 | D- | D+ | C- | D- |
| 2014 | D- | D+ | D+ | F |
| 2015 | D | C- | * | D |
| 2016 | D+ | C- | | D+ |
| 2017 | D- | D+ | | B- |
| 2018 | D+ | D+ | | C- |
| 2019 | D+ | C- | | C+ |

*Combined with the Bremer Estuary score from 2015

Scale - lowest (F) to highest (A+) Grade

| F | D- | D | D+ | C- | C | C+ | B- | B | B+ | A- | A | A+ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

## Background and history

Over the past 200 years the Bremer River has undergone significant change. Prior to European settlement, the Bremer River was most likely an entirely freshwater tributary of the Brisbane River. Consequently, the catchment, sub-catchments and tributaries have undergone significant modification.

Figure 2 shows a timeline of major historical events and changes from the early 1800's to 2010 that are likely to have influenced the health and management of the Bremer River and its catchment.

Some of the major pressures on waterway health were from industry and land use change. Early clearing of the catchment was likely to have driven significant change to hydrology and geomorphology. Comparisons of very early pictures to today show that the town reach of the Bremer River has incised (cut down) significantly since European settlement. This is a result of vegetation removal which decreases bank stability and increases water velocity, combined with interventions such as large scale dredging and the manual removal of natural rock bars, and major flood events. This has left the river bank within the city centre with steep banks that are prone to slippage and scour in flood events.

Further historical impacts on the Bremer River are a result of the river being used as an open industrial drain through the early 1900s, with the discards of animal by-products and waste from the town works being dumped or discharged into the river. Whilst the waterway (quality and ecology) has improved considerably from this time the legacy still persists with high concentrations of metals and toxic chemicals still present in the benthic substrate and prone to resuspension in flood and high flows.

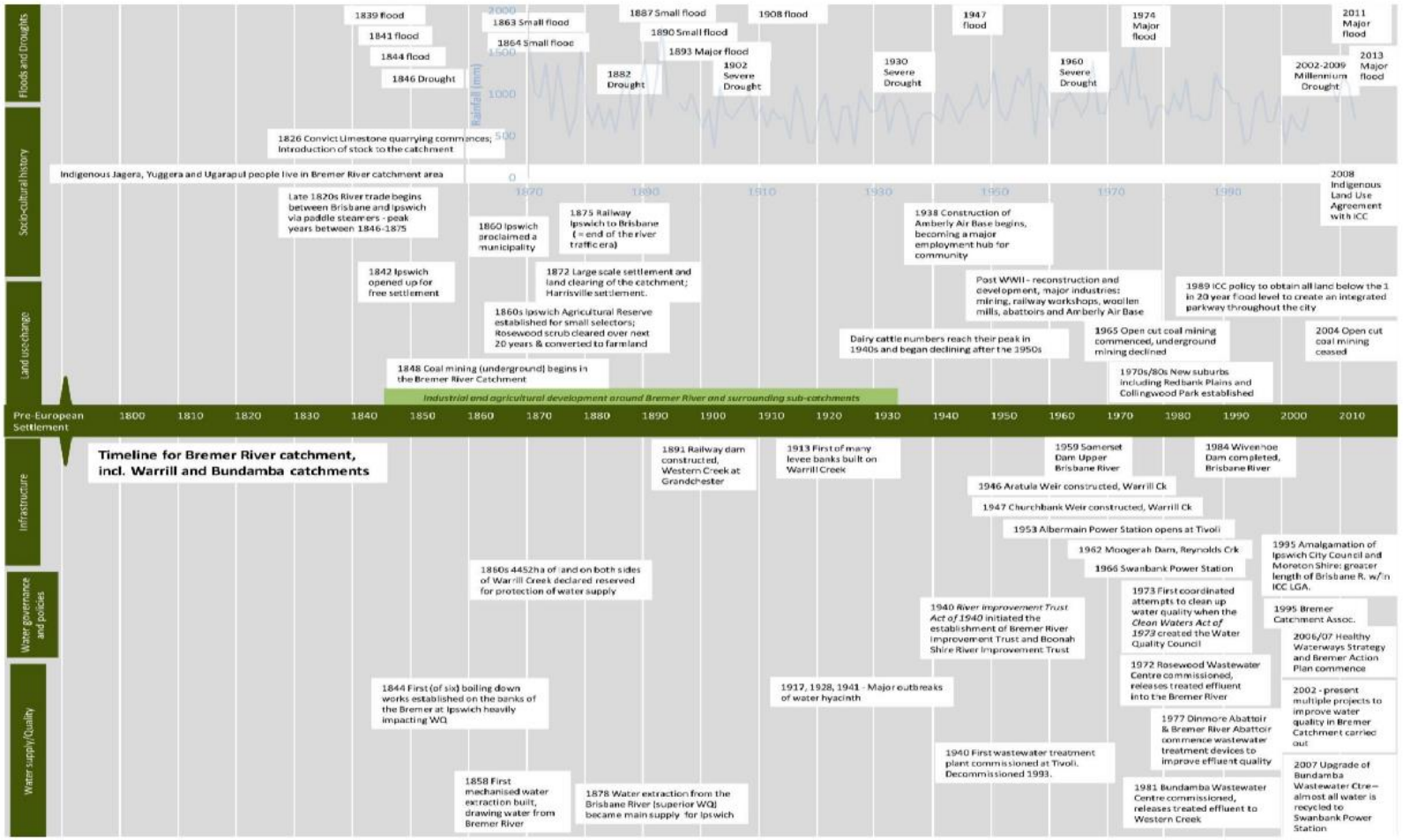



*Figure 2: timeline of historical events that may have influenced the Bremer River and its tributaries*

# 25 Years of Planning, Strategies and Initiatives

## Past History – An overview from 1995 to 2010

Table 2 Planning, Strategies and Initiatives 1995 – 2010

| | |
|---|---|
| **1995** | Commencement of the Bremer River Enhancement Project and formation of the Bremer Catchment Association Inc. (formally Bremer River Catchment Coordinating Committee) – Bremer River Catchment Management Strategy |
| **1996** | Funding for the Implementing Catchment Management into the Six Mile, Woogaroo and Goodna Creek Catchments (SWAG) |
| **1996/97** | Commencement of the Voluntary Conservation Agreements |
| **1998** | Moreton Bay and Catchments Water Management Partnership established (later known as SEQ Healthy Waterways Partnership) |
| **1999** | Commencement of the Bremer River Clean-Up Project |
| **2000** | National Action Plan for Salinity and Water Quality – federal funding for catchment action initiatives |
| **2001** | Commitment to Wastewater Treatment Plan upgrades through the SEQ Regional Water Quality Management Strategy |
| **2001** | Initiate partnership in the Ecosystem Health Monitoring Program, and the first annual report card released |
| **2002** | Initial funding for the Western Catchments Group |
| **2002** | Development of the Urban Stormwater Quality Management Plan |
| **2002** | Jamboree Park Frog Ponds Project |
| **2002**<br>**2004**<br>**2005** | RiverClean Event – Six Mile Creek Wildlife Corridor<br>RiverClean Event – Blue Gum Reserve<br>RiverClean Event – Jim Finimore Park |
| **2003** | NRMSEQ and SEQ Western Catchments Groups established (later known as SEQ Catchments in 2005) |
| **2005** | External funding through SEQ Catchments for on-ground projects |
| **2006** | RiverHeart Parklands Project |
| **2006/07** | Commencement of the Bremer Action Plan in the SEQ Healthy Waterways Strategy |
| **2008/09** | Bremer RiverBlitz revegetation project with Greening Australia Qld |
| **2009** | SEQ NRM Management Plan finalised |

## Highlights – 2009 onwards

*2009 - Ipswich City Council – Waterway Health Strategy*

This seminal strategy set a vision for Ipswich City Council around the management of waterways. It included specific considerations and recommendations as well as drawing on the best available science at the time to set out city-wide best practise principles that are still relevant today.

*2010 - Bremer River Forum*

The Bremer River Forum was held on Thursday 15 April 2010 in Ipswich, in partnership with the International WaterCentre, the International RiverFoundation, and the Australian Rivers Institute

(Griffith University). The forum facilitated an expert discussion on the key issues impacting the health of the Bremer River, and the development of a 10 point solutions plan to restore river health. It was attended by industry experts, government representatives, landholders, local businesses and the Mayor of Chattanooga. The result was a collaboration with the International RiverFoundation and the establishment of the Bremer River Fund, a contribution from local industry and businesses to invest in river recovery. Subsequent to its establishment the fund received no further industry contributions. However, a number of small scale water quality improvement projects were implemented, funded by State and Commonwealth Government grants for plantings and community events and a stabilisation and wetland project on Bundamba Creek.

*2012 (on-going) Habitat Connections*

Habitat Connections is a strategic creek rehabilitation program designed to beautify and restore degraded urban waterway corridors throughout Ipswich. This is being achieved through corridor restoration and revegetation.

The program has been designed to provide the community with dedicated locations to take part in tree planting activities that will help improve the water quality of waterways and habitat for local native fauna whilst forging strong community partnerships. Council has selected a number of urban creeks to enhance environmental outcomes of the area and offer the community and corporate groups new nature-based recreation opportunities. These creek include:

- Bundamba Creek
- Ironpot Creek
- Deebing Creek
- Woogaroo Creek

*2014-2018 Creek Improvement/Corridor Plans*

A series of creek corridor plans have been developed to address a range of complex issues and to guide the long term management of urban and rural creeks across the City. The Plans provide a common vision and integrated approach to support management across the open space, transport, recreation and stormwater networks that exist within a creek corridor. To date, Creek Corridor Plans have been developed for:

- Black Snake Creek
- Bundamba Creek
- Ironpot Creek
- Deebing Creek

A number of actions have already been undertaken as a result of the Creek Corridor Plans, including new pathways and revegetation along Black Snake Creek, stabilisation of eroding banks on Ironpot Creek, naturalisation of Small Creek, and revegetation of Bundamba Creek.

*2015 Ipswich City Council - Integrated Water Strategy*

The Integrated Water Strategy establishes a framework for the management of Ipswich's water cycle in accordance with a total water cycle management approach. Ipswich's water cycle combines a complex and interrelated mix of people, industries, catchments, rivers, dams, reservoirs, water service provider assets (potable water and sewerage networks), stormwater drainage features and flood mitigation works. As a deliverable of the IWS, the Floodplain Management Strategy was finalised in 2017.

*2016 Mid-Brisbane Catchment Action Plan*

Developed as one of the first Catchment Action Plans under the banner of the CoMSEQ Resilient Rivers Initiative, this Plan focuses on a stretch of Brisbane River from below Wivenhoe Dam to Mt Crosby Weir. The catchment is strategically important to SEQ as the main water supply for the region, providing drinking water to three million people in SEQ. The key focus is on keeping soil out of the river and on the land, and working in partnership with rural and peri-urban landholders.

*2016 Berrys Weir, Rock Ramp Fishway*

The remediation of Berrys Weir on the Bremer River with the construction of a rock-ramp fishway was undertaken in 2016. Berrys Weir was ranked as the 7$^{th}$ highest priority fish barrier in the Greater Brisbane region due to the 2.4m weir that was constructed in the 1960's to impound water for power generation. The fishway is extremely successful, with surveys showing 19 different species of native fish now using the ramp to access upstream freshwater habitats.

*2017 (on-going) Small Creek Naturalisation Project*

Small Creek is being transformed from a straight concrete channel to a living waterway. As well as providing natural habitat for wildlife and stormwater quality improvements, Small Creek also provides better path and bikeway connections and the opportunity for the local community to re-engage with urban waterways. The Small Creek Naturalisation Project is funded through Council's stormwater quality offsets scheme which is a developer-funded program, used to improve water quality and waterway health.

*2018 (on-going) Franklin Vale Creek Initiative*

In partnership with landholders along Franklin Vale Creek, Council is working to restore and improve the catchment condition through actions such as revegetation, offline watering points and stock exclusion fencing. Council is making a substantial investment in building a legacy of best practice land management where the productivity of the land is maintained for landholders, the community and the environment. Funding is derived from Council's stormwater quality offsets scheme.

*2018 Bremer Catchment Action Plan*

Developed by Council on behalf of the SEQ Council of Mayors Resilient Rivers Initiative, this Catchment Action Plan focuses on the resilience of the river system from the perspective of erosion and sedimentation in response to flood events – that is, keeping soil out of the rivers and on the land. The primary focus of the CAP is to address the very high risk of flooding, erosion, sediment and pollutant movement through the catchment and its impact on downstream creeks, the Brisbane River and Moreton Bay.

*2019 Brisbane River Strategic Floodplain Management Plan*

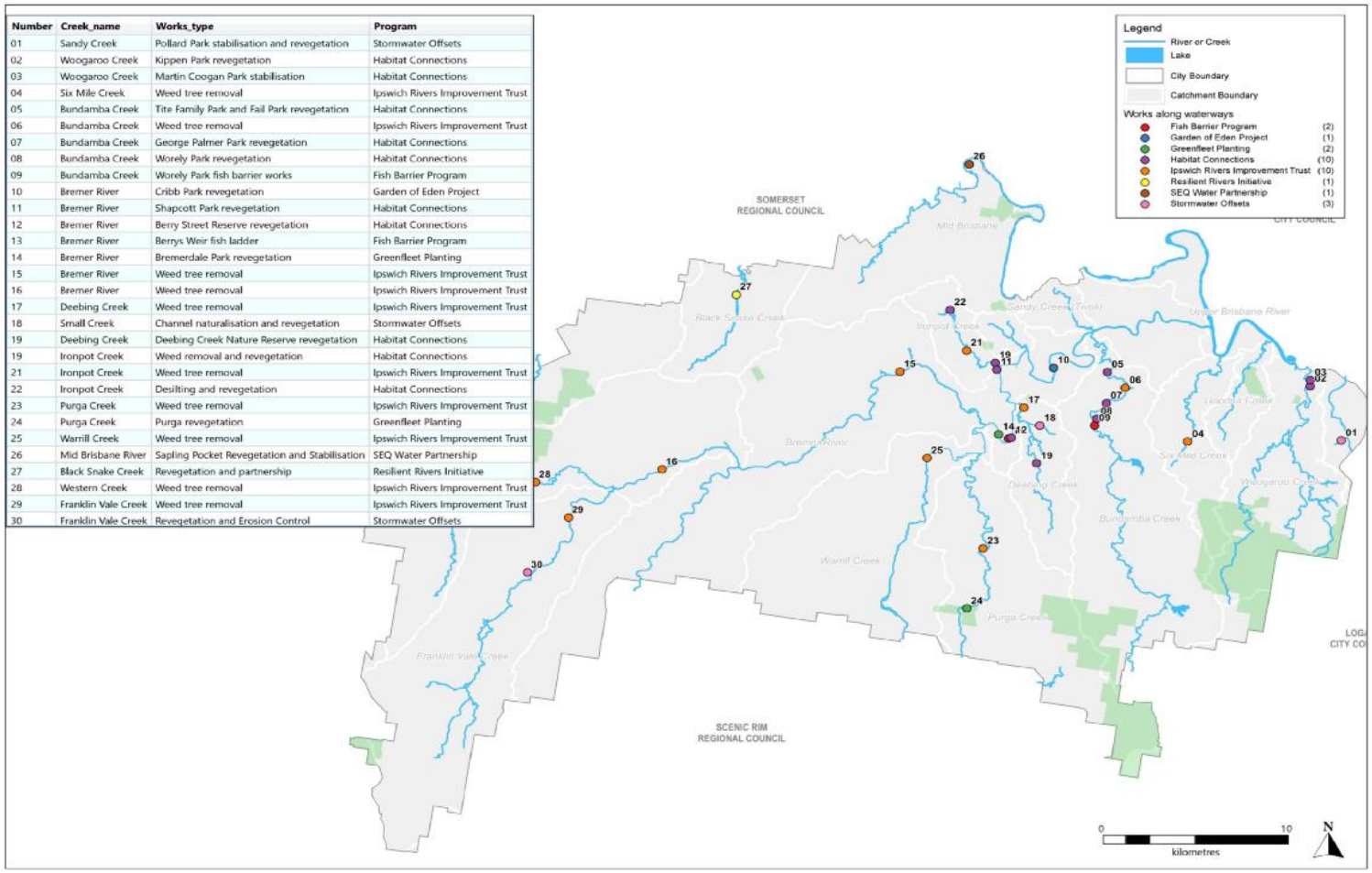
The Brisbane River Strategic Floodplain Management Plan (BRSFMP) provides the framework for a consistent approach to managing flood risk across the Brisbane River floodplain. It is a significant regional plan that considers current and future flood risk, disaster management, mitigation infrastructure, community resilience, building codes and guidelines, land use planning, and landscape management. It was informed by the Brisbane River Catchment Flood Study released in May 2017.

*2020 Ipswich Integrated Catchment Plan*

As a required next step following the release of the BRSFMP, Council has commenced the development of Ipswich Integrated Catchment Plan (IICP). The Plan is set to be completed in December 2020, focussing on landscape-scale flood mitigation, floodplain management, land use planning, community resilience and preparedness for future flood events.

## Table 3. Current and Recent Projects Maps

| Number | Creek_name | Works_type | Program |
|---|---|---|---|
| 01 | Sandy Creek | Pollard Park stabilisation and revegetation | Stormwater Offsets |
| 02 | Woogaroo Creek | Kippen Park revegetation | Habitat Connections |
| 03 | Woogaroo Creek | Martin Coogan Park stabilisation | Habitat Connections |
| 04 | Six Mile Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 05 | Bundamba Creek | Tite Family Park and Fail Park revegetation | Habitat Connections |
| 06 | Bundamba Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 07 | Bundamba Creek | George Palmer Park revegetation | Habitat Connections |
| 08 | Bundamba Creek | Worely Park revegetation | Habitat Connections |
| 09 | Bundamba Creek | Worely Park fish barrier works | Fish Barrier Program |
| 10 | Bremer River | Cribb Park revegetation | Garden of Eden Project |
| 11 | Bremer River | Shapcott Park revegetation | Habitat Connections |
| 12 | Bremer River | Berry Street Reserve revegetation | Habitat Connections |
| 13 | Bremer River | Berrys Weir fish ladder | Fish Barrier Program |
| 14 | Bremer River | Bremerdale Park revegetation | Greenfleet Planting |
| 15 | Bremer River | Weed tree removal | Ipswich Rivers Improvement Trust |
| 16 | Bremer River | Weed tree removal | Ipswich Rivers Improvement Trust |
| 17 | Deebing Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 18 | Small Creek | Channel naturalisation and revegetation | Stormwater Offsets |
| 19 | Deebing Creek | Deebing Creek Nature Reserve revegetation | Habitat Connections |
| 19 | Ironpot Creek | Weed removal and revegetation | Habitat Connections |
| 21 | Ironpot Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 22 | Ironpot Creek | Desilting and revegetation | Habitat Connections |
| 23 | Purga Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 24 | Purga Creek | Purga revegetation | Greenfleet Planting |
| 25 | Warrill Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 26 | Mid Brisbane River | Sapling Pocket Revegetation and Stabilisation | SEQ Water Partnership |
| 27 | Black Snake Creek | Revegetation and partnership | Resilient Rivers Initiative |
| 28 | Western Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 29 | Franklin Vale Creek | Weed tree removal | Ipswich Rivers Improvement Trust |
| 30 | Franklin Vale Creek | Revegetation and Erosion Control | Stormwater Offsets |



# Where to from here?

Contained within the various plans and strategies that have been developed by Council and stakeholders, is a breadth of actions and investment priorities to improve the health of the Bremer River and Ipswich waterways. Many of these actions can be distilled into short, medium and long term goals. A well-used and recognised approach for creek and river recovery is the 'ABC' model, being: ***Activate, Beatify and Clean***.

## Activate

"Activate" relates to encouraging people to utilise under-used spaces and engaging with the waterways – seeing them as assets and cherishing them. "Activation" includes elements such as holding organised events (eg: Trees for Mum), and improving open space amenity by providing pathways, seating and active recreational nodes (eg: Small Creek naturalisation project). Activation of a riparian parkland can assist with building stewardship and creating a sense of ownership amongst local residents for their local parks and waterways.

"Activation" has benefits in reducing antisocial behaviour, including vandalism, littering and illegal dumping in parks and creeks through passive and active surveillance.

The Bremer River has ongoing activation through the city centre with Riverheart Parklands, Riverlink precinct, and the connection across the Bradfield Bridge. The completion and connection of the CBD project will open up this connection and should be seen as a unique and exciting opportunity for the City to face and embrace the Bremer River; forming a connection and understanding of the broader catchment.

## Beautify

Beautification and perceived 'cleanliness' of the Bremer River and its associated parklands are key elements to encourage appropriate use of the area, building community trust, and supporting personal and social investment in embracing the river as a cherished asset.

The current situation in regards to the aesthetics of the river as seen from the town centre bridges is a direct disincentive to the general community and tends to attract the less desirable behaviours such as the dumping of trollies. This currently initiates a negative cycle of disengagement and decreased care factor.

A program of localised beautification of the river and its banks within the town reach would support the social and ecological values and encourage positive attitudes to investment across the reset of the waterways and catchments.

## Clean

"Clean" refers to ensuring that the more fundamental waterway health values are addressed to ensure the waterways remain a clean and healthy asset. The social and public investment and social licence to 'clean up the waterways' comes partially as a result from the previous activation and beatification steps.

Similar to "beautification", clean parklands and waterways help improve community perception of the area and encouraging appropriate use of the parklands. A clean waterway has potential to be an active part of the parklands adding new recreational elements to how people use the parklands. The ultimate goal is to invert the negative spiral of social attitudes into a positive, caring, cleaning feedback loop once the river and catchments are seen as a valued asset.

# High Level Investment Priorities

Recovery of the Bremer River and Ipswich waterways requires a dedicated, long-term approach to investment. Traditionally, catchment and waterway health investment has been limited, ad-hoc or focussed on single projects and initiatives through short-term funding or grant programs. The recovery of the Bremer River and waterways requires targeted, sustained investment.

As shown in Figure 1 previously, improvement in waterway health will be incremental and realised over many years if not decades. The key to improving the Bremer River and Ipswich waterways lies in managing and reducing inputs of sediment and pollutants in the upper catchments and tributaries that feed into the Bremer River, as well as the activation and beautification of the town reach to engage the hearts and minds of the community.

The high level investment proposal focusses on a 10 year timeframe, and includes annual costs to be carried forward each year, and project based initiatives that may be delivered as once-off investments. Some actions and projects are yet to be costed due to the high-level informing document yet to be finalised, or are opportunistic.

The proposed projects and annual budgets have been listed under the 5 Strategic Priorities identified in the *Waterway Health Strategy 2020*.

### STRATEGIC PRIORITY 1: Giving waterways and wetlands room to function

| ACTION | DETAILS | PROPOSED BUDGET | TOTAL |
|---|---|---|---|
| **PROJECTS** | | | |
| Ipswich Integrated Catchment Plan – implementation of the IICP actions for re-engagement of floodplains to promote flood mitigation and waterway health | Once finalised and adopted, an annual works program and project delivery schedule is to be developed. | To be costed | TBD |
| Wetland acquisition – voluntary acquisition of priority wetland(s) as part of the Enviroplan Acquisition program | The Enviroplan Acquisition Plan identifies priority areas for acquisition. Implementation of the plan is on an opportunistic basis as priority areas become available for acquisition. | Variable – to be identified in the Enviroplan forward financial model | TBD |

## STRATEGIC PRIORITY 2: Promoting waterways and wetlands as engaging and accessible public spaces

| ACTION | DETAILS | PROPOSED BUDGET | TOTAL |
|---|---|---|---|
| **PROJECTS** | | | |
| Bremer River bank stabilisation within the town reach – implementation of the North Ipswich Open Space Masterplan for stabilisation of the banks within the town reach | Through the implementation of the North Ipswich Open Space Master Plan, or parts thereof, to stabilise and revegetate the banks of the Bremer River within the town reach. | To be costed | TBD |
| Bremer River Trail – linking points of interest through signage and online media | Signage and educational resources | $120,000 (new) | $120,000 |

## STRATEGIC PRIORITY 3: Supporting landholders in undertaking works on private properties

| ACTION | DETAILS | PROPOSED BUDGET | TOTAL |
|---|---|---|---|
| **ANNUAL PROGRAMS** | | | |
| Voluntary Conservation Partnerships – supporting landholders with the revegetation and restoration of waterways on private land | 2 x Program Officer (Natural Environment) (existing budget)<br>Program incentives (existing budget) | $200,000 (existing)<br>$240,000 (existing)<br><br>Note: The existing program and budget covers all conservation partnerships, including waterway corridors | $440,000 |
| Healthy Land and Water membership – partnership with the regional NRM body, including the annual Ecosystem Health Monitoring Program, and Bremer River clean-up program | Annual membership<br>Clean Up program<br>Trolley Clean Up | $76,000 (existing)<br>$20,000 (existing)<br>$20,000 (new) | $116,000 |
| Ipswich Rivers Improvement Trust – annual precept for waterway restoration, including bank stabilisation and woody weed removal | Annual precept | $150,000 (existing) | $150,000 |
| **TOTALS** | | | |
| New budget | | | $20,000 |
| Existing budget | | | $686,000 |
| **ANNUAL TOTAL** | | | **$706,000** |

**STRATEGIC PRIORITY 4: Reducing sediment entering our waterways**

| ACTION | DETAILS | PROPOSED BUDGET | TOTAL |
|---|---|---|---|
| **ANNUAL PROGRAMS** | | | |
| Erosion and Sediment Control Compliance – education and partnering with development industry to meet legislative requirements for ESC on-site | 2 x ESC officers (PRS)<br>Education / Compliance Resources | $250,000 (new)<br>$100,000 (new) | $350,000 |
| Water Sensitive Urban Design – development and implementation of WSUD policy, guidelines and best practice to support development and council projects, including natural channel guidelines, input into LGIP | 1 x WSUD officer (IED)<br>Resources | $120,000 (new)<br>$75,000 (new) | $195,000 |
| Stormwater quality offsets – delivery of offset projects funded through the voluntary stormwater quality offsets scheme (developer funds) | 1 x Waterway Improvement Officer<br>On-ground projects<br>Monitoring | $120,000 (existing)<br>$1,500,000 (existing)<br>$100,000 (new) | $1,720,000 |
| **PROJECTS** | | | |
| Gravel road resealing – resealing gravel roads within the priority waterways such as: mid-Brisbane River | Potential partnership and co-funding with Seqwater | To be costed | TBD |
| **TOTALS** | | | |
| New budget | | | $1,620,000 |
| Existing budget | | | $645,000 |
| **ANNUAL TOTAL** | | | **$2,265,000** |

## STRATEGIC PRIORITY 5: Enhancing riparian corridors

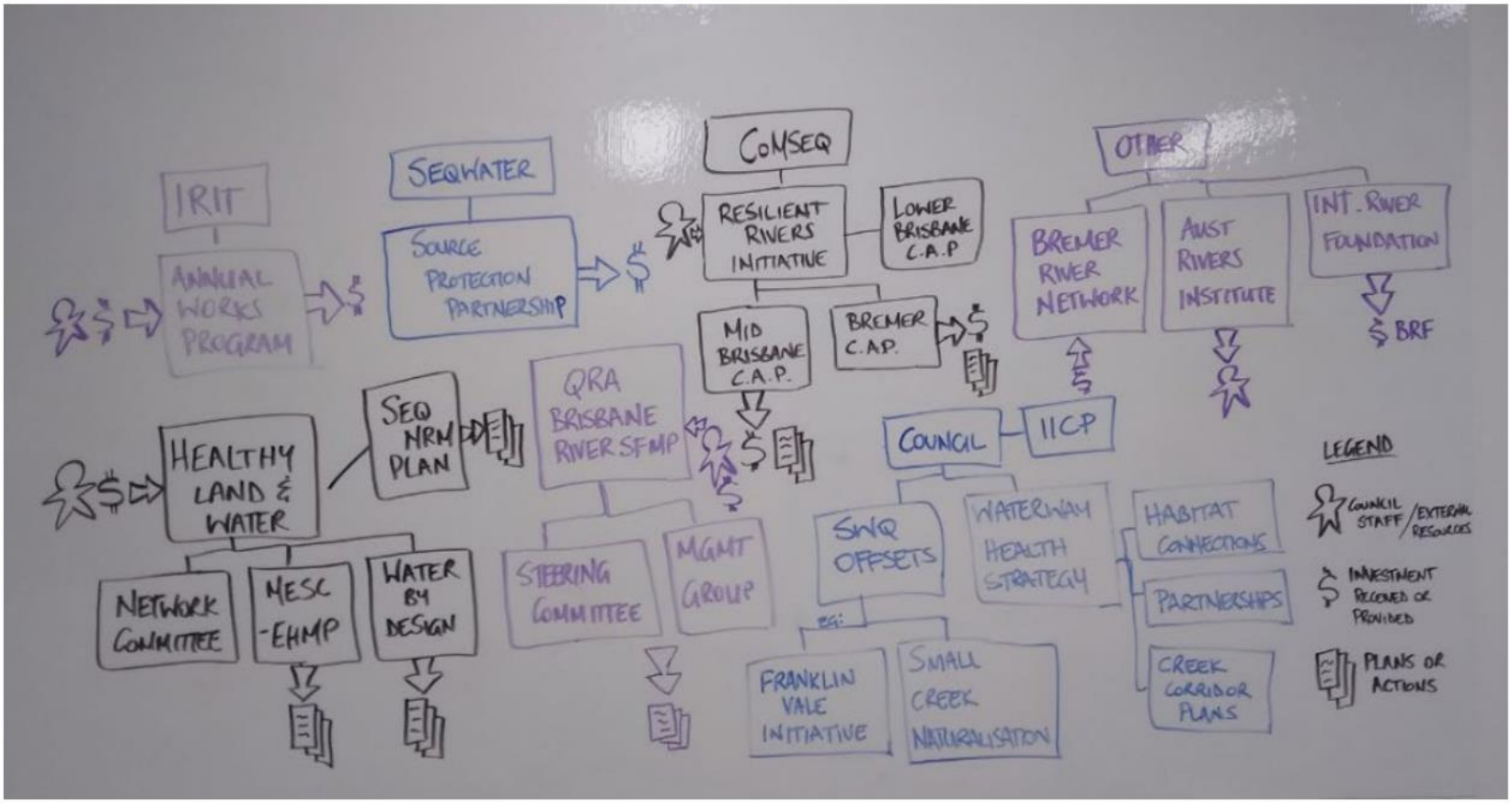
| ACTION | DETAILS | PROPOSED BUDGET | |
|---|---|---|---|
| **ANNUAL PROGRAMS** | | | |
| Riparian and In-stream restoration projects – enhancing the extent and condition of riparian and in-stream habitat | 2 x Waterway Health Officers (1 currently budgeted)<br>On-ground projects, including weed control, revegetation, bed and bank stabilisation | $240,000 (incl. $120,000 existing)<br>$500,000 (incl. $120,000 existing – Habitat Connections) | $740,000 |
| Riparian and water asset maintenance – skilled team for the maintenance of riparian corridors within linear open space network, and over 200 stormwater quality assets | 3 x maintenance staff<br>Maintenance<br>Operational expenses | $240,000<br>$350,000<br>($250,000 existing) | $590,000 |
| **TOTALS** | | | |
| New budget | | | $490,000 |
| Existing budget | | | $840,000 |
| **ANNUAL TOTAL** | | | **$1,330,000** |

The proposed investment for annual operational and capital expenditure (excluding one-off projects) is $4,301,000. This budget is made up of costs that are already contained within Council's operational and capital budgets of $2,171,000 and new budget of $2,130,000. The above costs are indicative only, and are provided at a high-level to demonstrate current and proposed investment priorities. Of note, is the proposal for additional resources within the following areas:

| | |
|---|---|
| Compliance: Erosion and Sediment Control Compliance | 2 x officers |
| Planning: Water Sensitive Urban Design | 1 x officer |
| Maintenance: Stormwater Quality Assets and Natural Channels | 3 x officers |
| Project Management: Waterway Health | 1 x officer |

The supplementary ***Waterway Health Strategy 2020*** sets out a more comprehensive list of actions for achieving the city-wide strategic priorities and improving waterway health across the identified sub-catchments. Whilst many of these actions will be delivered through existing Council resources, projects and programs, other actions will require the development of business cases to support their consideration for inclusion in future budgets.

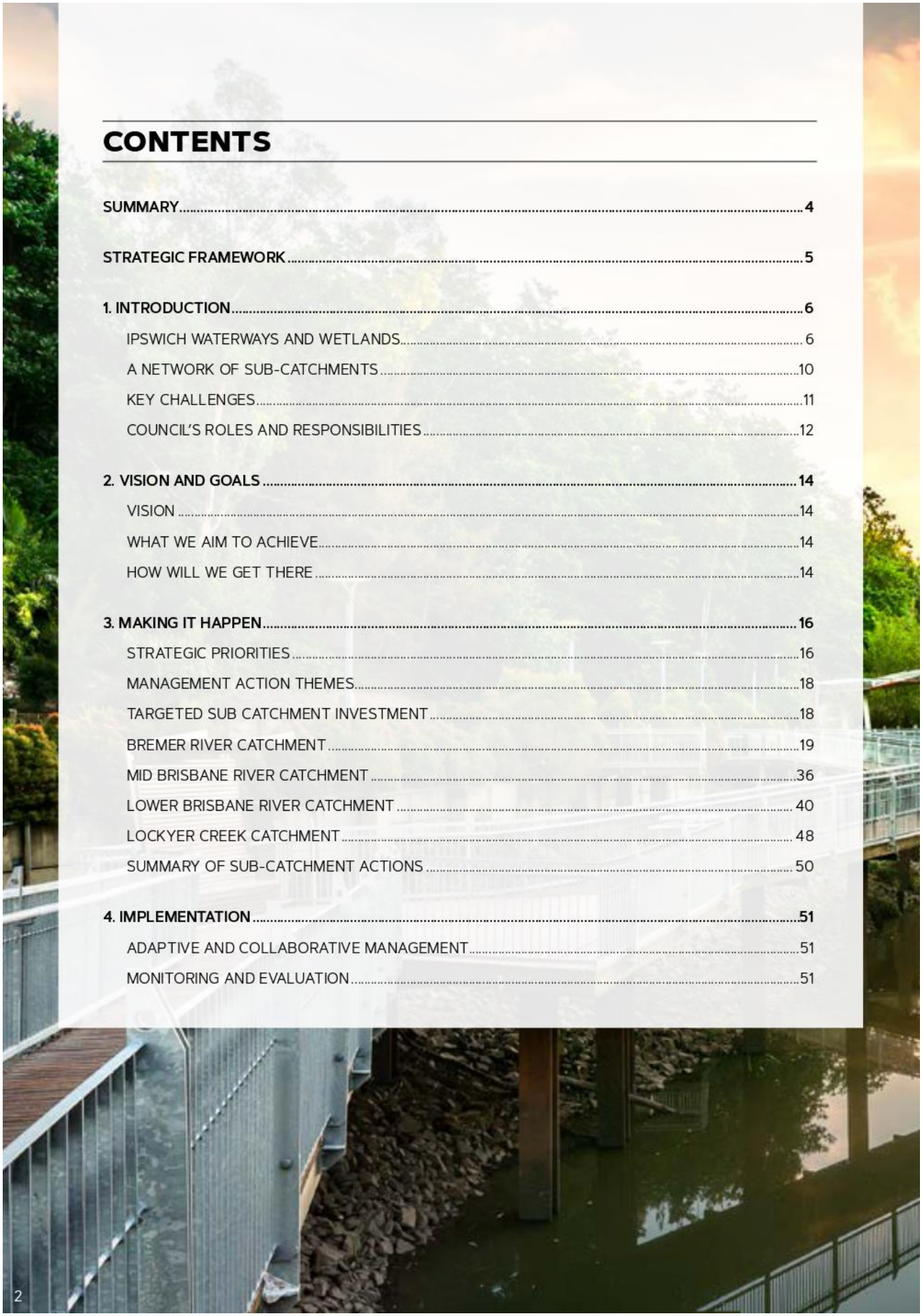
# Appendix 1 – Stakeholders map



# City of Ipswich
# Waterway Health Strategy

2020

Ipswich.qld.gov.au



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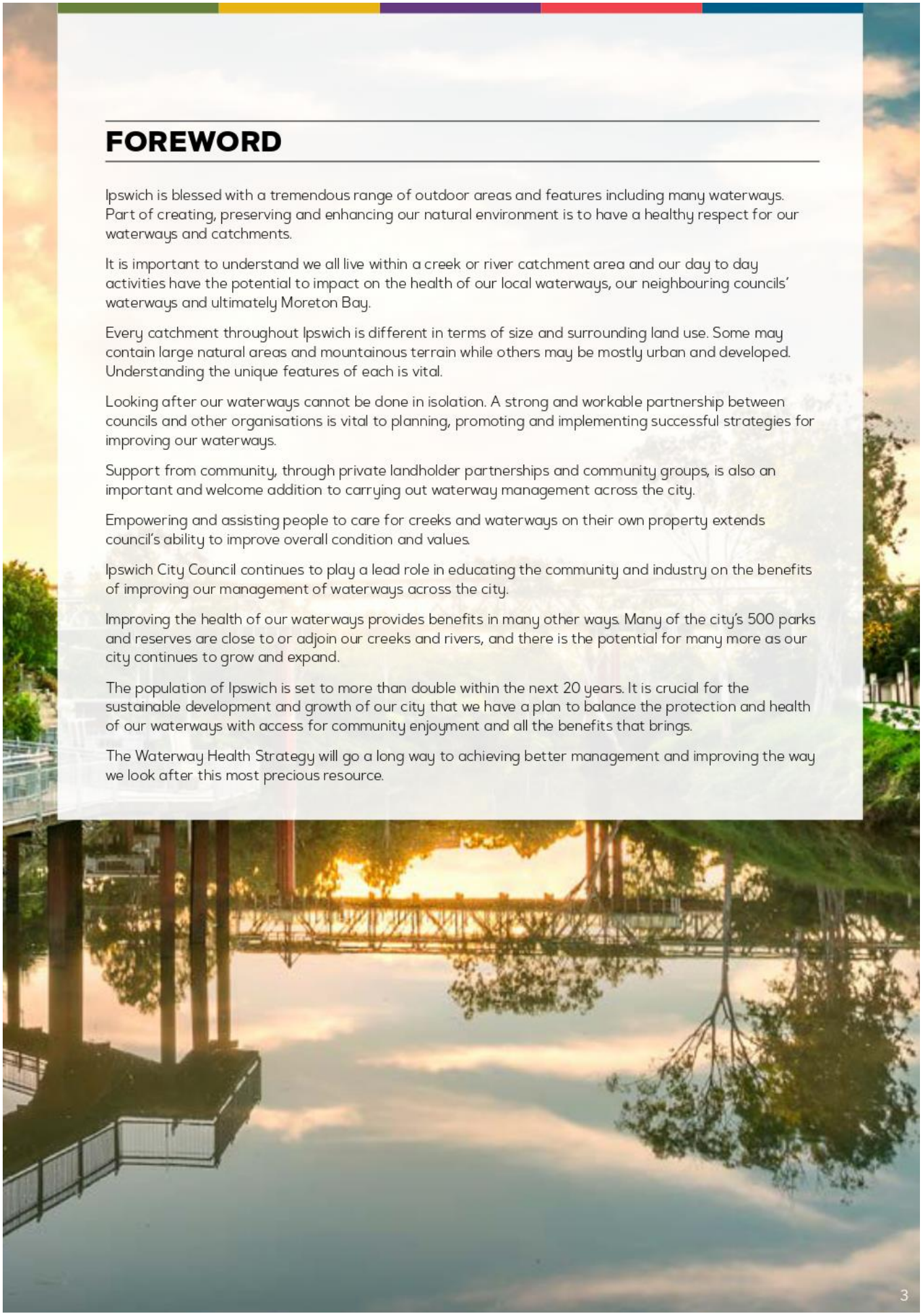


# FOREWORD

Ipswich is blessed with a tremendous range of outdoor areas and features including many waterways. Part of creating, preserving and enhancing our natural environment is to have a healthy respect for our waterways and catchments.

It is important to understand we all live within a creek or river catchment area and our day to day activities have the potential to impact on the health of our local waterways, our neighbouring councils' waterways and ultimately Moreton Bay.

Every catchment throughout Ipswich is different in terms of size and surrounding land use. Some may contain large natural areas and mountainous terrain while others may be mostly urban and developed. Understanding the unique features of each is vital.

Looking after our waterways cannot be done in isolation. A strong and workable partnership between councils and other organisations is vital to planning, promoting and implementing successful strategies for improving our waterways.

Support from community, through private landholder partnerships and community groups, is also an important and welcome addition to carrying out waterway management across the city.

Empowering and assisting people to care for creeks and waterways on their own property extends council's ability to improve overall condition and values.

Ipswich City Council continues to play a lead role in educating the community and industry on the benefits of improving our management of waterways across the city.

Improving the health of our waterways provides benefits in many other ways. Many of the city's 500 parks and reserves are close to or adjoin our creeks and rivers, and there is the potential for many more as our city continues to grow and expand.

The population of Ipswich is set to more than double within the next 20 years. It is crucial for the sustainable development and growth of our city that we have a plan to balance the protection and health of our waterways with access for community enjoyment and all the benefits that brings.

The Waterway Health Strategy will go a long way to achieving better management and improving the way we look after this most precious resource.

# SUMMARY

Achieving healthy catchments and waterways is a top priority for Ipswich residents when it comes to caring for the environment. Long-term environmental recovery programs for priority wetlands and waterways across the city will guide council's investment to meet community needs and desires. The future health of waterways and wetlands in Ipswich will be secured through council's leadership and commitment to catchment and waterway health enhancements.

Over the past two decades, council has demonstrated its commitment to waterway health through investment across a range of initiatives including:

- involvement in the SEQ Healthy Waterways Partnership (now Healthy Land and Water) and other regional and local initiatives
- implementation of the 2009 Waterway Health Strategy, 2015 Integrated Water Strategy and 2015 Floodplain Management Strategy
- development and promotion of waterway management guidelines including Riparian Corridor Revegetation Guidelines and Waterway and Channel Guidelines
- assessment of waterway and wetland health condition, geomorphic condition, water quality, fish populations and platypus surveys
- development and implementation of waterway improvement plans/corridor plans for Black Snake, Bundamba, Deebing and Iron Pot creeks
- investment in on-ground programs and partnerships in catchment improvement projects, including the Franklin Vale Initiative
- establishment of the Landholder Partnerships Program with incentives for private landholders to undertake rehabilitation works on their properties.
- partnership with other organisations in the Resilient Rivers Initiative to develop coordinated action plans for the Bremer River and Mid Brisbane River catchments
- integrated and long term planning with other organisations to develop strategic floodplain management plans for the Brisbane and Bremer Rivers
- innovative investment mechanisms to deliver waterway health outcomes such as stormwater offsetting.

The focus of this Waterway Health Strategy is to build upon these achievements and to set the investment priorities for the next 3-5 years, based on the current threats and opportunities influencing the health of waterways and wetlands across Ipswich.

Implementation of the strategy will support council's achievement of its Corporate Plan and the community's vision for improved waterway health, and provide a framework for council to meet the relevant legislative requirements for waterway protection. This will be done through two approaches, being:

### 1. STRATEGIC PRIORITIES

The implementation of city-wide policies, strategies and partnerships through five strategic priorities focusing on:

- giving waterways and wetlands room to function
- promoting waterways and wetlands as engaging and accessible public spaces
- supporting landholders in undertaking works on private properties
- reducing sediment loads and improving channel stability
- enhancing riparian corridors.

### 2. MANAGEMENT ACTION THEMES

Targeted investment across four waterway management themes for each sub-catchment, being:

- channel management
- riparian corridor management
- wetlands and floodplains
- community engagement.

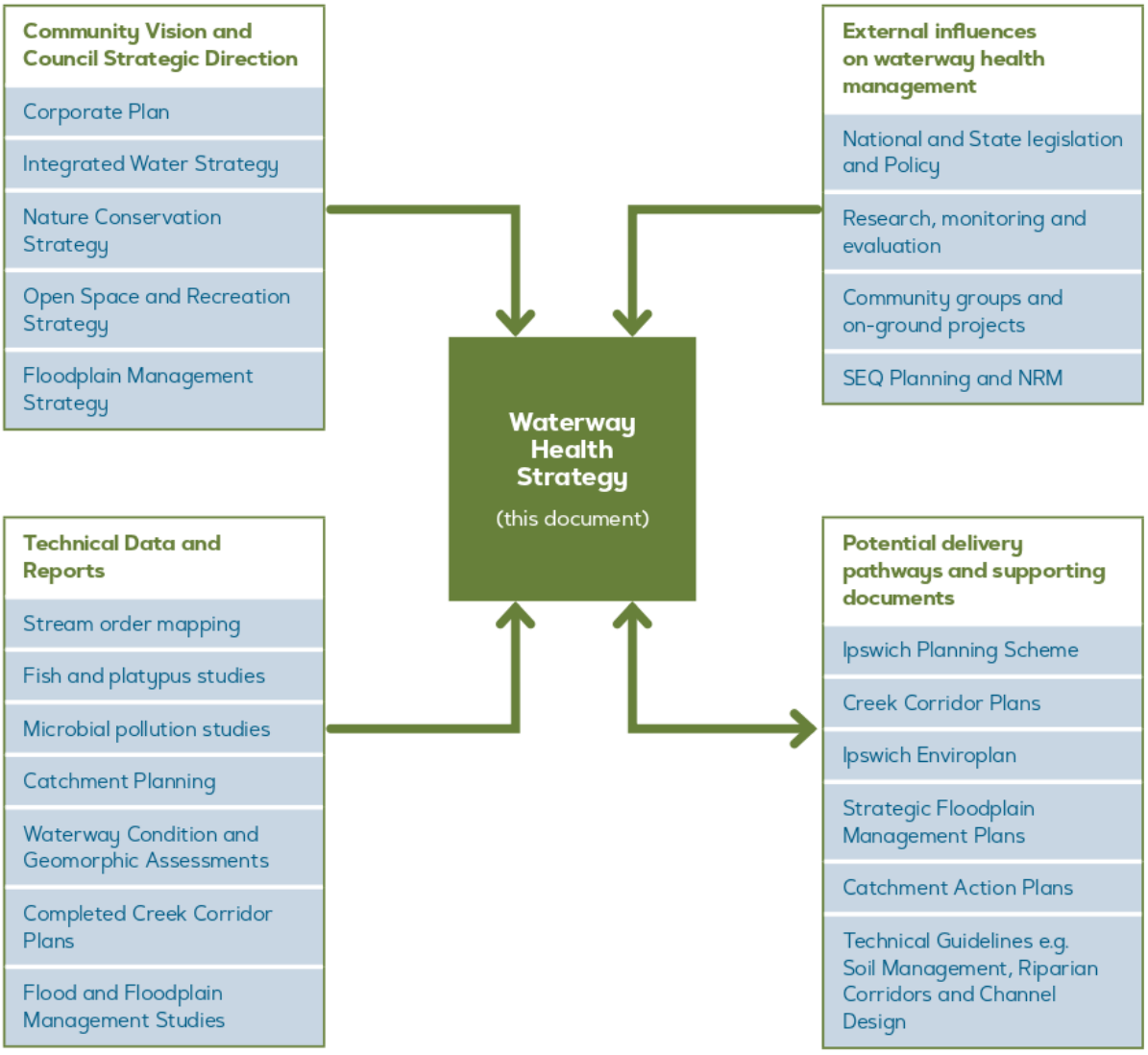
The strategy has taken a sub-catchment based approach for on-ground management actions to ensure that it adequately reflects the local context and condition for that catchment, and gives consideration to the varying constraints and opportunities associated with urban and rural waterways. The targeted sub-catchment actions are represented in one or more of the four management themes to give priority for investment over the next 3-5 years, and to assist in an overall improvement in health for that waterway.

# STRATEGY FRAMEWORK

The Waterway Health Strategy is council's overarching plan, which brings together the internal and external elements of waterway health management and gives a clear, coordinated framework for future improvement.

The Waterway Health Strategy has been developed, and will be delivered, in coordination with these elements including corporate and external strategies, policies, technical reports, and delivery pathways, as represented in Figure 1.

**FIGURE 1** – Waterway Health Strategy framework bringing together the internal and external elements of waterway health management to give a clear, coordinated framework for future improvement



# 1. INTRODUCTION

## IPSWICH WATERWAYS AND WETLANDS

Ipswich waterways and wetlands provide important values to the community regardless of where they sit within the landscape, from mountain peaks, rural landscapes, to urban backyards and the heart of the city. They help sustain our way of life and play a pivotal role in maintaining a liveable city. Ipswich waterways are and will continue to be, places of Indigenous significance, where the community comes together, and where we enjoy recreation in the shade and comfort of the natural environment. Values provided by waterway corridors include:

- habitat for native flora and fauna (both terrestrial and aquatic)
- improved water quality
- active and passive recreation opportunities including canoeing, boating, fishing, parklands, and nature based play
- shaded linear pathways for walking and cycling
- water supply for agriculture, industry and human consumption
- urban cooling
- flooding, stormwater management and detention
- groundwater recharge.

These values occur both within the waterway channel as well as the land adjoining the waterway which is made up of the riparian and floodplain zone. These areas are all interconnected, with activities in the floodplain and riparian zone influencing the channel and vice versa. For example, vegetation within the riparian zone not only provides food and habitat for land-based fauna, but the plants also influence the channel condition. Riparian and floodplain vegetation provides bank stability, shading over the waterway, filtering of flows, and provision of habitat and food for water-based fauna.

The waterway channel, riparian and floodplain zone together are referred to as the waterway corridor. Community engagement and participation are essential to achieving the vision of improving waterway health, and have been considered as the fourth theme of a waterway corridor, as shown on Figure 2.

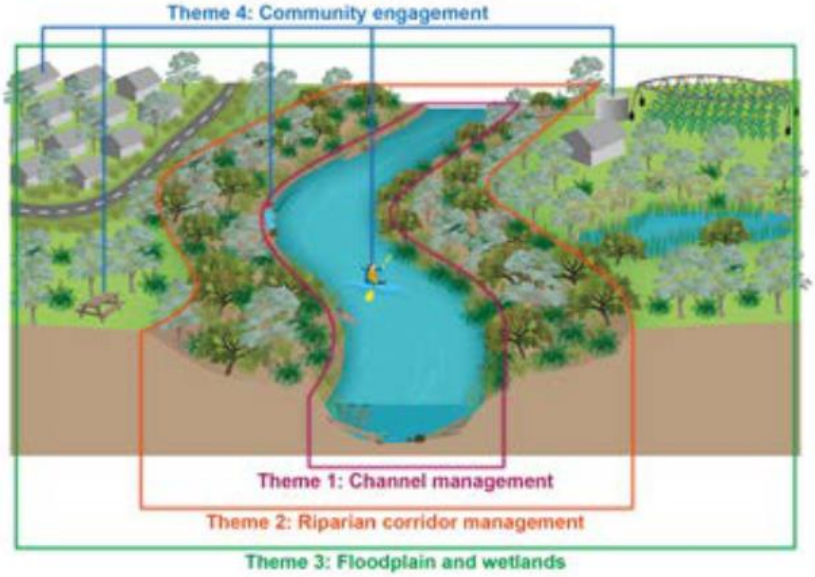
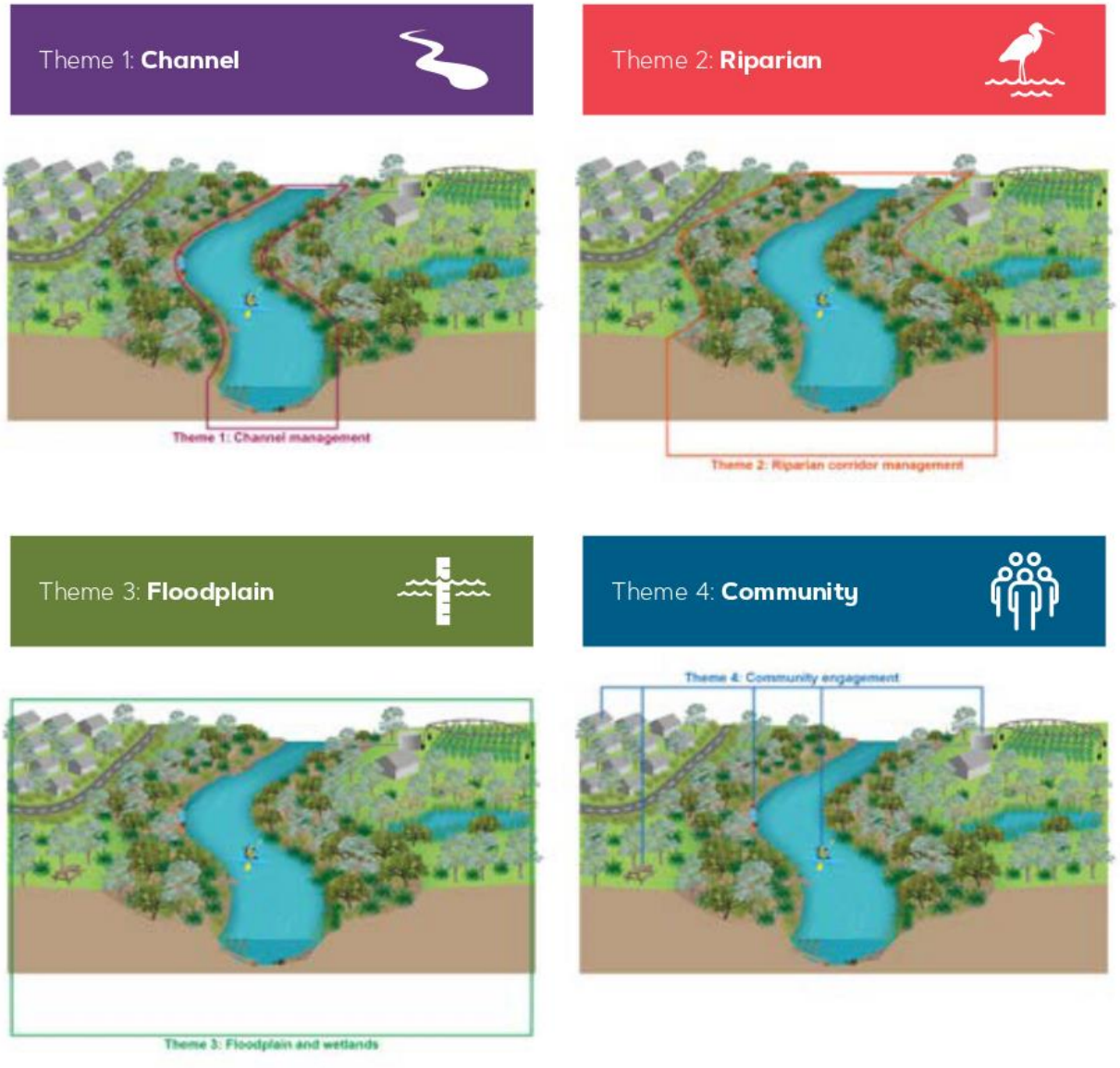



**FIGURE 2** – Waterway management action themes within the waterway corridor



## Ipswich waterways are a top priority for the community

Healthy waterways and catchments are a top environmental priority for Ipswich residents according to surveys undertaken for council's corporate plan. Survey respondents wanted council to develop long-term environmental recovery programs along its wetlands and waterways, particularly in the upper reaches of the city's rivers and creeks.

It is no surprise that Ipswich waterway corridors are so highly valued by the community as they contain endangered remnant vegetation and provide important habitat for koalas, platypus and native fish species. They are also important green linear open space corridors which can be enjoyed by the community in a variety of ways. A recent survey by Healthy Land and Water found Ipswich residents are mostly using the local waterways for walking, running and cycling, having picnics and enjoying nature and even swimming and fishing in some areas. This survey also found while Ipswich residents value the benefits of waterways and enjoy using them; they are also concerned about their condition.

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## Indigenous cultural significance of waterways

There is an important spiritual connection between Indigenous people and the land, waters and natural resources associated with water places. Many Aboriginal stories detail the creation of waterways, often by a spirit being in the form of a serpent.[1]

Waterways across Ipswich have special cultural relevance for the local Traditional Owners as places once used for sourcing food and materials and for living and recreation. This long history has built an understanding, knowledge and expertise in the management of water country.

Postcard from Colleges by K Barnes
Ipswich Enviroplan Photo Competition

## Waterways and wetlands in a changing climate

It is recognised that the natural environment supports the communities and lifestyles in South-East Queensland but is under threat from increased urbanisation.[2] There is also significant evidence that natural systems, such as wetlands and waterways, help communities and infrastructure withstand extreme events by serving as protective barriers or buffers.[3]

To ensure these natural assets can continue to support and buffer our communities from increasing temperatures, sea level rise and significant weather events; waterways and wetlands need to be robust and resilient ecosystems. Maintaining healthy soil profiles and vegetation cover in waterways and wetlands is important so they are able to buffer communities against extreme events, such as heatwaves, flooding and drought. For example, floodplain wetlands can mitigate the impacts of floods by absorbing excess water and retaining it or returning it to groundwater. Maintaining riparian vegetation can stabilise soil and reduce surface runoff during storm events as well as provide natural cooling during heatwaves.[4]

[1] Native Title Report 2008 – Chapter 6: Indigenous Peoples and Water
[2] ShapingSEQ – Draft South East Queensland Regional Plan 2016
[3] 'Buffering the Community from Extreme Weather Events', SEQ Catchments
[4] 'Wetlands and resilience to natural hazards', Australian Government, Department of the Environment and Energy

## A NETWORK OF SUB-CATCHMENTS

There are many waterways within the Ipswich City Council Local Government Area including those within the Bremer River catchment and sections of the Lockyer Creek, Mid Brisbane and Lower Brisbane River catchments (Figure 3). Most of these waterways have been significantly modified or altered from the pre-European state but still remain important landscape, ecological and recreational features across Ipswich.

**FIGURE 3** – Catchments and sub-catchments within the Ipswich City Council boundary


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## KEY CHALLENGES

The key challenges for Ipswich waterways and wetlands currently are:

- **channel instability and sediment transport**
  Unstable bed and banks, especially in areas with dispersive soils, threaten properties and infrastructure and generate large volumes of sediment. Sediment is transported downstream, smothering stream habitats and reducing biodiversity. These unstable bed and banks can directly threaten private properties and infrastructure which can be costly to address
- **changes in waterway hydrology**
  Increased flow frequencies, volumes and velocities can cause flooding issues as well as impact in-stream ecosystems and exacerbate in-stream erosion; increasing the frequency of hydraulic disturbance, the duration of sediment-transporting flows and the erosion potential and rates of bed and bank erosion
- **disconnection and loss of floodplains**
  Direct loss of wetlands associated with land use changes or disconnection due to changing hydrology impacts biodiversity, flooding and water quality
- **water quality**
  The accumulation of pollutants from direct and diffuse sources (e.g. stormwater runoff, sewer network overflows and on-site treatment systems) can result in algal blooms, fish kills, reduced water quality, and pose a risk to the community
- **riparian degradation**
  The direct removal of vegetation and/or infestation of weeds impacts bank stability and biodiversity values
- **large proportion of waterways within private land**
  Many of Ipswich's waterways are within private property. Undertaking landscape scale restoration to improve waterway health will therefore require cooperation and collaboration with a large proportion of landholders across Ipswich.

If these issues are not addressed, the health of waterways and wetlands in Ipswich will continue to decline; reducing their environmental, social and economic value to the community. Direct investment in the appropriate management of waterways, wetlands and their catchments can address these issues and improve waterway and wetland health.

Frosty Morning by C Black
Ipswich Enviroplan Photo Competition

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## COUNCIL'S ROLES AND RESPONSIBILITIES

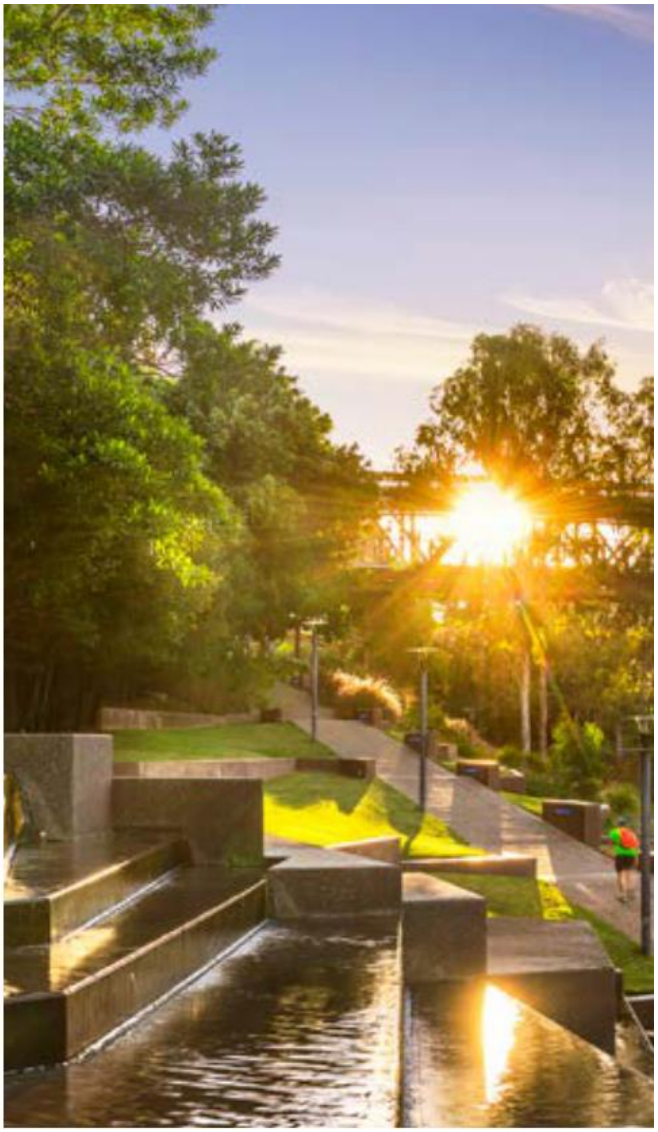
Council's primary role in waterway health management is to meet community expectations through policy, planning and management actions. Council's responsibilities are guided by Commonwealth and State legislation as well as regional and local policies.

While council is only one player within the broader context of waterway and catchment management, it is well positioned to implement and advocate real change at a local level. Council fulfils its role in waterway health management by working across four broad areas:

1. Developing and implementing planning documents and management activities to fulfil legislative requirements
2. Supporting regional natural resource management as a stakeholder in regional planning, operational programs and education initiatives
3. Delivering on-ground natural resource management, stormwater improvement and floodplain management activities
4. Supporting local groups and landholders in waterway improvement initiatives.

These activities are done as components of council's core activities and functions, including:

- **strategic land use planning and development assessments**
  Land use planning and the approval of development assessments are key activities that council can use to influence waterway health outcomes by ensuring that the development of Ipswich is undertaken in a way which embraces the natural environment and aims to mimic the natural water cycle
- **regulation of environmental risks**
  Council's responsibility to monitor environmental compliance is another key function which can directly protect waterway health, including responding to breaches of erosion and sediment control requirements or illegal dumping
- **acquisition and management of priority areas**
  Council can protect key areas, such as floodplains, through acquisition of private land. This council-owned land can then be managed and enhanced as natural areas
- **construction and maintenance of public infrastructure**
  New public infrastructure planned, designed and delivered by council (such as parks, roads and bike paths) can be undertaken in a coordinated approach which aims to provide multiple outcomes, including waterway health improvements.



Waterway health management is also achieved, directly or indirectly, through a number of projects and programs between council and external organisations, landholders and the general community, such as:

- private landholder support programs (Land for Wildlife, Partnership Agreements)
- environmental education material, workshops and events
- support to local and regional natural resource management groups
- investigating opportunities in market-based mechanisms for on-ground outcomes on private land, e.g. vegetation and water quality offsets
- sourcing external funding for riparian protection and rehabilitation projects and devolved grants.


Banking Right by S Rolleston
Ipswich Enviroplan Photo Competition


Australian Wood Duck at Nerima by M Taylor
Ipswich Enviroplan Photo Competition


Beautiful Brolgas by C Black
Ipswich Enviroplan Photo Competition


Dragon Rock by N Wootton
Ipswich Enviroplan Photo Competition

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# 2. VISION AND GOALS

## VISION

Waterways and wetlands are rehabilitated and protected to provide ecological sustainability through good water quality, habitat and fauna connectivity, recreational outcomes and mitigation of major storm and flood events.

## WHAT WE AIM TO ACHIEVE

How will our waterways function in the future?

The rehabilitation and protection of waterway corridors and wetlands today will help to:

- provide habitat for native aquatic and terrestrial animals, including fish, platypus and koalas
- create green, shady and cool places for the community to enjoy
- celebrate cultural connection and values of waterways and wetlands
- allow periodic flooding of natural floodplains
- have clean and safe water
- provide connections along corridors and between channels and floodplains
- provide room for the waterway to move without impacting infrastructure and houses.

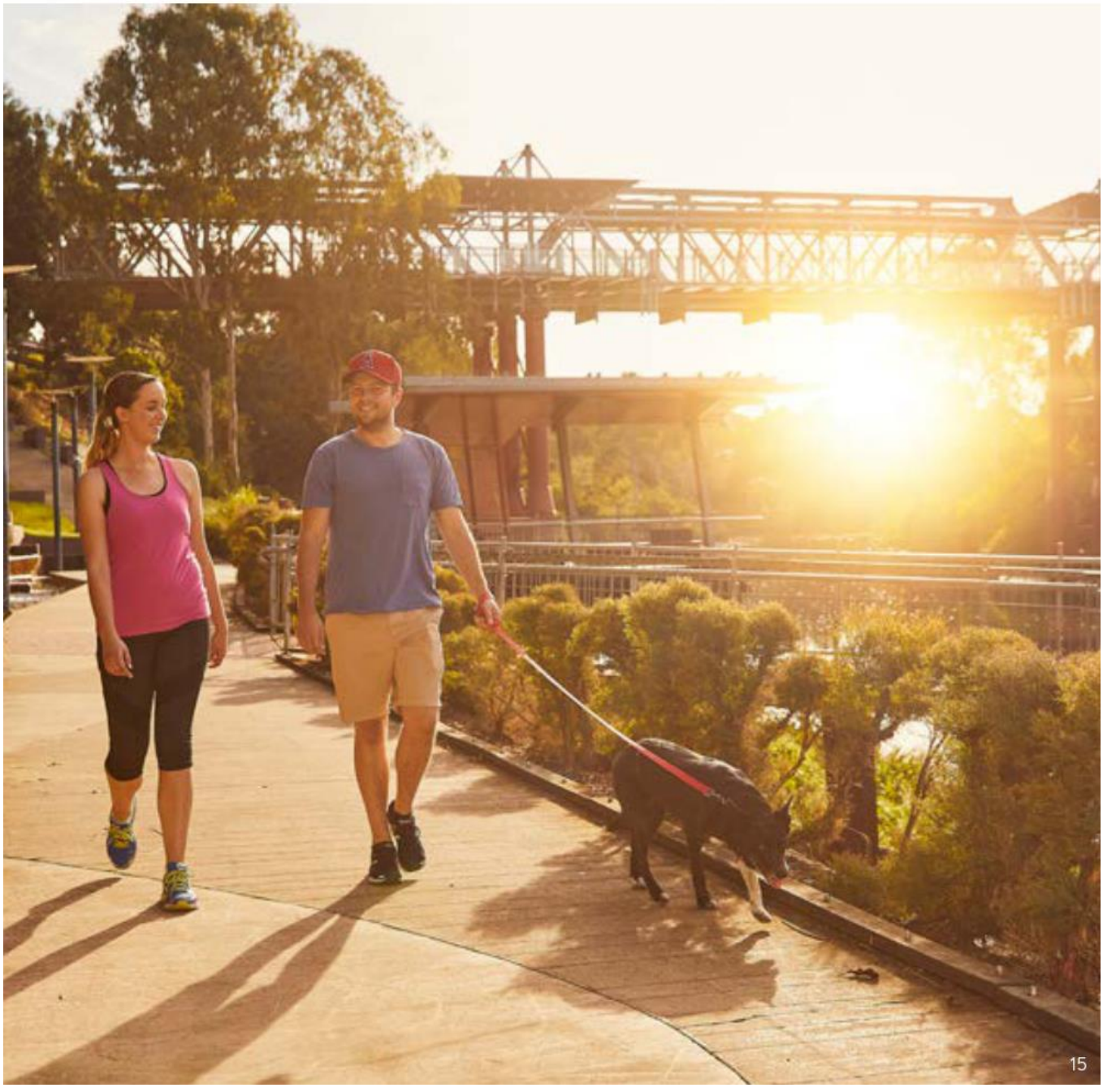
## HOW WILL WE GET THERE?

Waterways in Ipswich will face continued pressures associated with land use change, population growth and urban development, but this also brings opportunities to manage the impacts and drive towards the future vision. Transformation takes time, partnerships and investment and will involve several steps along the way. An upfront investment in waterway health protection and enhancement will result in avoided costs associated with waterway rehabilitation, water quality improvement and sediment capture in the future.

The Waterway Health Strategy recognises works undertaken across Ipswich waterways will need to reflect the local context and waterway condition. For example, urban waterways corridors are likely to be more constrained than rural waterway corridors as they typically need to accommodate multiple outcomes in a designated area including flood conveyance, areas for recreation and open space, infrastructure, and ecosystem services.

To achieve the vision of the Waterway Health Strategy, two approaches have been adopted to focus on:

1. **Strategic Priorities** – To guide consistency in the development and implementation of city-wide policies, strategies and partnerships for the five strategic priorities
2. **Management Action Themes** – Targeted investment based on the condition and management priority for each sub-catchment.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# 3. MAKING IT HAPPEN – AN ACTION PLAN

## STRATEGIC PRIORITIES

### Strategic Priority 1: Giving waterways and wetlands room to function

Waterways, wetlands and floodplains require space to provide a range of important human well-being and ecological functions, including flood storage, urban cooling, stormwater filtration, and native wildlife habitat.

**Actions:**

1. Develop a Waterway and Wetland Code in the revised Planning Scheme
2. Identify and map desired riparian corridor widths for priority waterways
3. Recognise lower order streams in strategic plans and policies
4. Complete sub-catchment waterway and stormwater management plans for priority areas to inform urban development stormwater management solutions and investment
5. Review and update the Waterway and Channel Design Guidelines
6. Develop and fund a waterway and channel maintenance program
7. Identify areas and develop programs for floodplain re-engagement.

### Strategic Priority 2: Promoting waterways and wetlands as engaging and accessible public spaces

Waterways and wetlands are areas of green and cool refuge across Ipswich landscapes which have strong cultural and heritage significance. They provide connected corridors of green links across the city; used for active and passive recreation such as picnicking, walking, cycling, canoeing, nature play, and sporting activities.

**Actions:**

1. Improve access through enhanced and new canoe ramps and recreational fishing points
2. Develop and promote the network of integrated pathways along Ipswich waterways
3. Deliver and promote community events and activities such as community planting days, exercise programs, safe transport and nature play
4. Collect and communicate stories of cultural significance and social connection to Ipswich waterways and wetlands
5. Enhance riparian areas to become enticing and appealing shaded green spaces.


Bird on the River by C Truong
Ipswich Enviroplan Photo Competition

## Strategic Priority 3: Supporting landholders in undertaking works on private properties

More than 60 per cent of waterways in Ipswich flow through or between private properties. In recognition and support of landholders undertaking management of waterways on private land, council provides a suite of partnership programs and incentives.

**Actions:**

1. Enable the Landholder Partnership Program to include wetland and floodplain stewardship
2. Partner with landholders to deliver waterway and wetland health outcomes in priority catchments
3. Provide technical guidelines to support landholders in managing waterways and wetlands on private property.

## Strategic Priority 4: Reducing sediment entering our waterways

Sediment enters waterways directly from gully and bank erosion and indirectly through stormwater runoff. Large inputs of sediment can result in deposition and the smothering of in-stream habitats, reduced water quality, and the loss of valuable topsoil from the land.

**Actions:**

1. Ensure best practice sediment and erosion control is undertaken in urban developments
2. Undertake sediment tracking to identify and map priority sediment sources
3. Implement bank stabilisation projects on priority waterways which can also improve habitat complexity
4. Investigate and manage the impact of altered hydrology from new urban areas on bank stability and geomorphology.

## Strategic Priority 5: Enhancing riparian corridors

Native riparian and in-stream vegetation is essential for the function of waterways and wetlands, increasing bank stability, providing food and shelter for native wildlife, and maintaining healthy temperature and water quality.

**Actions:**

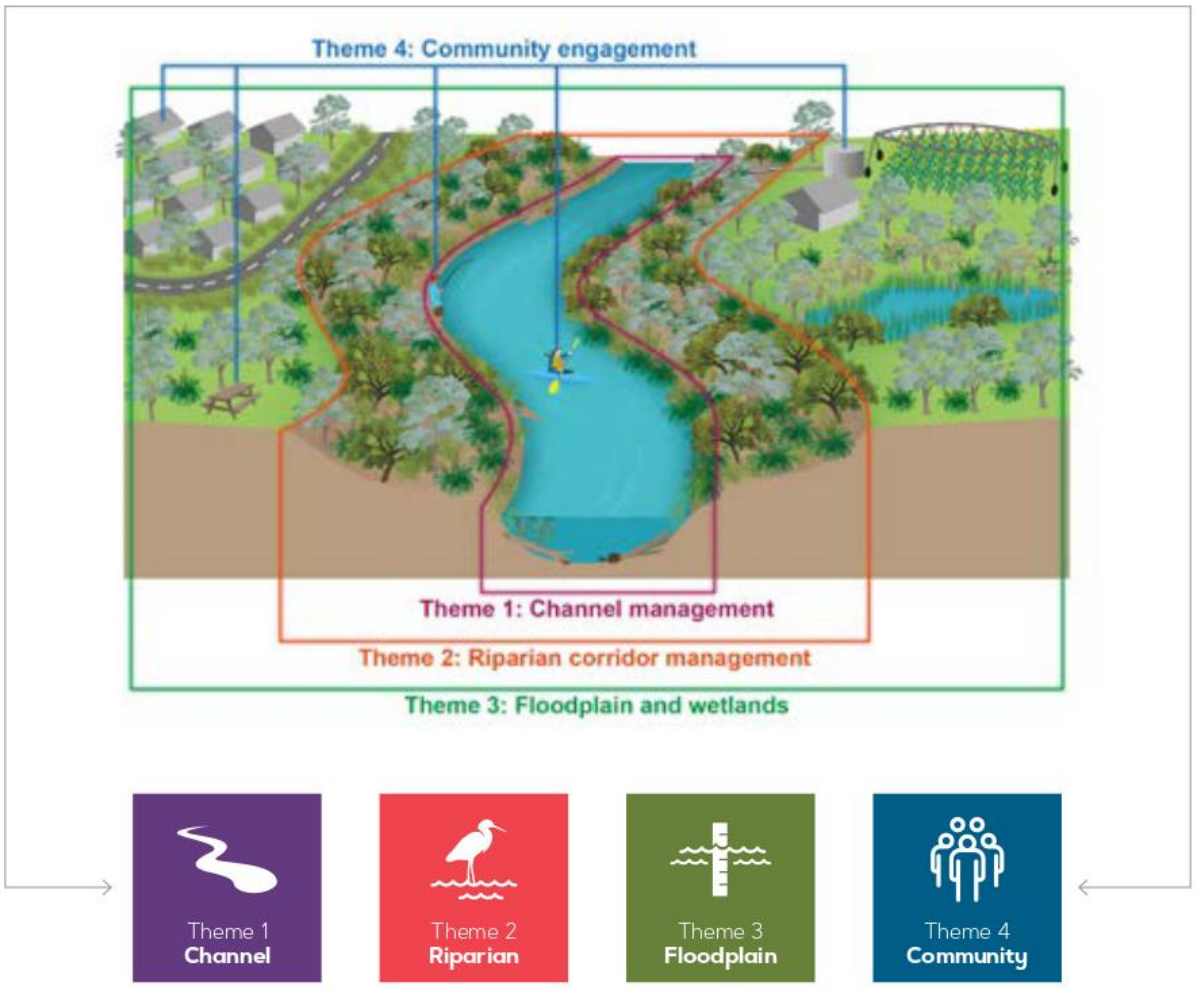
1. Deliver strategic tree planting and revegetation with the community along urban waterways
2. Support community and natural resource management groups to deliver weed removal and revegetation projects
3. Update the Riparian Revegetation Guideline to include wetland revegetation
4. Provide riparian and wetland 'preferred' species through council's free plant program
5. Identify strategic locations for the delivery of environmental offsets that also provide water quality outcomes
6. Identify priority wetlands for protection and rehabilitation.

## MANAGEMENT ACTION THEMES

Four Management Action Themes have been identified across the waterway corridor to ensure that investment in each sub-catchment is guided by the best-information on hand and is appropriately directed towards the most pressing issue for that waterway (see Figure 4). This is not to discount other important issues or to restrict future investment opportunities, but rather to account for the current condition of the waterway and to support the delivery of the management actions in the short-term.

The four management action themes are represented below, and further described in Waterway Health Strategy: Background Document.

**FIGURE 4** – Management Action Themes identified to guide investment




## TARGETED SUB-CATCHMENT INVESTMENT PRIORITIES

Investment priorities have been identified for each sub-catchment based on the most pressing impacts on condition and the protection or enhancement of that catchment's special features. In some sub-catchments, the priority actions may focus on one or more waterway management action themes across the corridor.

However, where improvements across themes that have not been identified as a priority can be achieved, these will be considered and delivered as opportunities and funding arise.

Sub-catchments are grouped into four broad catchments, being: Bremer River Catchment, Mid-Brisbane River Catchment, Lower Brisbane River Catchment, and Lockyer Creek Catchment.

## BREMER RIVER CATCHMENT

The Bremer River Catchment covers a total area of 2028km$^2$ and flows through Scenic Rim and Ipswich local government areas. It is comprised of the following sub-catchments:

- Bremer River (estuary)
- Bremer River (freshwater)
- Bundamba Creek
- Deebing Creek
- Franklin Vale Creek
- Iron Pot Creek
- Mihi Creek
- Sandy Creek (Tivoli)
- Purga Creek
- Warrill Creek
- Western Creek

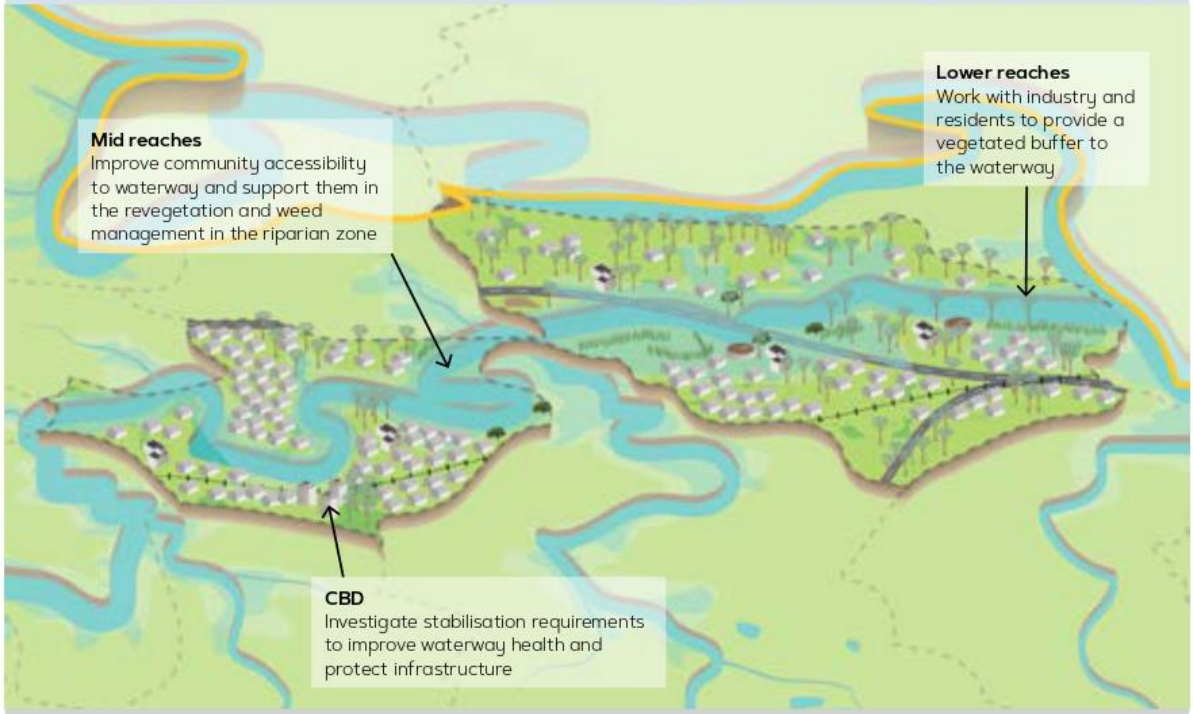
**FIGURE 5** – Bremer River Catchment and Sub-Catchments

## BREMER RIVER (ESTUARY)

The Bremer River estuary extends for about 19km upstream from the confluence with the Brisbane River, to an area known as Lynch's Crossing just upstream from Hancock Bridge. The estuary is subject to tidal influences with variations in river height up to 2m; at times exposing large areas of muddy bank through the CBD reach.

### SPECIAL FEATURES OF THE CATCHMENT

- Ipswich CBD and city centre are located in this sub-catchment
- The waterway is accessible for both passive and active recreation and used by the community for picnics, BBQs, walking, fishing and canoeing.



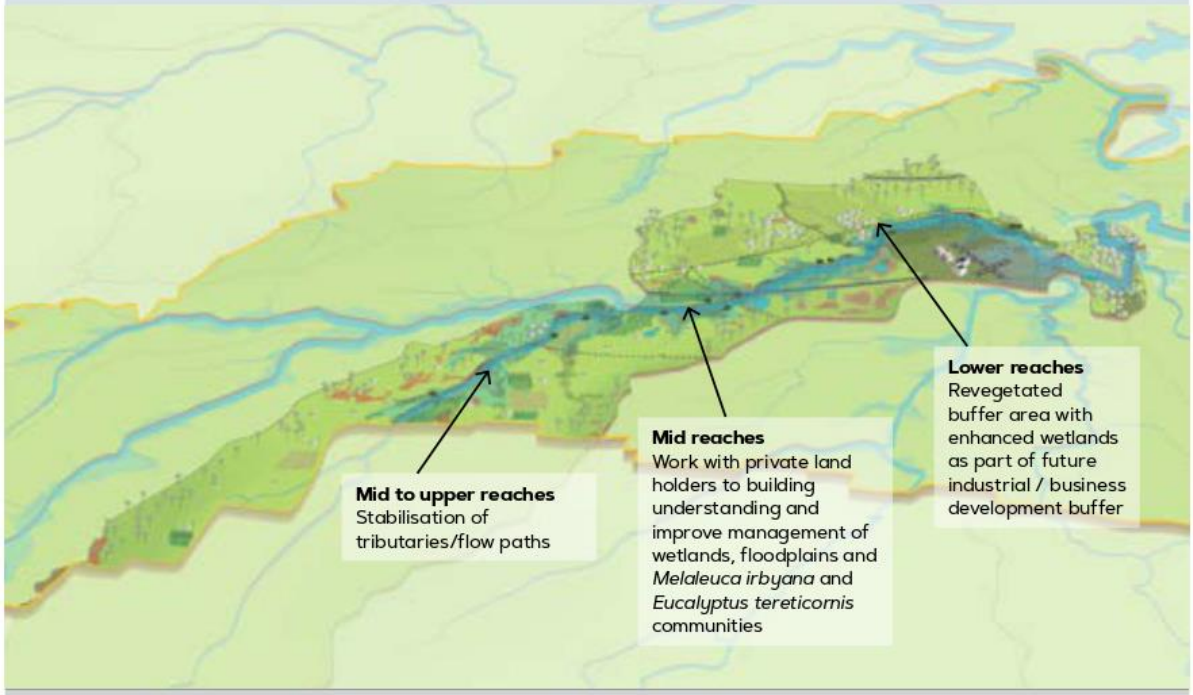

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Investigate stabilisation requirements for the Bremer River CBD reach to improve waterway health and protect public infrastructure. |
| Riparian | 1. Revegetate and control weeds to improve riparian corridor condition and deliver multiple benefits<br>2. Consider including vegetation protection and landscaping requirements in the Planning Scheme (i.e. retaining and enhancing existing native vegetation to provide a densely vegetated buffer) as one of the outcomes of the Regional Business and Industrial Buffer areas. |
| Community Engagement | 1. Hold community events and beautification projects to build community pride in the Bremer River<br>2. Provide community access to and views of the river public open spaces for a range of recreational experiences<br>3. Engage with landholders to manage weeds and revegetate the riparian zones with native vegetation on private property. |

## BREMER RIVER (FRESHWATER)

The Bremer River freshwater sub-catchment rises in the Main Range National Park with 50 per cent of the sub-catchment upstream of the Ipswich LGA. The freshwater portion of the Bremer River flows through rural and industrial landscapes before entering the Bremer River estuarine downstream from West Ipswich. The waterway contains pools connected by meandering channels.

### SPECIAL FEATURES OF THE CATCHMENT

- Home to threatened ecological community Swamp Tea-tree (*Melaleuca irbyana*) and Queensland Blue Gum (*Eucalyptus tereticornis*). Swamp Tea-tree is listed as critically endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*.




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Undertake stabilisation projects in the main tributaries and flow paths to reduce sediment transport. |
| Floodplain | 1. Investigate and establish initiatives to support the re-engagement of the floodplain<br>2. Identify wetlands for acquisition through local and state government funding mechanisms<br>3. Ensure environmental outcomes such as rehabilitation of drainage corridors is delivered within the Ebenezer Regional Industrial Area. |
| Community Engagement | 1. Increase community understanding of the benefits of wetlands and floodplains<br>2. Target and support landholders to protect and manage existing wetlands and waterways through the Landholder Partnerships Program<br>3. Identify properties for protection of Swamp Tea-tree and Queensland Blue Gum community through conservation partnerships<br>4. Investigate opportunities for large scale floodplain and catchment revegetation, through offsets or partnership programs. |

## BUNDAMBA CREEK

The Bundamba Creek sub-catchment covers a total area of 114km² and arises in the Flinders-Goolman Conservation Estate. More than 90 per cent of the catchment is within Ipswich LGA.

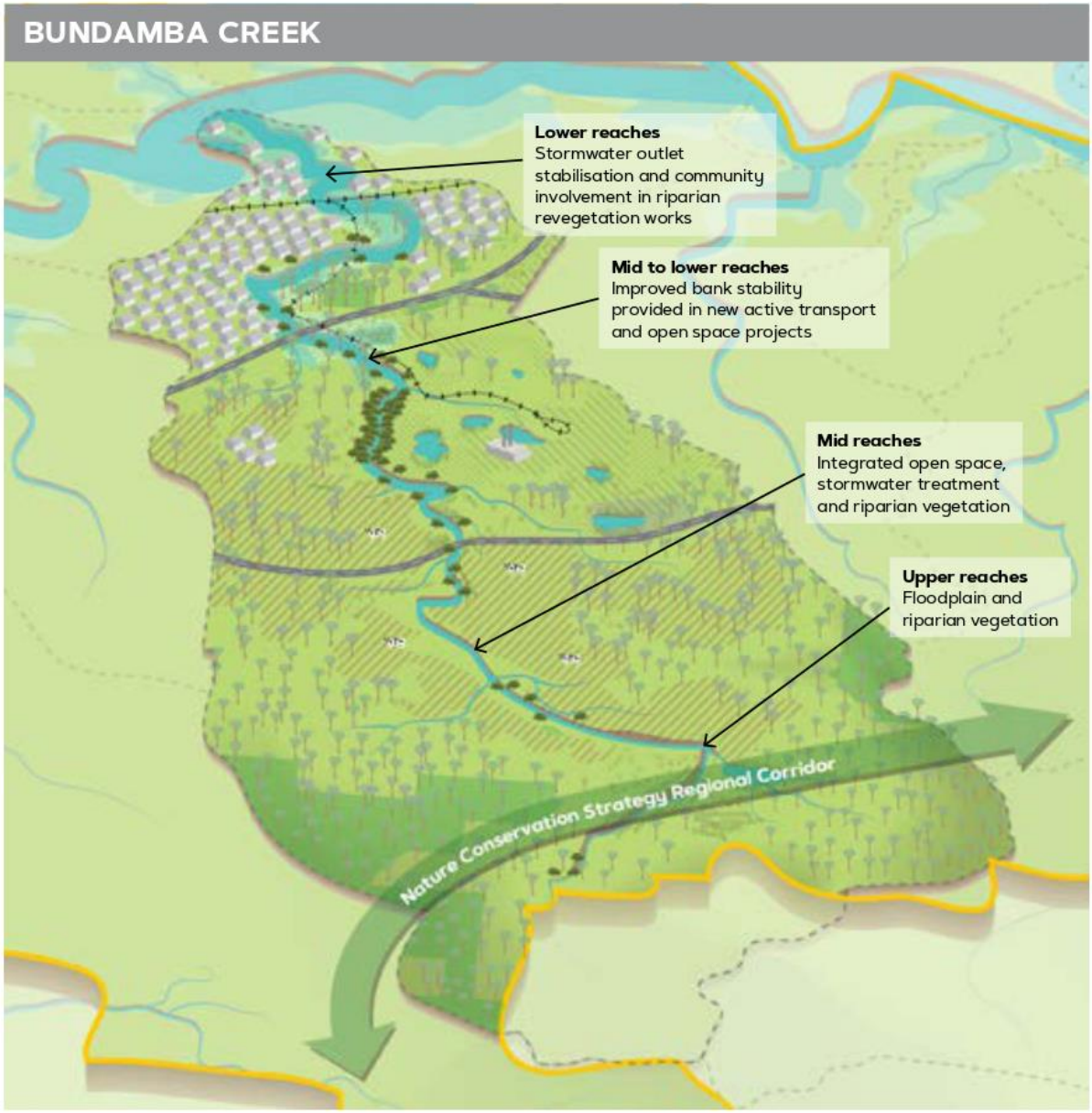
In many sections, Bundamba Creek flows over bedrock which controls bed incision and provides a diversity of pool, run and riffle habitats. Historic vegetation removal and grazing has resulted in some areas of degradation along the creek and the erosive soils place the waterway at high risk.

The creek flows through rural, industrial and urban landscapes before entering the Bremer River estuarine. The upper sub-catchment is dominated by agricultural land uses and the lower sub-catchment is predominately urban. The middle reaches have agricultural and extractive industries and host the Swanbank power station which has a license to discharge into the creek. The catchment faces major redevelopment in the coming decades with the new Ripley Valley urban development and new regional business and industrial area.

### SPECIAL FEATURES OF THE CATCHMENT

- Connected to Daly's (Bundamba) Lagoon
- Flinders-Karawatha regional corridor
- Ripley Valley urban core
- Platypus detected in Bundamba Creek
- Connected to the important Indigenous cultural site of Evelyn Dodds Cultural Reserve
- Bundamba Creek Corridor Plan.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Channel** | 1. Work with developers to stabilise channels, provide construction phase erosion and sediment control, and operational phase stormwater management to improve waterway health through the development process<br>2. Retain lower order streams where possible, or design stormwater management systems to replicate this function<br>3. Undertake waterway stabilisation projects in priority reaches<br>4. Improve bank stability with new active transport and recreation infrastructure located along waterways. |
| **Riparian** | 1. Ensure appropriate riparian buffer widths are achieved in new urban development areas for community needs and waterway health outcomes<br>2. Continue to work with the community to deliver riparian improvement works on private and public lands to create a sense of place and ownership. |


BUNDAMBA CREEK
Lower reaches
Stormwater outlet stabilisation and community involvement in riparian revegetation works
Mid to lower reaches
Improved bank stability provided in new active transport and open space projects
Mid reaches
Integrated open space, stormwater treatment and riparian vegetation
Upper reaches
Floodplain and riparian vegetation
Nature Conservation Strategy Regional Corridor

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## DEEBING CREEK

The Deebing Creek sub-catchment headwaters arise in the Grampian Hills and flow into the freshwater section of the Bremer River, near One Mile Bridge in West Ipswich.

Predominant uses in the lower sub-catchment are urban land uses. The upper sub-catchment area retains significant tracts of bushland, however, some sections of the floodplain are cleared for grazing. This area also faces significant changes as part of the Ripley Valley urban development. A new commuter bikeway is planned along the waterway to connect the urban development area with the existing CBD.

The creek channel is predominately natural, although there are some concrete sections in the urban area. The upper sections of the creek have experienced significant erosion. A major sand slug (in stream sedimentation) is present and completely infilling the channel with sand, approximately two kilometres downstream of the Centenary Highway. The channel in the lower section of the sub-catchment is a continuous waterway which is relatively stable and is currently not impacted by the sediment slug.

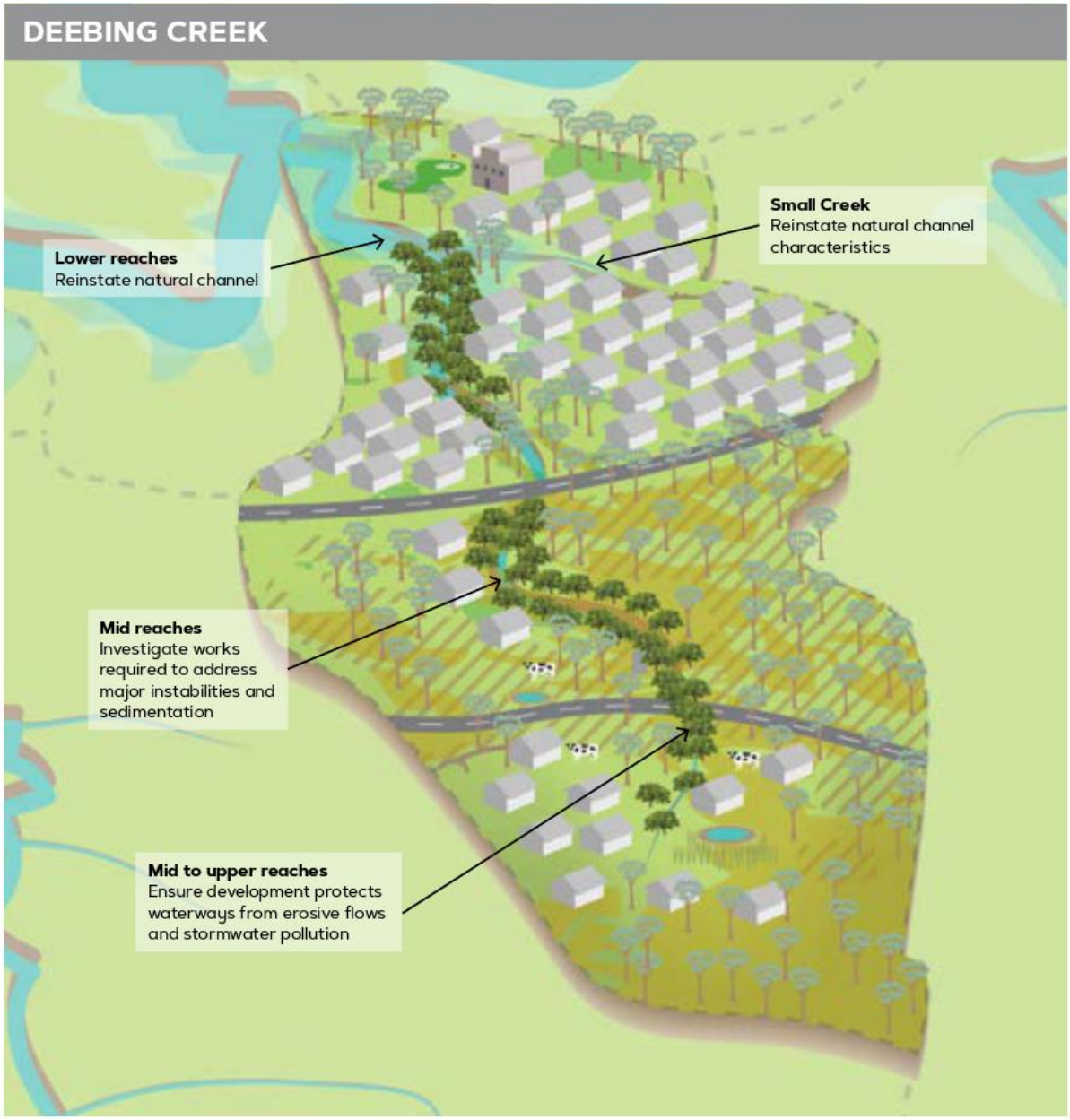
### SPECIAL FEATURES OF THE CATCHMENT

- Koala and flying fox habitat
- New urban development, including Ripley Valley
- Connected to the important Indigenous cultural heritage site of Deebing Creek Mission and cemetery
- Small Creek naturalisation project
- Deebing Creek Corridor Plan.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Channel** | 1. Investigate the extent of works required to address extensive erosion by stabilising banks and reducing volumes of sediment contributing to the established sand slug in the upper sub-catchment<br>2. Stabilise channels, provide construction phase erosion and sediment control and operational phase stormwater management to improve waterway health through the development process<br>3. Retain lower order streams where possible, or establish stormwater management systems designed to replicate this function<br>4. Maintain channel corridor width along Deebing Creek in developed areas, to protect the waterway from urban pressures<br>5. Re-instate natural channel characteristics for Small Creek. |

Darter Sun Bathing by L Hardwick
Ipswich Enviroplan Photo Competition

Duck Reflection by S Smolenski
Ipswich Enviroplan Photo Competition





Morning Breakfast by L List
Ipswich Enviroplan Photo Competition


Native Wildlife
by S Reberger
Ipswich Enviroplan
Photo Competition

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## FRANKLIN VALE CREEK

The Franklin Vale Creek sub-catchment flows northeast to enter Western Creek at Calvert. About 91 per cent of the sub-catchment area (125km$^2$) is within the Ipswich LGA.

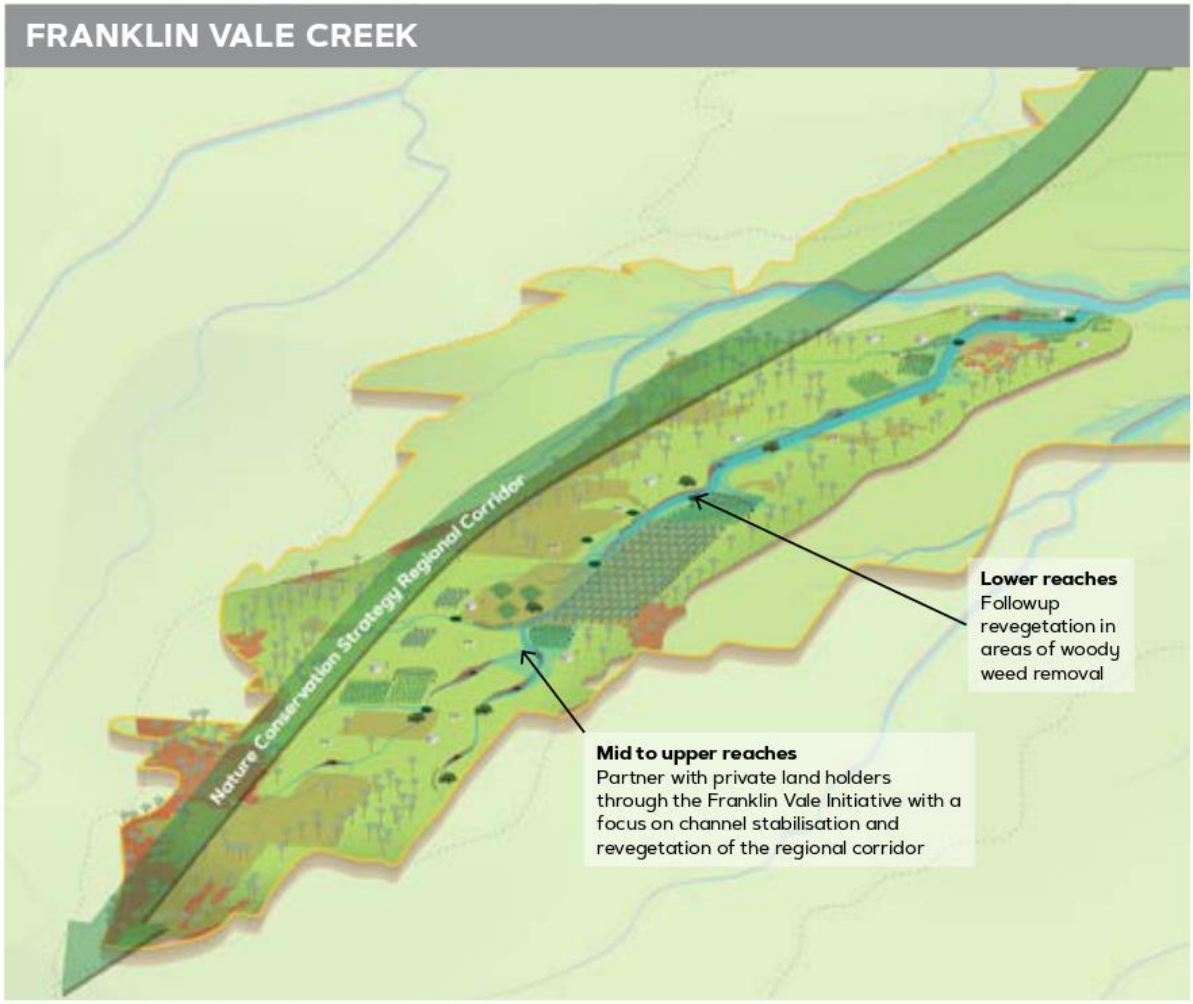
Bushland covers about half of the sub-catchment however the floodplain and riparian zone are predominantly cleared. The main land use in the sub-catchment is grazing, with instances of irrigated cropping and forestry plantation.

Franklin Vale Creek is characterised as a single continuous channel with anabranching sections. The creek has experienced instabilities due to the removal of vegetation and stock access, especially in the upper tributaries, which have experienced major erosion.

### SPECIAL FEATURES OF THE CATCHMENT

- Franklin Vale Initiative is underway to enhance community involvement in waterway health management
- The sub-catchment contains threatened ecological communities including Box Gum Grassy Woodland and Swamp Tea-tree (*Melaleuca irbyana*). These are listed as critically endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*
- Little Liverpool Range regional corridor.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Channel** | 1. Stabilise banks through stock access management, riparian revegetation and natural channel design<br>2. Follow-up revegetation project to support woody weed removal projects undertaken by the Ipswich Rivers Improvement Trust. |
| **Community** | 1. Deliver the Franklin Vale Initiative to create an active 'Franklin Vale Community' with a focus on waterway channel stabilisation, as well as protection of significant vegetation and revegetation of the regional corridor. |


FRANKLIN VALE CREEK
Nature Conservation Strategy Regional Corridor
Lower reaches
Followup revegetation in areas of woody weed removal
Mid to upper reaches
Partner with private land holders through the Franklin Vale Initiative with a focus on channel stabilisation and revegetation of the regional corridor

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## IRON POT CREEK

Iron Pot Creek is a tributary of the Bremer River and is a small 16.7km² largely urbanised sub-catchment within the Ipswich LGA. It flows south through the suburbs of Blacksoil, Brassall, Karrabin, Pine Mountain and Wulkuraka and joins the Bremer River just upstream of the Albion Street Bridge.

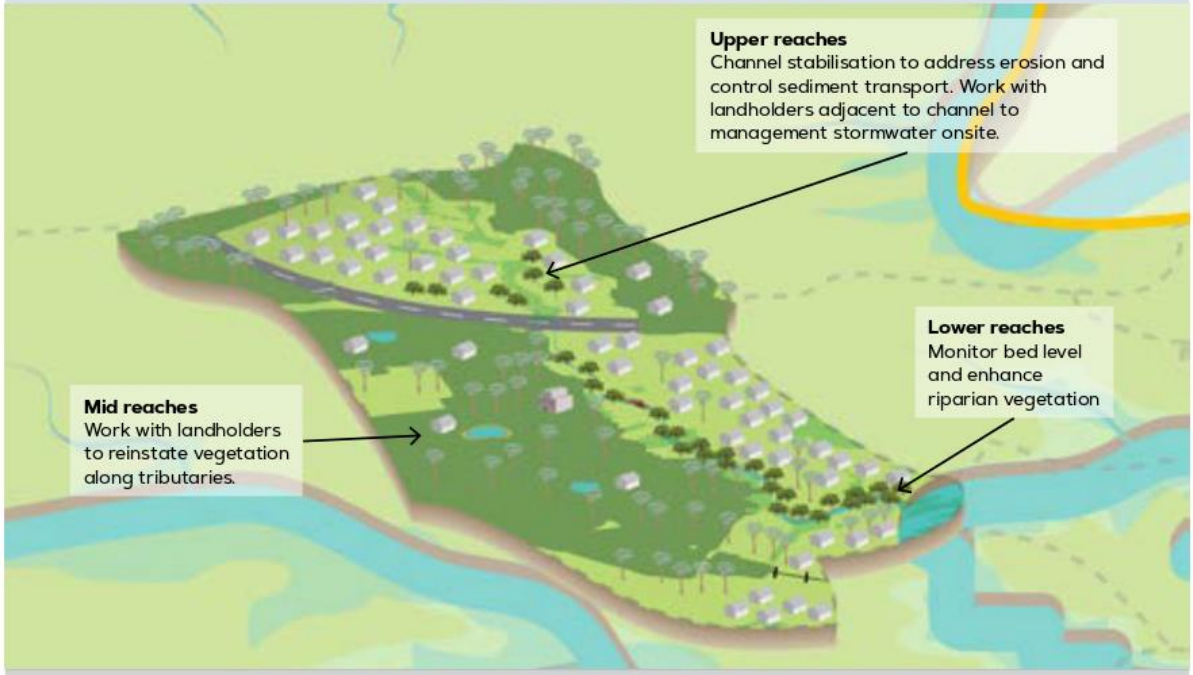
The sub-catchment contains mixed land uses, including urban, large lot residential and rural residential. Despite the level of urbanisation, the floodplain and riparian corridor is predominantly vegetated, creating a continuous riparian corridor. There are a large number of public parks and reserves along the waterway providing opportunities for access for the community. The Brassall bikeway is also located in the sub-catchment, but is outside the main waterway corridor.

The upper reaches of Iron Pot Creek have experienced severe erosion as a result of past clearing, urbanisation and the construction of infrastructure such as roads, rail and power corridors. Active incision is still occurring in these upper reaches which is lowering the bed level and resulting in steep, unstable banks. Further downstream, the channel transitions into a more stable channel with some chains of ponds sections present.

There have been a number of studies and works carried out across the sub-catchment including erosion and riparian works in the upper reaches and weed management in the lower.

### SPECIAL FEATURES OF THE CATCHMENT

- Active and engaged community
- Large sections of the waterway can be accessed by the community
- Iron Pot Creek Corridor Plan
- Studies and on-ground works undertaken to address channel instabilities.




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Stabilise channels in the upper reaches to protect property and infrastructure and reduce volumes of sediment being transported downstream<br>2. Address grade difference between Iron Pot Creek and Bremer River to protect waterway values upstream<br>3. Incorporate floodplain engagement, where suitable, into planned works in the middle corridor area. |

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## MIHI CREEK

The Mihi sub-catchment is 5.9km² in area and is entirely within the Ipswich LGA. The catchment drains the ridgeline which separates the Bremer and Brisbane River catchments, and flows into the estuarine section of the Bremer River in Brassall, downstream of Albion Street Bridge.

While the upper section of the sub-catchment is wooded rural lands, the majority of the catchment is urban residential. A continuous riparian corridor exists which sits within a zoned linear recreation zone. The creek is comprised of a mixture of natural and constructed channel forms. Severe gully erosion in the northwest section of the upper sub-catchment is impacting the waterway.

There are a number of environmental partnerships in the sub-catchment that enable community-driven improvement and ownership of the waterway.

### SPECIAL FEATURES OF THE CATCHMENT

- Good community access to the creek
- Active community involvement.


| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Community | 1. Focus community waterway improvement projects on flood resilience and weed management<br>2. Work with private landholders to stabilise the upper reach channels to protect property and infrastructure and reduce volumes of sediments being transported downstream. |

## PURGA CREEK

Purga Creek is a major tributary of Warrill Creek, joining the waterway approximately 3km upstream of the Bremer River and Warrill Creek confluence. The Purga Creek sub-catchment encompasses the Peak Crossing and Purga townships and has a total area of 227km$^2$. About half the sub-catchment is within the Ipswich LGA with the remaining upper catchment within the Scenic Rim Regional Council area.

Farming communities were established in the catchment in the 1850s, with large grazing runs established and vegetation cleared on a significant scale in the 1860s. Agriculture is still the predominant land use within the Purga Creek sub-catchment, with mostly irrigated horticulture on the floodplains and grazing on the hillslopes.

The sub-catchment contains the Flinders-Goolman Conservation Estate which forms part of the largest remaining tract of lowland eucalyptus forest in South-East Queensland. The sub-catchment also contains mapped endangered ecological communities. There are a number of private properties with conservation partnerships or agreements across the sub-catchment.

### SPECIAL FEATURES OF THE CATCHMENT

- Flinders-Karawatha regional corridor
- Priority local corridor
- Priority area for rehabilitation and protection of Koala habitat
- Active rural community
- Sites of cultural significance (Purga Aboriginal Cemetery and Purga United Church)
- Home to threatened ecological community Swamp Tea-tree (*Melaleuca irbyana*) which is listed as critically endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*.
- Flinders-Goolman Conversation Estate.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Floodplain** | 1. Undertake a wetland condition assessment across the sub-catchment<br>2. Preserve movement of the waterway within a broad floodplain<br>3. Improve connectivity between the channel, floodplain and wetland<br>4. Identify priority areas for increasing Koala habitat within the Purga floodplain and broader catchment. |
| **Community** | 1. Increase community understanding of the benefits of wetlands and floodplains<br>2. Target and support landholders to protect and manage existing wetlands, through partnership programs<br>3. Identify properties to target for protection of Swamp Tea-tree through conservation partnerships<br>4. Rehabilitate riparian corridors with a focus on those located in the local and regional corridors. |


PURGA CREEK
Nature Conservation Strategy Regional Corridor
Mid reaches
Work with landholders to protect /enhance wetlands and improve koala habitat (within local habitat corridor)

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## SANDY CREEK (TIVOLI)

The Sandy Creek (Tivoli) sub-catchment covers an area of 8.7km² and flows from the ridge line which separates the Bremer and Brisbane River catchments, through the suburbs of Chuwar, Tivoli and North Tivoli into the Bremer River estuarine zone, 8km upstream of the Brisbane River confluence.

The sub-catchment is predominantly wooded, with small pockets of urban, peri-urban and industrial land use.

The waterway consists of an intact chain of ponds in the upper reaches and a continuous channel in the lower reaches.

### SPECIAL FEATURES OF THE CATCHMENT

- Chain of ponds in upper reaches
- Currently no community access to the waterway

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| | 1. Due to limited knowledge of this catchment – undertake further investigation of the current condition and impacts of Sandy Creek to inform future management actions. |

## WARRILL CREEK

Warrill Creek rises in the Main Range National Park (World Heritage Area) and flows about 70km down to its confluence with the Bremer River near Amberley. The majority of the Warrill Creek sub-catchment is within the Scenic Rim LGA, with only the lower reaches contained within the Ipswich LGA downstream of Mutdapilly.

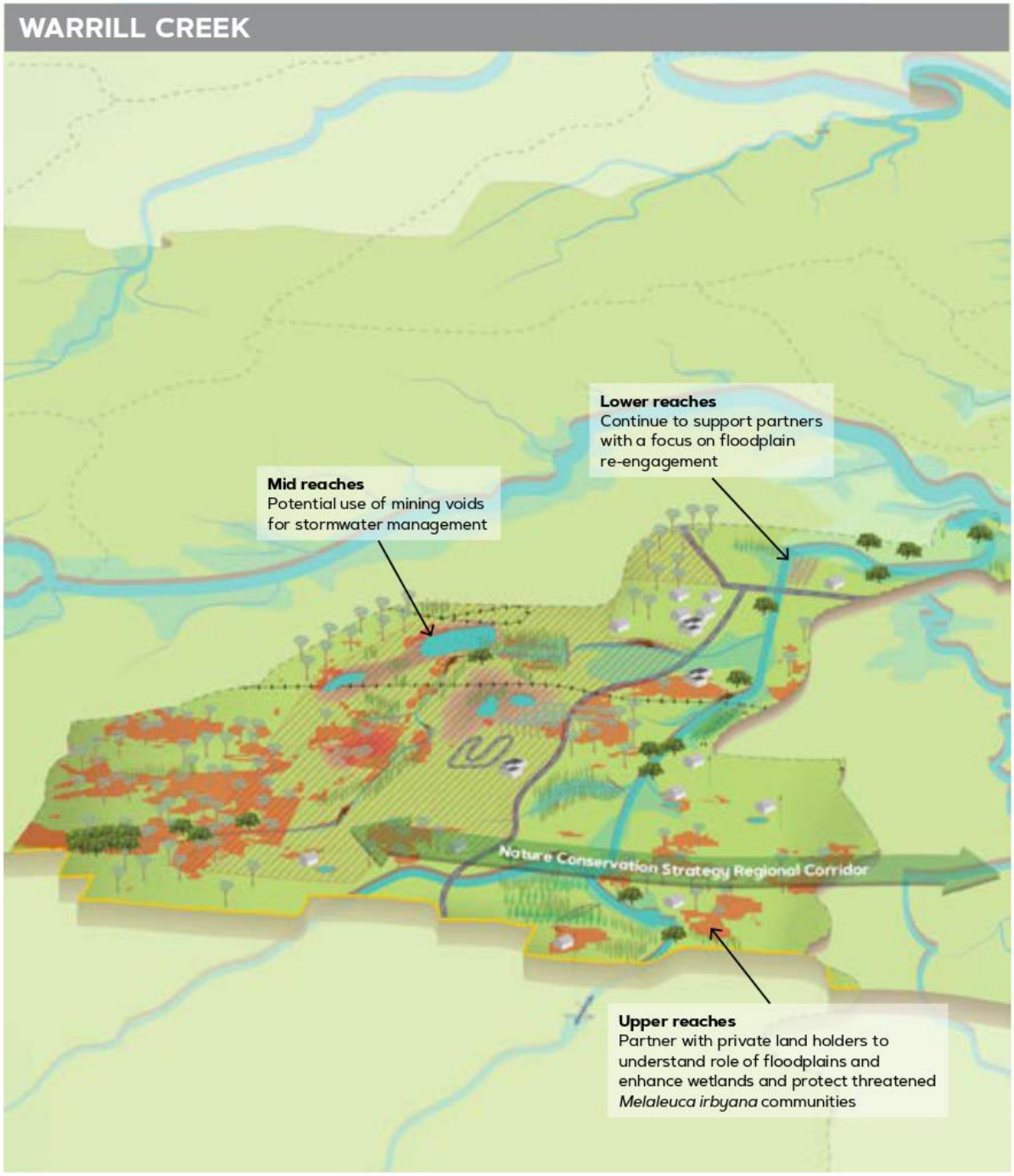
Warrill Creek transitions between a single continuous channel and anabranching low flow channels within a wide floodplain valley. The construction of Lake Moogerah on Reynolds Creek, a tributary of Warrill Creek, has impacted the natural flow regime of the sub-catchment. The dam has a total catchment area of approximately 200km² which is more than 20 per cent of the total Warrill Creek sub-catchment area. A series of weirs within Warrill Creek allow water from the dam to be released to downstream town water supply, and industrial and agricultural water users.

Agriculture is the predominant land use within the sub-catchment, with mostly irrigated horticulture on the floodplains and grazing on the hill slopes. A large area of the sub-catchment is planned for the Ebenezer Regional Industrial Area, which is one of the larger industrial areas in South-East Queensland and will include the provision of more direct road access (Warrego Highway link) and freight rail access.

### SPECIAL FEATURES OF THE CATCHMENT

- Home to threatened ecological community Swamp Tea-tree (*Melaleuca irbyana*) which is listed as critically endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*
- High value wetlands including Ten Mile Swamp
- Priority area for rehabilitation and protection of Koala habitat.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Floodplain** | 1. Investigate and establish initiatives to support the re-engagement of the floodplain<br>2. Protect and enhance existing wetlands, and improve connectivity to the main channel<br>3. Protect pockets of Swamp Tea-tree community within the floodplain areas<br>4. Develop innovative stormwater management measures with developers in the Ebenezer Regional Industrial Area<br>5. Retention and rehabilitation of streams of order 1 and 2. |
| **Community** | 1. Increase community understanding of the benefits of wetlands and floodplains<br>2. Target and support landholders to protect and manage existing wetlands using partnerships programs<br>3. Identify properties to target for protection of Swamp Tea-tree communities through conservation programs<br>4. Deliver floodplain improvements works through offsets and partnerships. |


WARRILL CREEK
Lower reaches
Continue to support partners with a focus on floodplain re-engagement
Mid reaches
Potential use of mining voids for stormwater management
Nature Conservation Strategy Regional Corridor
Upper reaches
Partner with private land holders to understand role of floodplains and enhance wetlands and protect threatened *Melaleuca irbyana* communities

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## WESTERN CREEK

Western Creek sub-catchment headwaters arise in the Little Liverpool Range with about 90 per cent of the catchment within the Ipswich LGA. The sub-catchment includes the townships of Rosewood, Calvert and Grandchester.

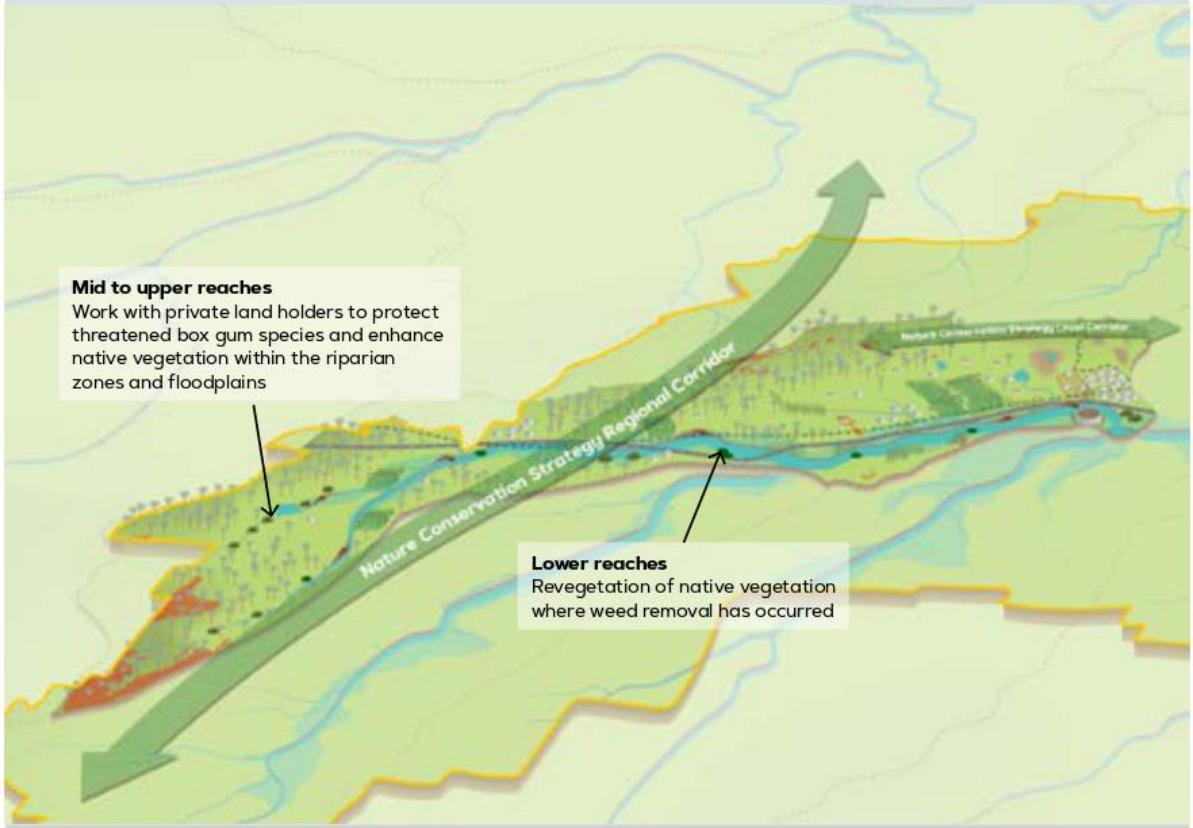
The predominant land use is grazing, with minor instances of cropping and mining. Urban expansion is possible in the lower sub-catchment area.

The creek flows through a steep confined valley setting consisting of bushland before transitioning into a wider valley, in which the waterway meanders across the floodplain, before joining the Bremer River just upstream of Jeebropilly.

The Rosewood Wastewater treatment plant discharges via a series of lagoons and constructed wetlands into Western Creek, just before its confluence with the Bremer River.

### SPECIAL FEATURES OF THE CATCHMENT

- Little Liverpool Range regional corridor
- Little Liverpool Range Initiative
- The catchment contains threatened Box Gum Grassy Woodland ecological communities. which are listed as critically endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999.*




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Riparian | 1. Undertake riparian revegetation works in the upper reaches within the regional fauna movement corridor. |
| Community | 1. Work in partnership with landholders to manage weeds and re-instate native vegetation, with a focus on properties within the regional fauna movement corridor. |

## MID BRISBANE RIVER CATCHMENT

The Mid Brisbane River Catchment covers a total area of 552km$^2$ and is the primary drinking water catchment for South-East Queensland, providing water for most of Brisbane and Ipswich. It is also a key water resource for irrigation, stock grazing, passive recreational use and ecological function.

The Mid Brisbane River comprises the following sub-catchments within the Ipswich LGA boundary:

- Black Snake Creek
- Mid Brisbane River

**FIGURE 6** – Mid Brisbane River Catchment and Sub-Catchments

## BLACK SNAKE CREEK

The Black Snake Creek sub-catchment covers an area of 35km² within the Ipswich LGA. The remaining 64 per cent of the lower sub-catchment area is in the Somerset LGA.

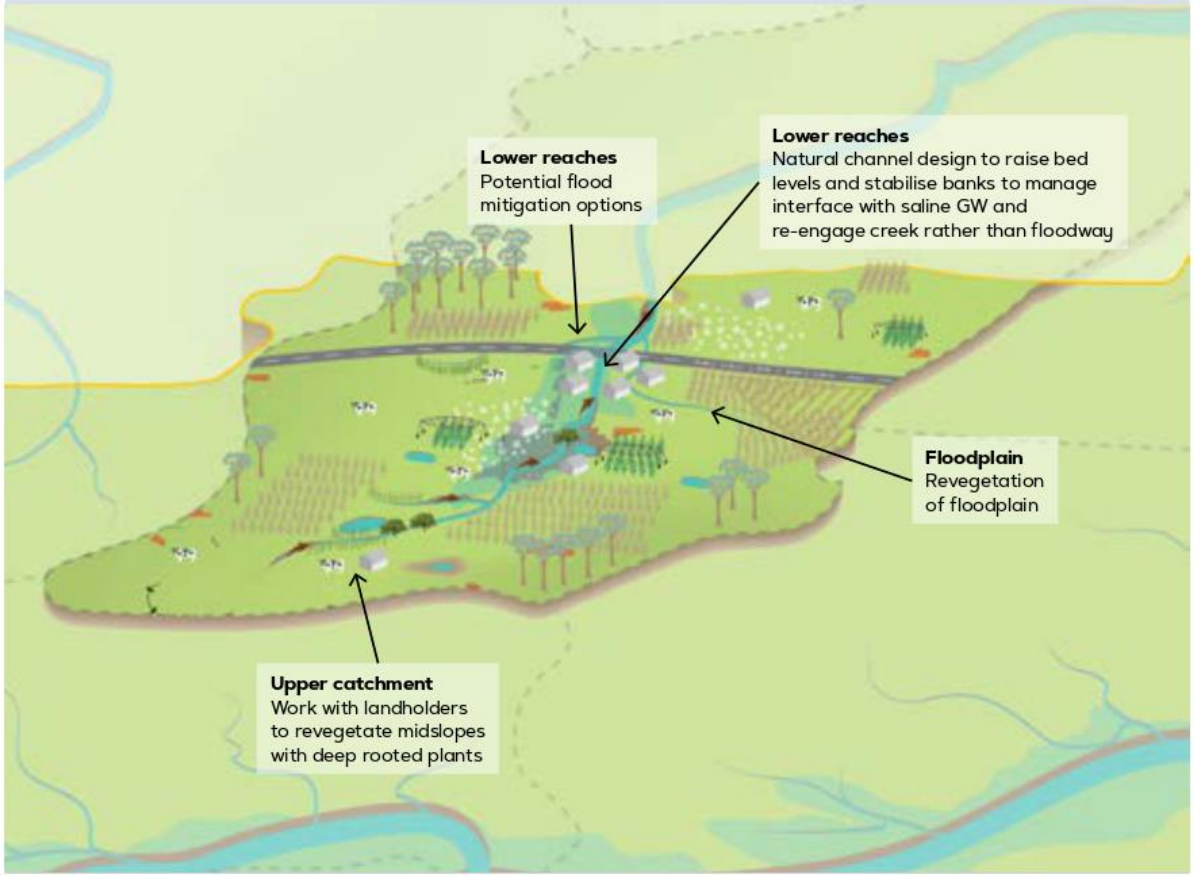
Black Snake Creek drains the northern slopes of the rolling hills which separate the Bremer and Brisbane River catchments. The creek flows north through the historical township of Marburg and enters the Brisbane River between Wivenhoe Dam and Mt Crosby Weir, which is the offtake point for two main water treatment plants in South-East Queensland.

Land use within the sub-catchment is primarily livestock grazing with the majority of the catchment in private ownership. The creek is highly modified and degraded and is characterised as a continuous channel along much of its length, due to historic channel incision.

In 2002 a large flood detention basin was constructed on Black Snake Creek upstream of Marburg to reduce the impact of flooding on the town.

### SPECIAL FEATURES OF THE CATCHMENT

- Active and engaged community
- Located within Brisbane's drinking water catchment
- Some pockets of Brigalow ecological community (*Acacia harpophylla*). Brigalow is listed as endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*
- Upper Black Snake Creek Improvement Plan.



| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Channel** | 1. Raise bed levels and stabilise banks to manage the channel interface with saline groundwater<br>2. Investigate weir levels in relation to the creek channel and floodway levels to allow for engagement of the flow path<br>3. Continue revegetation of the main channel downstream of the detention basin to provide bank stability and improve water quality. |
| **Floodplain** | 1. Revegetate the floodplain along the eastern tributary<br>2. Investigate and implement flood mitigation options<br>3. Revegetate the midslope areas with deep rooted trees, to help address salinity issues. |
| **Community** | 1. Partner with landholders to improve stock access management, on-site septic system management, and revegetation of the midslopes and riparian zones<br>2. Investigate the feasibility of establishing a Black Snake Creek Initiative to support landholder management<br>3. Work with external stakeholders to help fund works across the catchment which will provide water quality benefits downstream |

# MID BRISBANE RIVER

Sections of the Mid Brisbane River form part of the Ipswich boundary. The Mid Brisbane River sub-catchment covers an area of 63km² within Ipswich LGA out of a total sub-catchment area of 454km², and includes Sandy Creek (Pine Mountain) and Watercress Creek.

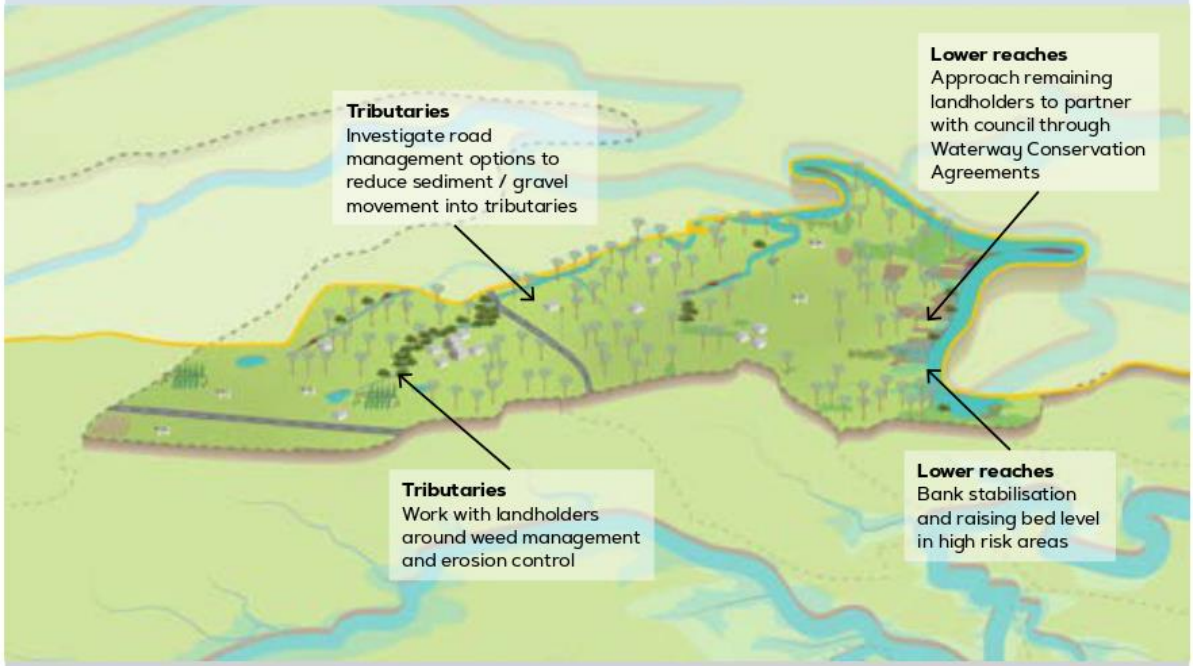
Dominant land uses include bushland, grazing, intensive agriculture, rural residential and industry.

Recreation values of the river are high with public parks and reserves and canoeing, boating, fishing and swimming occurring in the waterway.

The flow regime within the Mid Brisbane River has been significantly altered by Wivenhoe Dam on the Brisbane River and Somerset Dam on the Stanley River tributary. Flows are regulated depending on the releases from Wivenhoe Dam, and variability has been significantly modified.

## SPECIAL FEATURES OF THE CATCHMENT

- Platypus sighted with evidence of healthy and breeding population
- Sections of the waterway are accessible to the public (e.g. Kholo Enviroplan Reserve)
- The waterway is used for a range of recreational activities including picnics, BBQs, walking, swimming, fishing and boating
- Active community
- D'Aguilar Range Terrestrial Corridor regional corridor




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Investigate unsealed road management options to reduce sediment inputs into tributaries<br>2. Work in partnership with landholders to undertake bank stabilisation and weed management projects along the river. |
| Community | 1. Work in partnership with Seqwater to deliver improvement actions<br>2. Increase the number of landholders engaged in council conservation and landholder partnerships programs. |

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## LOWER BRISBANE RIVER CATCHMENT

The Lower Brisbane River Catchment covers a total area of 1,195km² and is a highly urbanised catchment with sections of the river used regularly for passive and active recreational use, including jet boating, water skiing and fishing.

It is comprised of the following sub-catchments within the Ipswich LGA:

- Goodna Creek
- Lower Brisbane River
- Sandy Creek (Camira)
- Six Mile Creek
- Woogaroo Creek, including Mountain and Opossum creeks

**FIGURE 7** – Lower Brisbane River Catchment and Sub-Catchments


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## GOODNA CREEK

The Goodna Creek sub-catchment covers only 14km$^2$. The creek flows through the suburbs of Redbank Plains and Collingwood Park, before entering the Lower Brisbane River 5km downstream of the Moggill Ferry crossing.

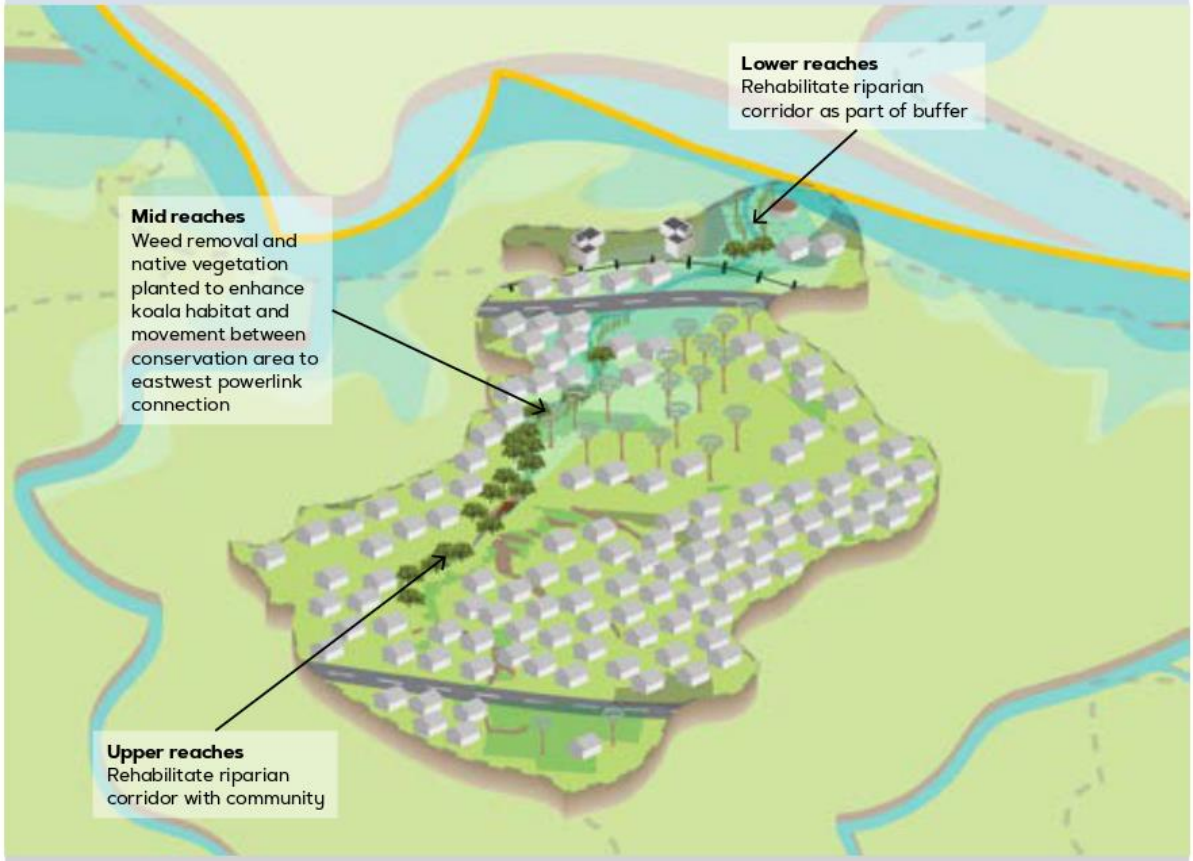
Land use within the sub-catchment is a mixture of urban, light industrial and bushland, with significant tracts of vegetation retained near the creek within the former Redbank Rifle Range south of the Ipswich Motorway.

The upper reaches of the creek consist of sections of constructed channel and discontinuous chain of ponds. The lower reaches of the creek exist as a continuous channel with variable widths and some sections with an undefined channel.

The Goodna Sewage Treatment Plant, at the downstream end of the catchment, discharges directly into the Brisbane River.

### SPECIAL FEATURES OF THE CATCHMENT

- Much of the creek is accessible to the community
- Indigenous artefacts
- Important area for securing urban Koala populations.




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Riparian | 1. Remove weeds and revegetate the riparian corridor with a focus on providing habitat and movement corridors for koalas<br>2. Investigate opportunities for retaining and enhancing existing native vegetation within the Regional Business and Industrial Buffer areas. |
| Community | 1. Initiate community riparian revegetation events in local parks. |

## LOWER BRISBANE RIVER

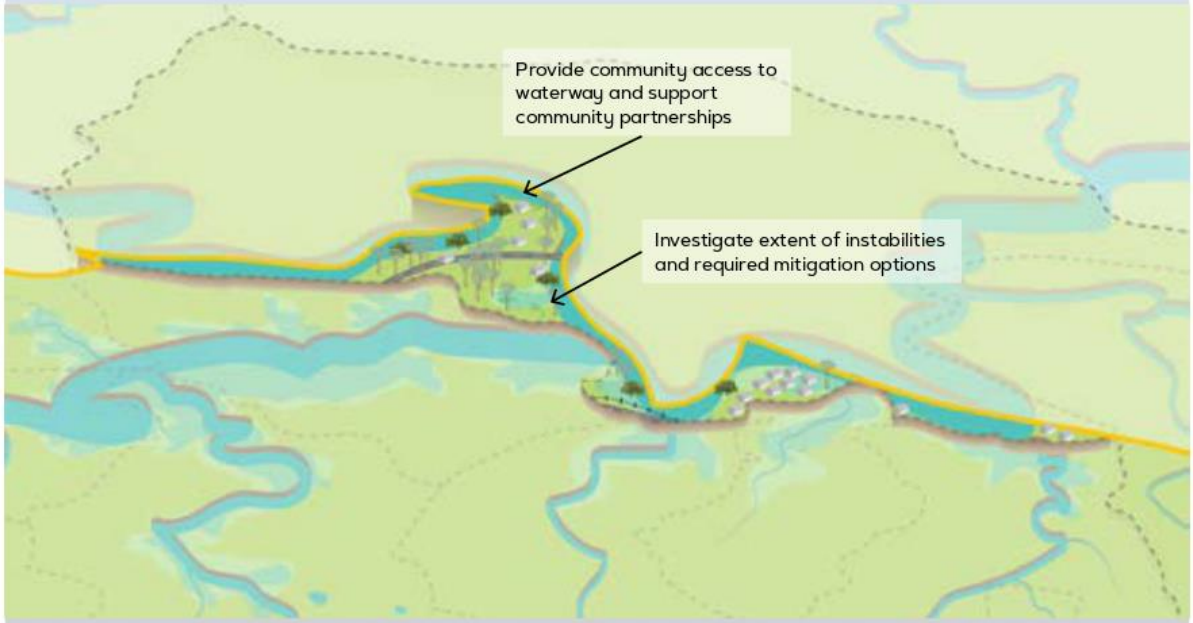
Sections of the Lower Brisbane River form part of the Ipswich City Council northern boundary. The Lower Brisbane River is estuarine and receives flows from the Goodna, Woogaroo, Six Mile and Sandy Creek (Camira) sub-catchments.

Dominant land uses within the Lower Brisbane sub-catchment include bushland, grazing, intensive agriculture, rural residential and industry. Recreation values of the Lower Brisbane River are high with a number of public parks and reserves along the waterway and its use for canoeing and fishing.

The flow regime has been significantly altered by Wivenhoe Dam on the Brisbane River and Somerset Dam on the Stanley River tributary. Flows are regulated depending on the releases from Wivenhoe Dam, and variability has been significantly reduced. During flood conditions, the Lower Brisbane River has a significant impact on Ipswich.

### SPECIAL FEATURES OF THE CATCHMENT

- Sections of the waterway can be accessed by the community for active recreation, including Riverside Park
- Used for walking, picnics, BBQs, cycling, and swimming




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Investigate the extent of channel instabilities and develop appropriate mitigation works to address gullying or severe slumping which impact on infrastructure. |
| Community | 1. Provide access and views to the river in existing and new public open space areas which allow a range of recreation experiences<br>2. Continue to support private landholders through partnership programs. |

## SANDY CREEK (CAMIRA)

The upper and middle sections of the Sandy Creek (Camira) sub-catchment area cover 25km² within the Ipswich LGA. The creek flows through the suburbs of Camira and Carole Park, before it flows into Wolston Creek and then the Lower Brisbane River outside of the Ipswich boundary.

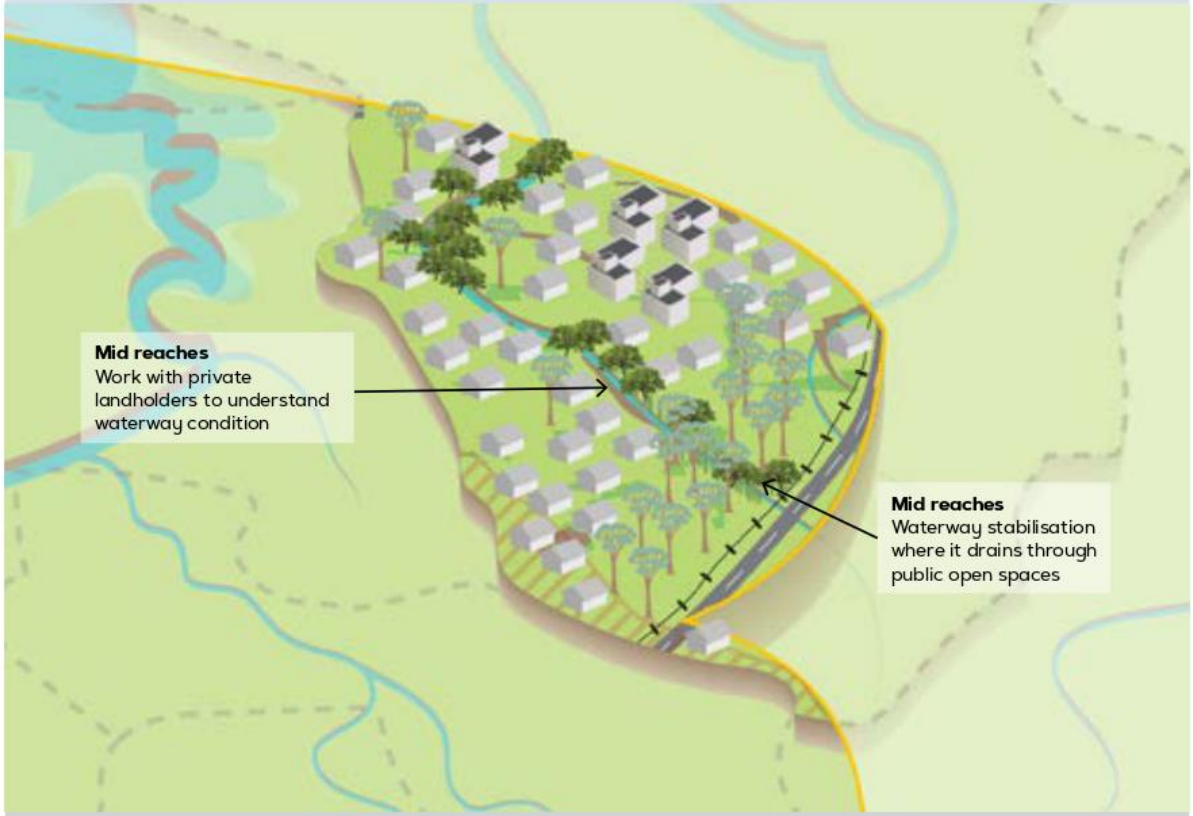
Land use within the sub-catchment is a mixture of urban, light industrial (Carole Park Industrial Estate) and bushland predominantly within the Greenbank Military Camp. There are also a number of council conservation and landholder partnerships across the sub-catchment.

The channel form is predominantly natural, however there are some concrete channelised sections. A vegetated riparian corridor exists for the length of Sandy Creek and contains mapped palustrine wetlands in the upper sub-catchment. They have been identified as in good condition by Queensland Wetlands.

The waterway drains through a combination of residential land and council parks and reserves in the upper reaches. The waterway in the lower reaches flows through the back of industrial lots in Carole Park.

### SPECIAL FEATURES OF THE CATCHMENT

- Registered Indigenous cultural heritage site with the Camira Bora Ring and other artefacts located
- Anecdotal sightings and recent detection of Platypus




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Stabilise the waterway where it drains through public open spaces. |
| Community | 1. Engage the community on channel condition and Platypus habitat. |

## SIX MILE CREEK

The Six Mile Creek sub-catchment covers an area of 31km$^2$. The creek flows north from the White Rock – Spring Mountain Conservation Estate through the suburbs of Redbank Plains, New Chum, Collingwood Park and Redbank to join the Brisbane River downstream of Moggill Road Ferry.

Land use within the sub-catchment is mixed, with the upper reaches retaining significant tracts of bushland, old mining areas in the west and urban development in the east. The mid sub-catchment is currently experiencing rapid urban growth mostly on the eastern side of the creek. Regional Business and Industry and supporting buffers are planned for the western side of the corridor.

The waterway channel has experienced degradation in the middle and lower reaches as a result of riparian vegetation removal, channelisation and impoundments (voids from historic mine sites). Bed and bank instabilities exist and some informal grade control works have been undertaken.

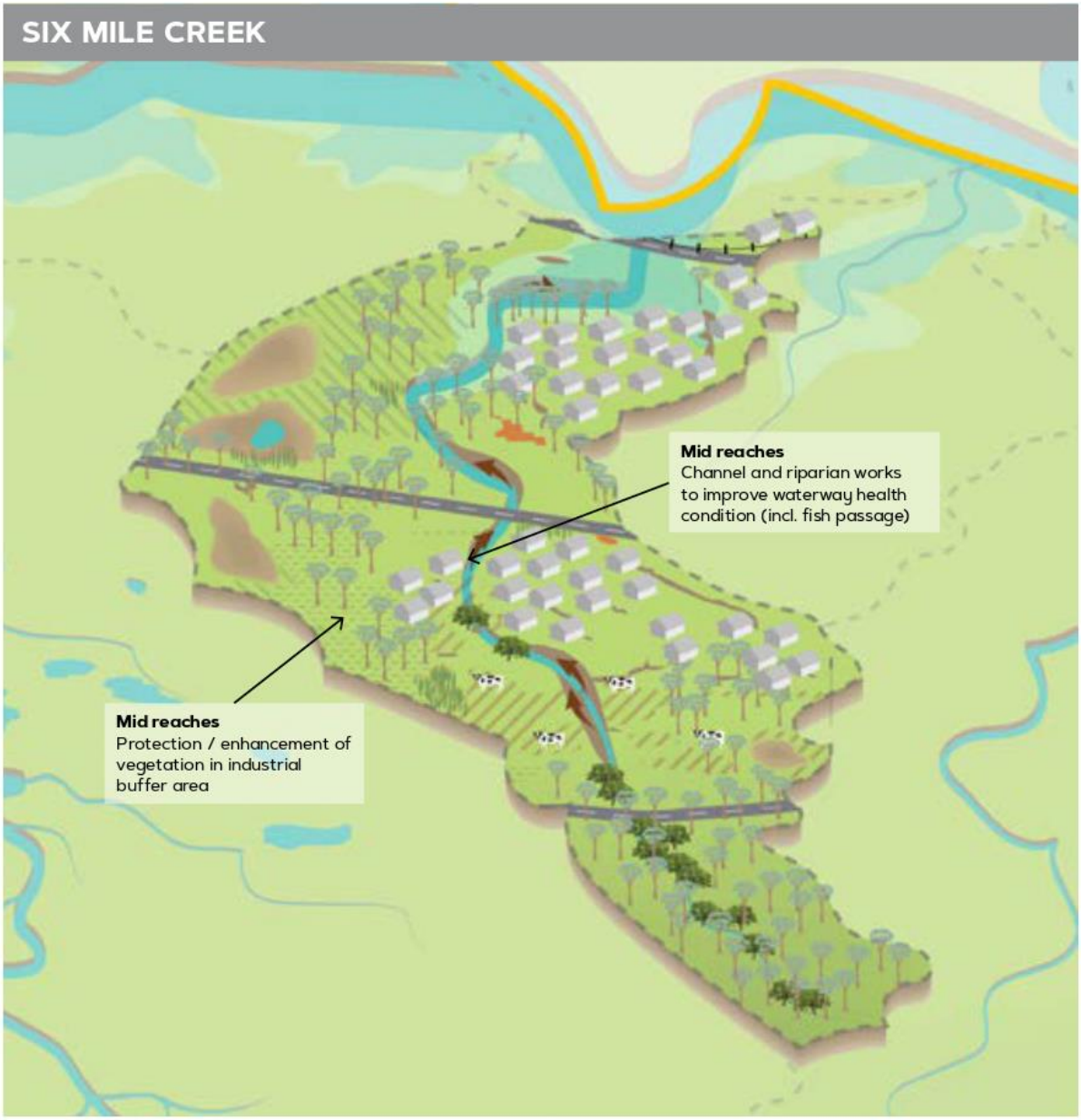
The waterway flows through large areas of vegetation in the upper and lower sub-catchment areas, but there is little or no vegetation present in the middle reaches. The vegetation in the sub-catchment contains some mapped endangered communities.

There are many council parks and reserves along the waterway which provide access for the community. There are also a number of council conservation and landholder partnerships in the sub-catchment.

### SPECIAL FEATURES OF THE CATCHMENT

- Anecdotal sighting and recent detection of Platypus in Six Mile Creek
- Significant urban growth
- Many areas of the creek are accessible to the community
- Threatened ecological community Box Gum Grassy Woodland is mapped within the catchment. It is listed as critically endangered in the *Environmental Protection and Biodiversity Conservation (EPBC) Act 1999*.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| **Channel** | 1. Stabilise the waterway channel and improve in-stream condition to enhance Platypus habitat<br>2. Reinstate natural channel design characteristics including fish passages in modified channels. |
| **Riparian** | 1. Reinstate native riparian vegetation in the middle section. |


SIX MILE CREEK
Mid reaches
Channel and riparian works to improve waterway health condition (incl. fish passage)
Mid reaches
Protection / enhancement of vegetation in industrial buffer area

## WOOGAROO CREEK

The sub-catchment area of Woogaroo Creek and its tributaries, Mountain Creek and Opossum Creek, is 69km² (40km², 14km² and 15km² respectively), of which 65km² is within the Ipswich LGA. The waterways flow north from the White Rock – Spring Mountain Conservation Estate through the suburbs of Springfield, Springfield Lakes, Redbank Plains and Goodna.

Woogaroo Creek and Mountain Creek both flow through bushland for more than 5km. Both systems consist of sections of waterway with continuous and discontinuous channel forms. Opossum Creek only flows through bushland for a short distance before entering a large online impoundment in the suburb Springfield Lakes. Opossum Creek continues as a small continuous channel downstream of the impoundment, the shape and form reflective of reduced flows due to the impoundment.

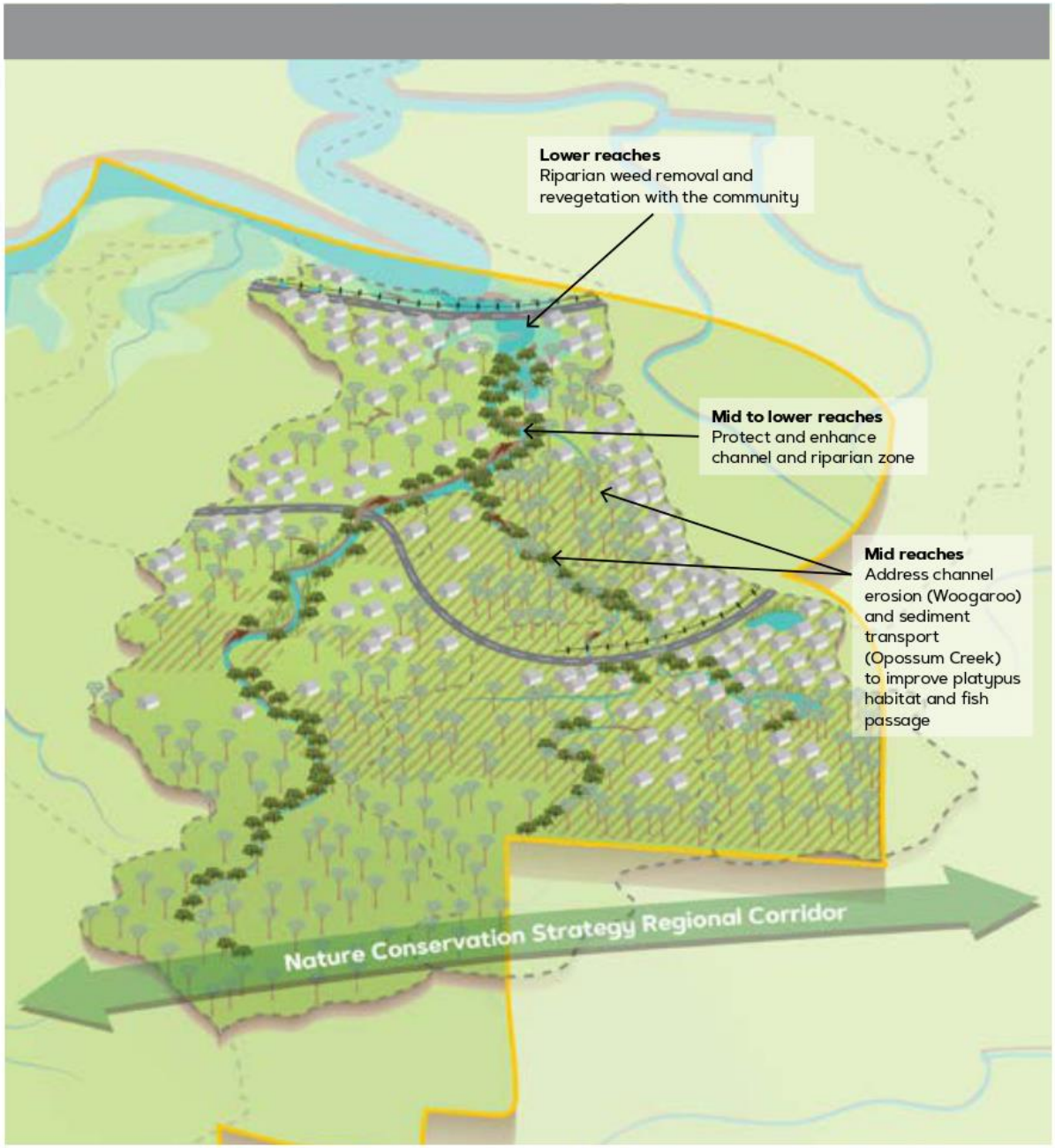
Land use within the sub-catchment is a mixture of urban and vegetated, with the upper catchment retaining significant tracts of bushland. The Springfield development area is within the Woogaroo Creek sub-catchment which includes a large town centre and urban residential land. Linear open space corridors are provided along the main waterway as part of this development and there are a large number of open water bodies within these corridors.

Large areas of the waterway corridor flow through council parks and reserves, providing the community good opportunities to access the waterway. There are also a number of council partnerships with landholders and community-driven initiatives.

### SPECIAL FEATURES OF THE CATCHMENT

- Platypus sighted and detected within Woogaroo and Opossum creeks
- Important area for securing urban Koala populations
- Flinders-Karawatha regional corridor
- Indigenous artefacts.

| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Channel | 1. Waterway stabilisation works downstream of Augusta Parkway to build resilience to upstream development and improve Platypus habitat<br>2. Works undertaken to address sedimentation and transportation in constructed channels along Opossum Creek and improve habitat condition for Platypus<br>3. Utilise new urban development in the lower corridor to manage stormwater flows on-site and to protect stable channel form. |
| Riparian | 1. Target weed management in the middle to lower corridor, to be combined with revegetation of native vegetation to improve Koala habitat and movement<br>2. Rehabilitate the waterway as required to remove weeds and provide a fully vegetated corridor outcome<br>3. Reinstate native riparian vegetation to support Platypus communities. |


Lower reaches
Riparian weed removal and revegetation with the community
Mid to lower reaches
Protect and enhance channel and riparian zone
Mid reaches
Address channel erosion (Woogaroo) and sediment transport (Opossum Creek) to improve platypus habitat and fish passage
Nature Conservation Strategy Regional Corridor

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## LOCKYER CREEK CATCHMENT

The Lockyer Creek Catchment covers a total area of 2,974km$^2$ and as a whole has the highest proportion of land used for intensive agriculture in South-East Queensland. Only a small portion of the upper reaches of the sub-catchment (which includes Woolshed and Plain Creeks) are located in the Ipswich LGA.

**FIGURE 8** – Lockyer Creek Catchment

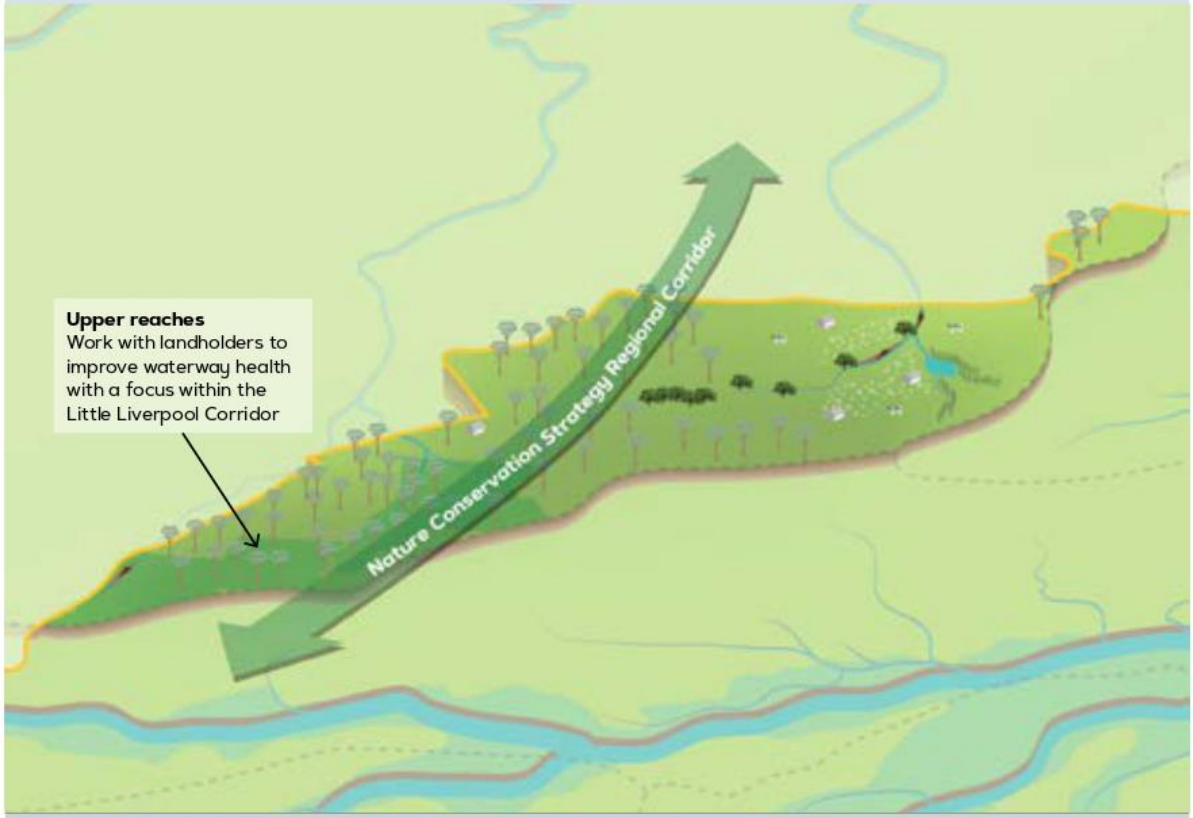
## LOCKYER CREEK

The Lockyer Creek catchment is largely outside of the Ipswich LGA. Only the upper reaches of Woolshed and Plain Creeks have a partial area within the Ipswich LGA. Woolshed and Plain Creeks headwaters rise in the Little Liverpool Range and cover 38km$^2$ within the Ipswich LGA before they continue to flow north into the Lockyer Valley Regional Council area.

The Woolshed Creek sub-catchment is predominantly bushland on the hill slopes and agricultural on the floodplain, while the Plain Creek sub-catchment is predominantly agricultural. Woolshed Creek is characterised by a continuous channel with minor instabilities, while Plain Creek is characterised as a continuous, sinuous channel. Woolshed and Plain Creek sub-catchments have been identified as being under significant salinity stress.

### SPECIAL FEATURES OF THE CATCHMENT

- Little Liverpool Range regional corridor
- Active community
- Salinity issues.




| PRIORITY MANAGEMENT THEMES | TARGETED ACTIONS |
|---|---|
| Community | 1. Engage the community to improve landholders' understanding of stack access management, riparian revegetation, dam management. |

## SUMMARY OF SUB-CATCHMENT ACTIONS

Table 1 provides a summary of investment priorities across the different Ipswich sub-catchments.

**TABLE 1** – Summary of priority actions across sub-catchments

| ACTION TYPE | CATCHMENT / SUB-CATCHMENT | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | **Bremer River** | | | | | | | | | | | **Mid Brisbane River** | | **Lower Brisbane River** | | | | | **Lockyer Ck** |
| | Bremer River Est | Bremer River FW | Bundamba Ck | Deebing Ck | Franklin Vale Ck | Iron Pot Ck | Mihi Ck | Purga Ck | Sandy Ck (Tivoli) | Warril Ck | Western Ck | Black Snake Creek | Mid Brisbane River | Goodna Ck | Lower Brisbane River | Sandy Ck (Camira) | Six Mile Ck | Woogaroo Creek, including Mountain and Opossum creeks | Lockyer Ck |
| Channel stabilisation / naturalisation | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | No actions – low priority sub-catchment | | | ■ | ■ | | ■ | ■ | ■ | ■ | |
| Best practice stormwater management - new development | | | ■ | ■ | | | | | | ■ | | | | | | | | ■ | |
| Lower order stream protection | | | ■ | ■ | | | | | | ■ | | | | | | | | | |
| Protect waterway corridor / riparian buffer widths | | | ■ | ■ | ■ | | | ■ | | | | | | | | | | | |
| Riparian revegetation / weed control | ■ | | ■ | | ■ | | ■ | ■ | | | ■ | ■ | ■ | ■ | | | ■ | ■ | |
| Floodplain engagement / enhancement | | ■ | | | | ■ | | ■ | | ■ | | ■ | | | | | | | |
| Wetland protection / enhancement | | ■ | | | | | | ■ | | ■ | | | | | | | | | |
| Vegetation protection / enhancement | ■ | ■ | | | | | | ■ | | ■ | | ■ | | | | | | | |
| Land management best practice – private land | | | | | ■ | | ■ | | | | | ■ | | | | | | | ■ |
| Community education | | ■ | | | | | | ■ | | ■ | | | | | | ■ | | | ■ |
| Community events | ■ | | ■ | | | | | | | | | | | ■ | | | | | |
| Community access | ■ | | | | | | | | | | | | | | ■ | | | | |
| Support landholders | ■ | ■ | | | ■ | | ■ | ■ | | ■ | ■ | | ■ | | ■ | | | | |

Theme 1 **Channel**

Theme 2 **Riparian**

Theme 3 **Floodplain**

Theme 4 **Community**


Hydrotherapy by D Houley
Ipswich Enviroplan Photo Competition

# 4. IMPLEMENTATION

## ADAPTIVE AND COLLABORATIVE MANAGEMENT

The management framework for waterway and wetland health in Ipswich needs to be adaptive and collaborative. That is, it will respond to new information and allow improved knowledge to inform management actions. This is necessary as:

- our knowledge of waterway health processes and the causes of degradation is continually improving, and will be reviewed and updated regularly
- waterways are highly variable and their responses to management actions cannot be easily predicted and often take a number of years to be realised
- community awareness and desires for healthy ecosystems is constantly evolving.


Lazy Sunday by J Clark
Ipswich Enviroplan Photo Competition

## MONITORING AND EVALUATION

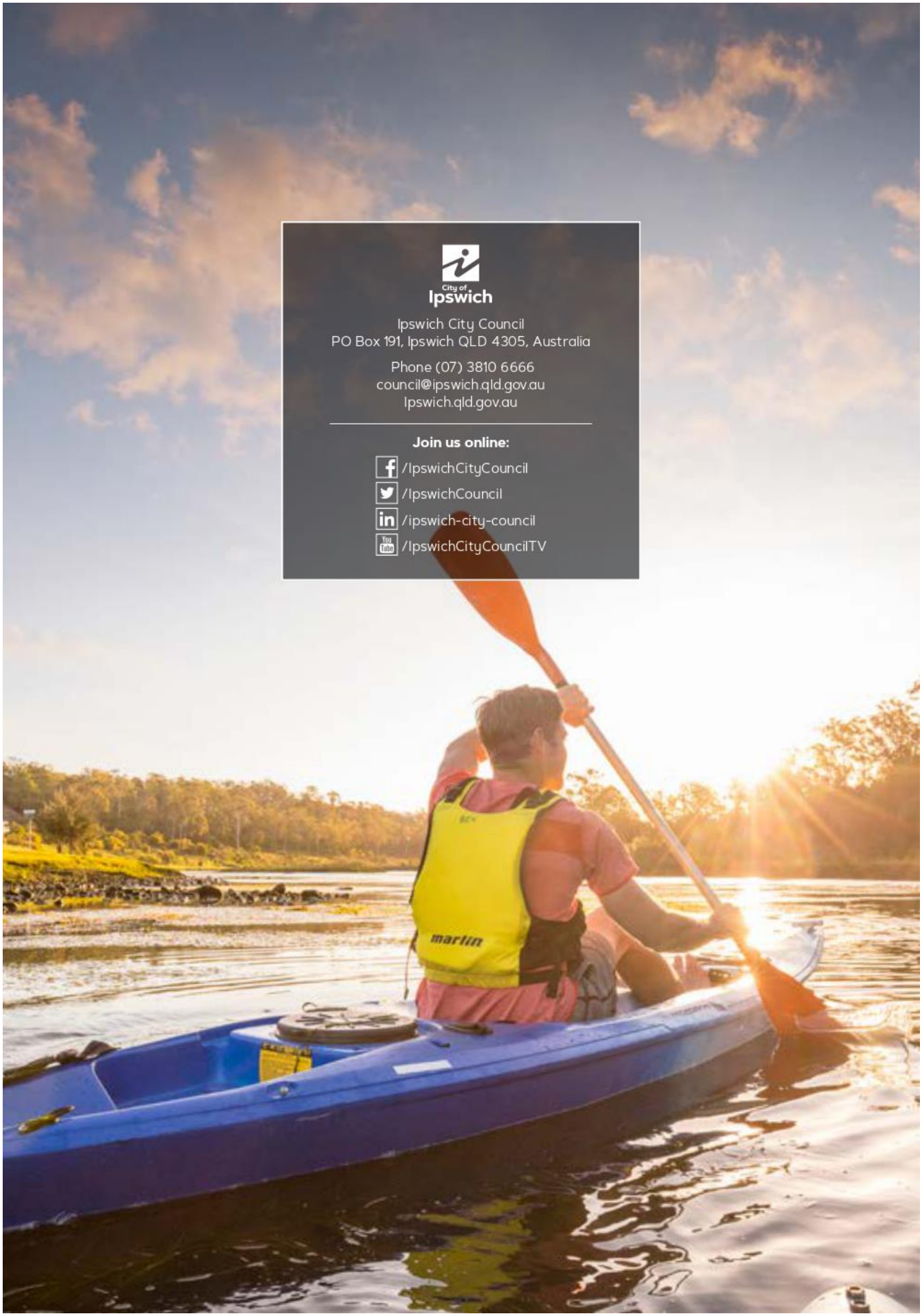
An effective adaptive management framework for waterway and wetland health requires a combination of planning, management, research and monitoring mechanisms, including:

- high quality, baseline information on waterway and wetland health and catchment management processes to be used as the basis for local planning
- understanding of waterway and wetland health processes and their responses to management activities
- performance monitoring to assess whether targets and objectives have been achieved
- review processes to incorporate new information into plans and works programs, and
- community commitment and involvement in long-term management.

Council will review current local and regional monitoring arrangements to determine their relevance for assessing council's waterway and wetland health strategic direction and implementation of management actions. This review of existing data will build the current baseline understanding of Ipswich waterways and wetlands and identify any knowledge gaps to be filled to allow for effective decision making. The data will be used to inform, monitor and evaluate the performance of the actions.

In addition, the following actions will also be undertaken to monitor and evaluate the performance of the Strategy:

- Update of the initial Waterway Condition Assessment (2014) to include new data and to measure success of waterway management actions
- Record extent of on-ground works undertaken (e.g. number of trees planted, volume of weeds removed)
- Measure extent of benefit provided by on-ground works (e.g. stormwater pollution removal)
- Record number of active community partnerships.


City of Ipswich
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Phone (07) 3810 6666
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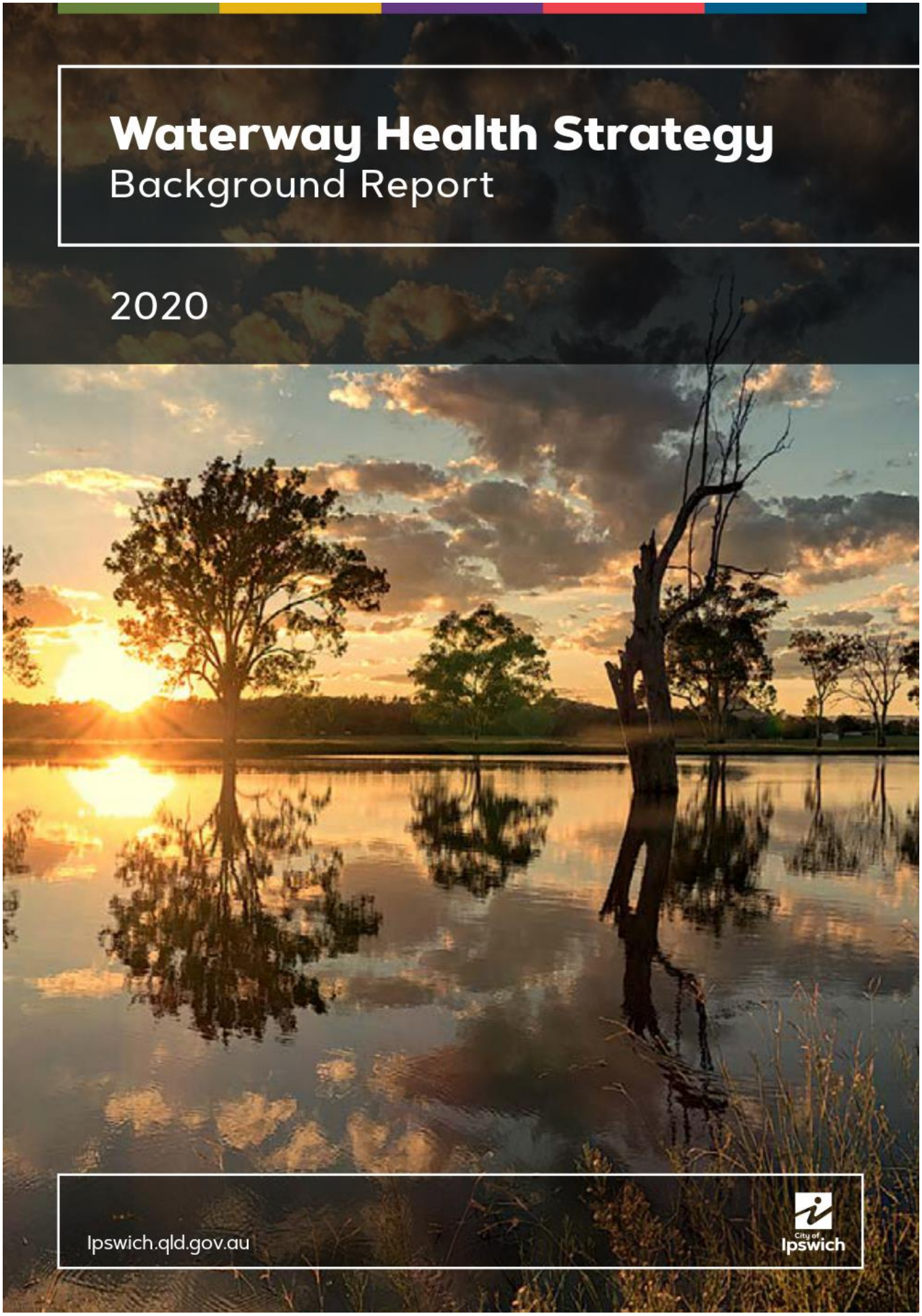
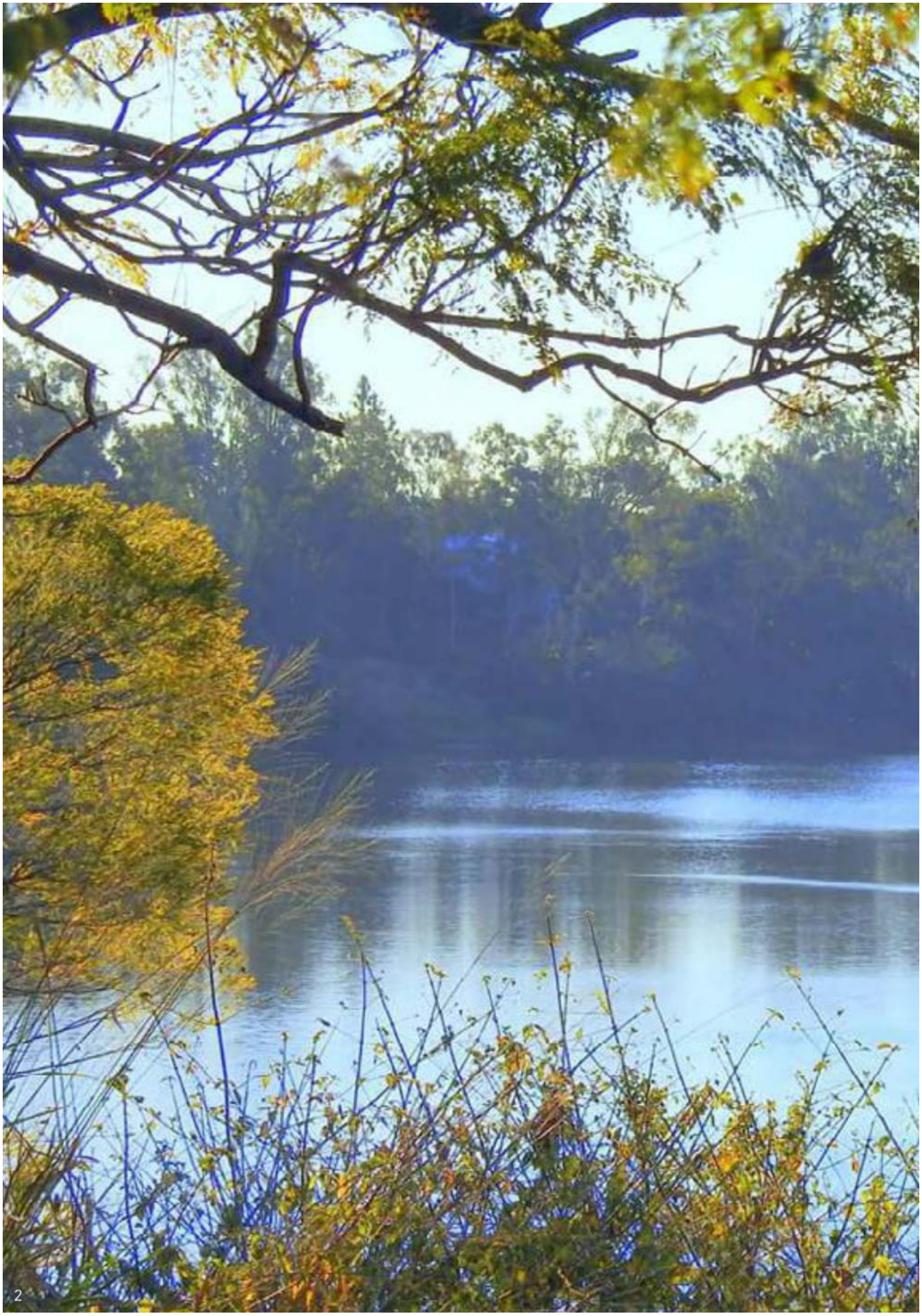

Waterway Health Strategy
Background Report
2020
Ipswich.qld.gov.au
City of Ipswich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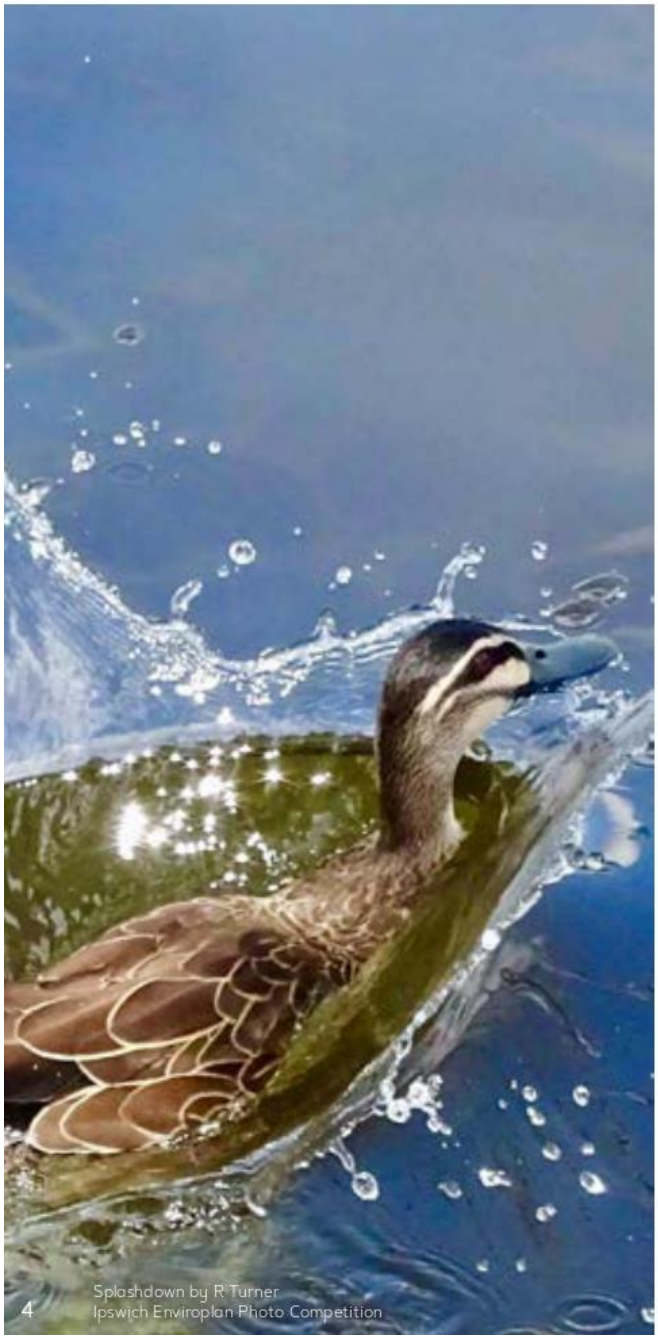
# CONTENTS



Brisbane River, Goodna by K Petie
Ipswich Enviroplan Photo Competition

# A. BACKGROUND AND CONTEXT



Splashdown by R Turner
Ipswich Enviroplan Photo Competition



## PURPOSE AND USE

The Waterway Health Strategy Background Report describes the condition and vision for the waterways within the Ipswich Local Government Area (LGA).

The intent of this report is to provide current technical background information on the values and threats facing Ipswich waterways which has assisted in the development of the Waterway Health Strategy 2020. The report is set out in four main parts:

**PART A**
BACKGROUND AND CONTEXT

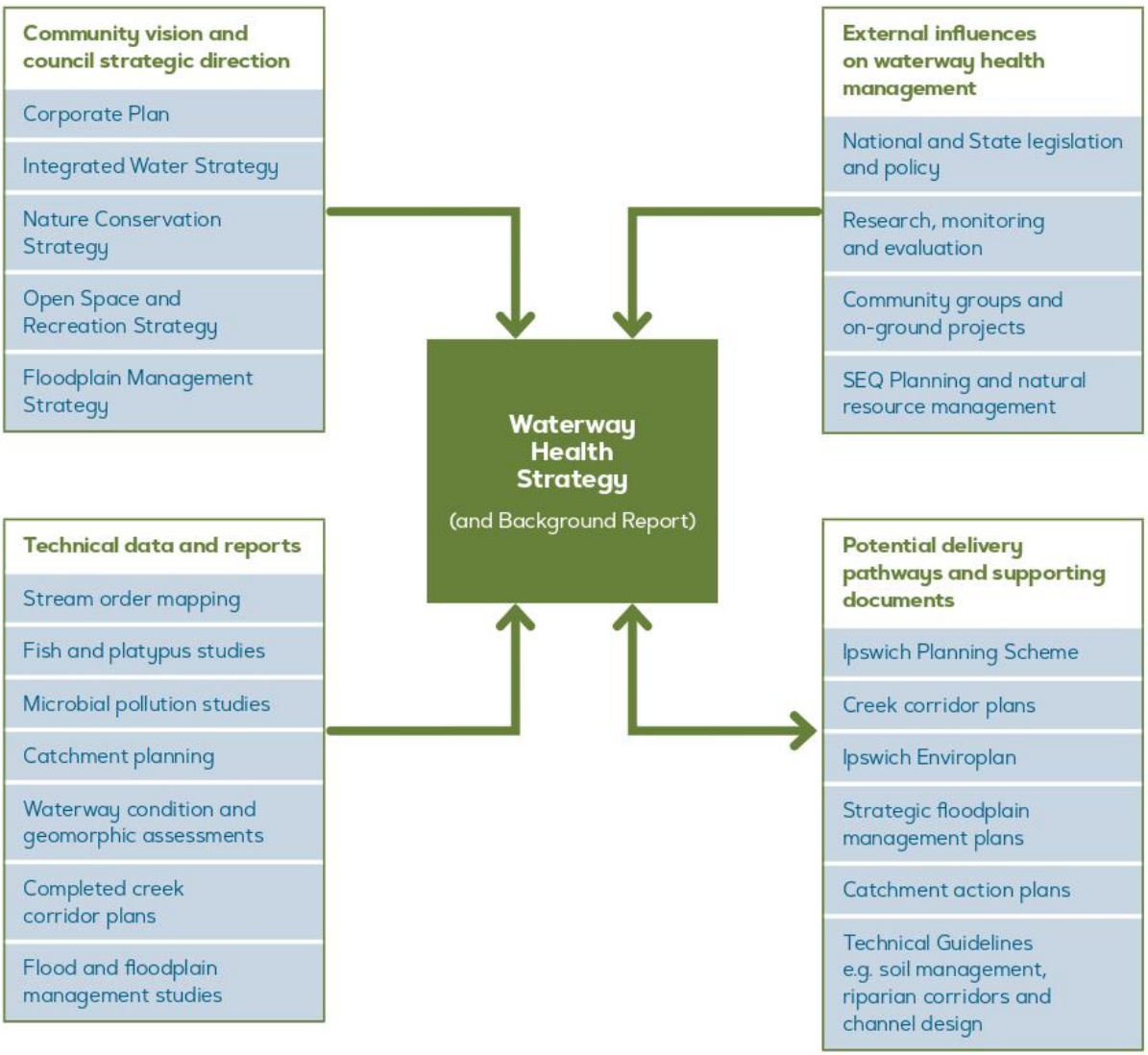
**PART B**
IPSWICH WATERWAYS AND WETLANDS

**PART C**
WATERWAY MANAGEMENT ACTION THEMES

**PART D**
SUB-CATCHMENT SUMMARIES – CURRENT CONDITION

A number of strategies, policies and technical reports which have been produced by council and others link to the Waterway Health Strategy and will assist in achieving its strategic priorities (See Figure 1).

**FIGURE 1** – Framework bringing together the internal and external elements of waterway health management to give a clear, coordinated framework for future improvement

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# STRATEGY DEVELOPMENT

The health of our Ipswich waterways are directly influenced by the condition of and activities in the adjacent riparian corridor, as well as the contributing catchment. Therefore the protection and enhancement of waterway health requires input and cooperation from many stakeholders. To achieve this, the strategy has been developed through coordinated consultation across multiple council departments and stakeholders including:

**Infrastructure and Environment**

- Natural Environment and Land Management
- Hydrology and Open Space Planning
- Infrastructure Strategy
- City Maintenance

**Community, Cultural and Economic Development Department**

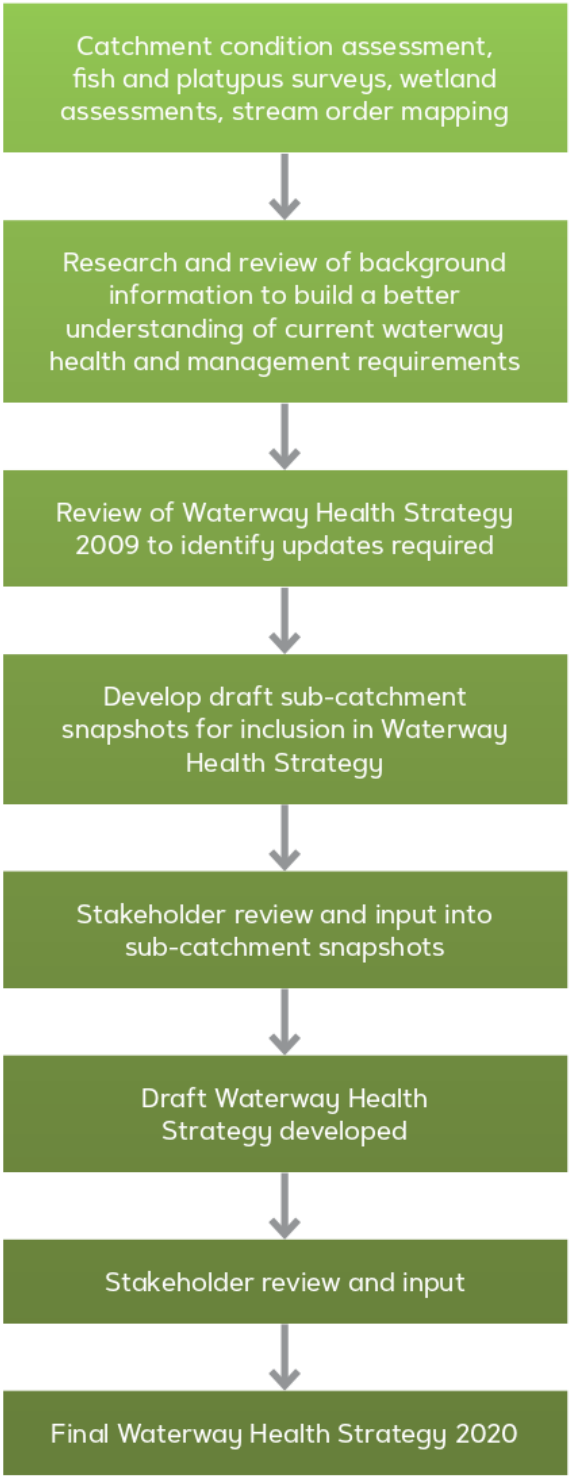
- Sport and Recreation

**Planning and Regulatory Services Department**

- Engineering, Health and Environment
- City Design.

The Waterway Health Strategy 2020 and Waterway Health Strategy Background Report replaces the Waterway Health Strategy 2009 to reflect the current understanding of Ipswich waterways and their management requirements. Figure 2 represents the process which was undertaken in order to update the Waterway Health Strategy 2009.

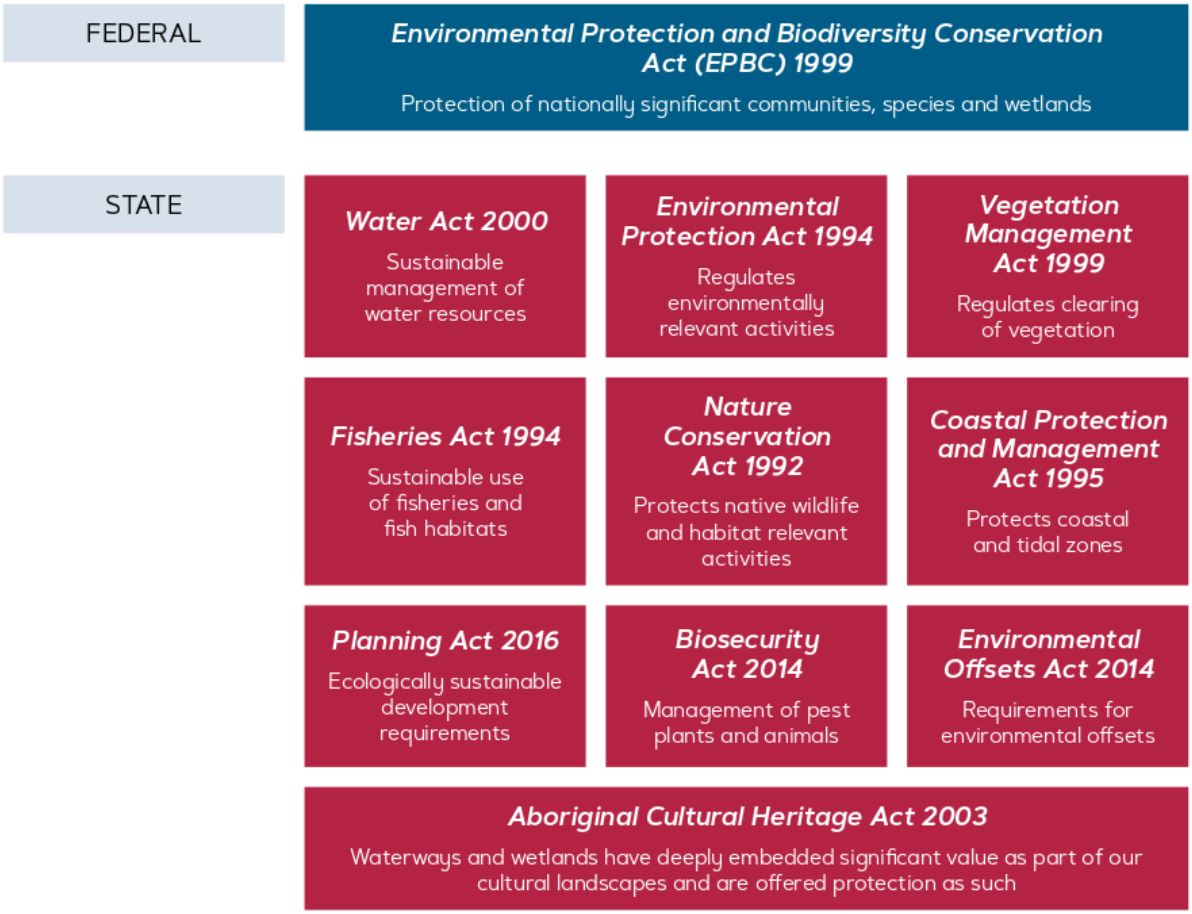
**FIGURE 2** – Strategy development process



# LEGISLATIVE AND PLANNING FRAMEWORK

Council has an obligation to meet a number of statutory requirements and regional targets for the protection and management of water quality, aquatic ecosystems and riparian vegetation (refer Appendix B for more details). It also has to fulfil State Government devolved responsibilities through regulatory enforcement on public and private land. Figure 3 provides a summary of key waterway and wetland legislation.

**FIGURE 3** – Summary of national and state legislation which helps to protect and manage waterways and wetlands



The State Planning Policy 2017 and the SEQ Regional Plan 2017 (ShapingSEQ) both work together as part of Queensland's planning framework under the *Planning Act 2016* to manage growth, change, land use and development in South-East Queensland.

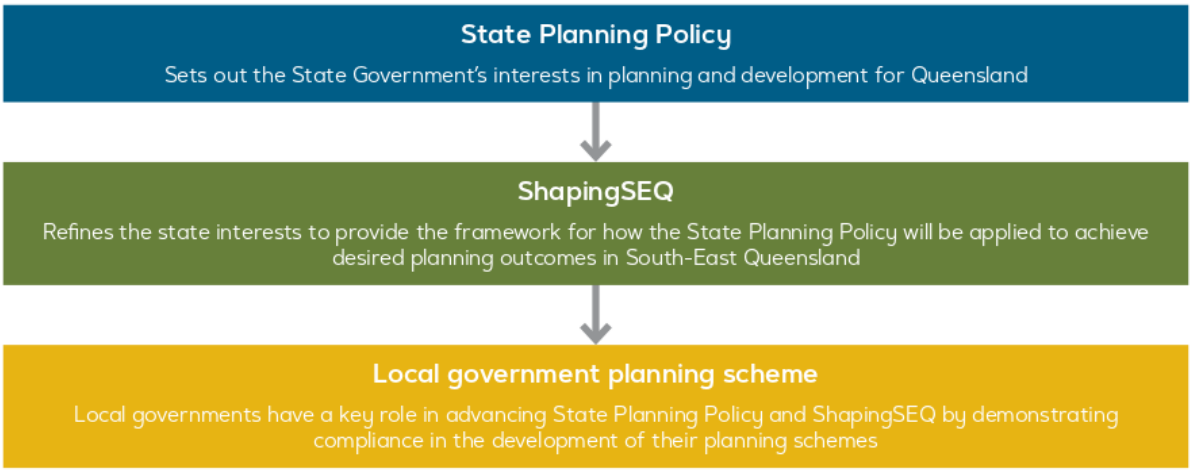



**TABLE 1 –** The Waterway Health Strategy accords with the following State interests and ShapingSEQ goals:

| State Planning Policy Interests | |
|---|---|
| **Biodiversity** | Matters of environmental significance are valued and protected, and the health and resilience of biodiversity is maintained or enhanced to support ecological processes. |
| **Water quality** | The environmental values and quality of Queensland waters are protected and enhanced. |
| **ShapingSEQ Goals** | |
| **Sustain – Element 2: Biodiversity** | The regional biodiversity network is protected and enhanced to support the natural environment and contribute to a sustainable region. |
| **Sustain – Element 4: Regional Landscapes** | Regional landscape values and functions are sustainably managed and provide social, environmental, cultural and economic benefits to the region. |
| **Sustain – Element 5: Water sensitive communities** | Water management in SEQ will use innovative approaches in urban, rural and natural areas to enhance and protect the health of waterways, wetlands, coasts and bays. |
| **Sustain – Element 6: Natural economic resources** | The region's natural economic resources are managed sustainably and efficiently to meet the needs of existing and future communities. |
| **Sustain – Element 7: Health and wellbeing** | Communities are designed and supported by social infrastructure and natural assets to provide healthy, liveable places that promote mental and physical wellbeing. |
| **Sustain – Element 9: Climate change** | The effects of climate change are managed to optimise safety and resilience for communities and the natural environment. |
| **Sustain – Element 10: Safety** | Communities are designed and equipped to be safe, hazard-resilient places. |
| **Live – Element 4: Working with natural systems** | The liveability and sustainability of SEQ's urban environments are enhanced by incorporating urban greening networks. |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# B. IPSWICH WATERWAYS AND WETLANDS

## ENVIRONMENTAL VALUES AND WATER QUALITY OBJECTIVES

Environment Values and Water Quality Objectives are set in Queensland Government legislation, listed in Schedule 1 of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. This document achieves the objective of the *Environmental Protection Act 1994* (EP Act) to protect Queensland's waters while supporting ecologically sustainable development.

Environmental Values are the qualities that make water and wetlands suitable for supporting aquatic ecosystems and human use. Water Quality Objectives apply to receiving waters including freshwater, estuarine and marine wetlands.

Specific Environmental Values and Water Quality Objectives have been developed in Schedule 1 for each of the catchments across Ipswich (see Appendix A for more details). They are part of legislation and therefore inform a range of statutory and non-statutory activities related to waterway health management, including development assessments and compliance of environmentally relevant activities ie: point source discharges.

The Environmental Protection (Water and Wetland Biodiversity) Policy sets the management intent for the protection of water quality based on a classification level given to waterways. All waterways in Ipswich have been classified, in consultation with council, as 'Moderately Disturbed Waters' based on their current condition. The management intent for these waterways is:

- Where the existing water quality achieves the scheduled Water Quality Objectives, maintain current water quality
- Where the existing water quality does not achieve the scheduled Water Quality Objectives, improve water quality.

For council, management decisions need to consider other impacts on waterway health, such as catchment condition, land uses, existing and future flow patterns, to determine how it will meet the Water Quality Objectives as only one land manager within a catchment. Those listed in the Policy are therefore referred to as the long-term aspirational targets for Ipswich waterways.

## TYPES AND CLASSIFICATION

Waterways and wetlands are described and classified using different methods. The following sections describe the types of waterways and wetlands which may be found in the Ipswich region.

### WATERWAY TYPES AND CLASSIFICATION

Waterways are generally defined as areas which provide a passage for water and may look like natural creeks and rivers or grass lined and concrete channels. These waterways may or may not have permanent water in them. Table 2 provides a snapshot of different waterway types and the benefits they typically provide. This table highlights that though a waterway may be in a degraded state, it still provides a number of important waterway services. The table highlights that by reinstating certain characteristics (such as riparian vegetation or in-stream habitat), gradual improvement can be achieved, which increases the benefits provided by the waterway.

**TABLE 2** – Waterway types

| WATERWAY SERVICES PROVIDED | CHANNEL TYPE CONTINUUM | | | | |
|---|---|---|---|---|---|
| | Concrete channel | Grass lined open channel | Vegetated open channel | Natural channel with limited riparian vegetation | Natural channel with intact riparian and floodplain zone |
| |  |  |  |  |  |
| Riparian habitat | | | | L | X |
| In-stream habitat | | | L | X | X |
| Water quality improvement | | L | X | X | X |
| Flow conveyance | X | X | X | X | X |
| Urban cooling | | L | L | X | X |
| Amenity | | L | L | L | X |
| Potential future transformation | | → | → | → | → |

X = services provided, L = services may be provided depending on the waterway condition

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The classification of waterways influences the way in which they need to be managed. The majority of Ipswich waterways have been classified as 'moderately disturbed ecosystems' , which recognises that the aquatic biodiversity may have been adversely affected by human activity. The management plan for these waterways works toward ensuring that the current condition is maintained or improved.

Waterways can be further classified based on their size and position within a catchment. Currently the stream order system is used to classify waterways, based on their status in a hierarchy which ranges from small headwater tributaries (commencing with stream order 1) to large rivers. When two streams of the same order join, the waterway is elevated to the next highest order. The use of other methods such as overland flow mapping can also be used to delineate smaller lower order streams from larger higher order streams.

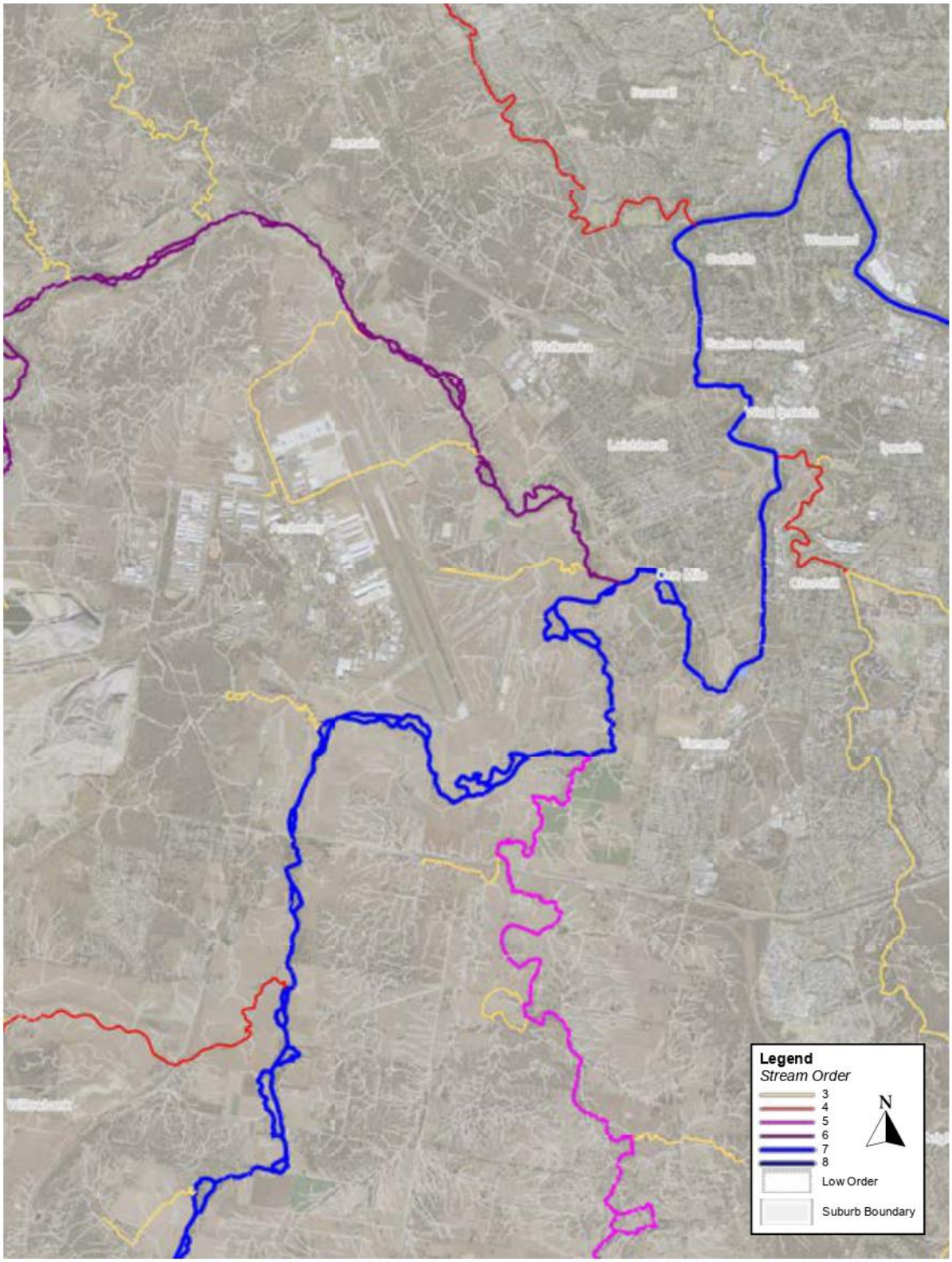
On a collective basis, lower order streams comprise the majority of stream lengths in Ipswich and therefore play a critical role in protecting and maintaining the health of higher order streams and rivers (refer Table 3 and Figure 4) by reducing flow volumes promoting infiltration and supplying critical inputs such as coarse sediment and gravel from the catchment. However, due to their small size and ephemeral nature, many of these waterways have been lost or altered significantly. The important services provided by these smaller waterways can be effectively managed through:

- enhancement through on-ground rehabilitation to restore native vegetation and bank stability, and
- design of stormwater management systems to replicate their functions if protection or rehabilitation is not practical, or protection by planning mechanisms.

**TABLE 3** – Total length and percentage of stream orders in Ipswich

| Stream order | Total length (km) | Percentage of total stream length in Ipswich (%) |
|---|---|---|
| Lower (1 + 2) | 10,694 | 93% |
| 3 | 378 | 3% |
| 4 | 143 | 1% |
| 5 | 125 | 1% |
| 6 | 44 | 0.5% |
| 7 | 64 | 1% |
| 8 | 47 | 0.5% |

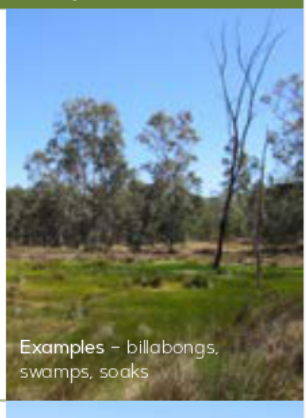
**FIGURE 4** – Example of stream order mapping undertaken in 2015 showing extent of lower order streams in the Ipswich landscape



## WETLAND TYPES AND CLASSIFICATION

Wetlands are described as areas of permanent or periodic inundation of static water. There are two main wetland types as described in Table 4.

**TABLE 4** – Wetland types

| Wetland type | Description | Ecosystem services | Examples |
|---|---|---|---|
| **Palustrine** | Vegetated wetlands which are located within the floodplain and are not part of the waterway channel. They are mostly formed as depressions in the landscape and may not contain water in dry periods. These wetlands don't stop being wetlands during these dry periods as they are adapted to 'bounce' back to become hot spots of biodiversity when it rains. Many of these wetlands have been lost to development, agriculture, draining and filling. | ▪ Habitat/refugia<br>▪ Movement/connectivity<br>▪ Flood mitigation<br>▪ Nutrient and sediment management<br>▪ Soil management. |  Examples – billabongs, swamps, soaks |
| **Lacustrine** | Large open water systems which can include modified or artificial systems such as dams. Many of the natural lacustrine wetlands have been modified with levee banks and dam walls which disconnect them from other aquatic systems. | ▪ Habitat/refugia<br>▪ Flood mitigation<br>▪ Nutrient and sediment management. |  Examples – lakes, farm dams |

Wetlands in Queensland are identified, classified and assessed by the state government. **Wetlandinfo.ehp.qld.gov.au** can be used to find out where wetlands are located, the type of wetland and its condition. On a collective basis, the non-riverine (lacustrine and palustrine) wetlands in Ipswich are in poor condition based on this source of information.

# WATERWAY AND WETLAND MANAGEMENT

The health of waterways and wetlands reflect on land and water resource management within the waterway corridor as well as the broader catchment. Typical negative influences on waterway health include pollution (point source and diffuse), changes in hydrology, loss of riparian and floodplain vegetation and erosion and sedimentation.

Waterway management over the past decade has focused on water quality, through the management of point source pollution (e.g. direct discharge of pollution from wastewater treatment plants and industry) and requiring new urban developments to better manage stormwater, in order to meet best practice pollution reduction and flow management targets. It should be noted that legislative best practice standards are based on the economic treatment efficiency of current stormwater management infrastructure technologies. These technologies are designed to manage only a portion of the stormwater flows generated from new urban areas and therefore there is still an increase in pollutant loads and volumes of wastewater and stormwater entering our waterways. To ensure there is no worsening and improvement of waterway health across Ipswich, it is important that a combination of on-site and catchment management solutions are implemented.

## CHALLENGES FOR WATERWAY MANAGEMENT

A number of challenges are faced by council in its management of waterways. The environmental, land use or management challenges are presented in Table 5.

**TABLE 5** – Challenges for waterway management

| Environmental challenges | Land use challenges | Management challenges |
|---|---|---|
| **Erosive soils**<br>▪ Highly mobile dispersive soils in most sub-catchments leads to widespread erosion, threats to property and infrastructure, sedimentation and increased turbidity in waterways.<br>**Unstable banks**<br>▪ Configuration and morphology of receiving waterways with deeply incised banks increases the risk of bank erosion with high volume and/or high velocity flows.<br>**Degraded riparian and floodplain management**<br>▪ Continual loss and degradation of native vegetation in riparian and floodplains reduces riparian, wetland and in-stream habitats, significantly impacts on water quality and increases vulnerability of river ecosystems to collapse.<br>**Climate change uncertainty**<br>▪ Projected climate change variability and changed rainfall patterns will polarise base and peak flows and exacerbate degradation patterns. | **Urban areas and increased impervious surfaces**<br>▪ Greater areas of impervious surfaces associated with urbanisation increases the risk of downstream flooding, increased channel erosion and sediment transport and impacts from 'first flush' inputs of pollutants (nutrients, litter, pesticides, heavy metals and sediments).<br>**Population growth**<br>▪ Population growth and expanding infrastructure places added pressure on catchments and waterways.<br>**Peri-urban development**<br>▪ Changing land use practices and demographics in rural areas with an increasing trend towards 'peri-urban' developments.<br>**Rural areas**<br>▪ Loss of vegetation and unrestricted access of stock in wetlands and waterways.<br>**PFAS and other contaminants**<br>▪ The occurance of per- and poly-fluoroalkyl substances (PFAS) contamination in waterways in Ipswich has highlighted the risk that land use activities can have on waterway health. | **Enforcement**<br>▪ Capacity to strengthen enforcement of erosion and sediment control and pollution discharges, using a combination of regulatory and educational mechanisms.<br>**Staff capacity**<br>▪ Increasing internal knowledge and skills to address waterway health issues and management requirements.<br>**Resources**<br>▪ Commitment of resources and investment to the delivery of management actions.<br>**Roles and responsibilities**<br>▪ Developing a clear definition and agreement on the roles and responsibilities of all stakeholders.<br>**Partnerships**<br>▪ Developing and supporting strong partnerships with private landholders, non-government organisations, regional NRM bodies and all levels of government to align waterway health management.<br>**Monitoring**<br>▪ Capacity to monitor and evaluate the success of management actions. |

## STRATEGIC WATERWAY MANAGEMENT DECISION-MAKING

Waterways in Ipswich will face continued pressures associated with land use change, population growth and urban development, but this brings opportunities to manage the impacts to drive towards the future vision. It is important to understand that transformation requires time, partnerships and investment and will involve multiple stages. An upfront investment in waterway health protection and enhancement, can result in avoided future costs associated with waterway rehabilitation, water quality improvement and sediment capture.

### Economic rationale for investing in waterway health

*Sharing the Load*, a report by Mainstream Economics and Policy in 2011 identified that at the time, the value of avoiding further decline in coastal, marine and inland waters across South-East Queensland over the next 20 years would be approximately $2 billion.

- **Avoided costs in downstream waterway rehabilitations**
  Appropriate management of stormwater within urban developments can potentially result in avoided costs (on average $34,000/ha) associated with rehabilitation of downstream waterways which have been impacted by increased flows and pollution.[1]
- **Water quality improvements**
  If urban land uses manage pollutants before they are discharged to waterways, it can result in the removal of the Total Nitrogen (an addition nutrient) that would cost on average $3,360–$7,860/ha/yr to remove in an equivalent wastewater treatment.[2]
- **Sediment management**
  Protecting waterways through effective management is often cheaper than treatment at a treatment plant. Modelling undertaken in 2009 identified that a conservative assumption of a 10 per cent increase in turbidity by 2031 would increase water treatment costs by approximately $16M each year.[3]

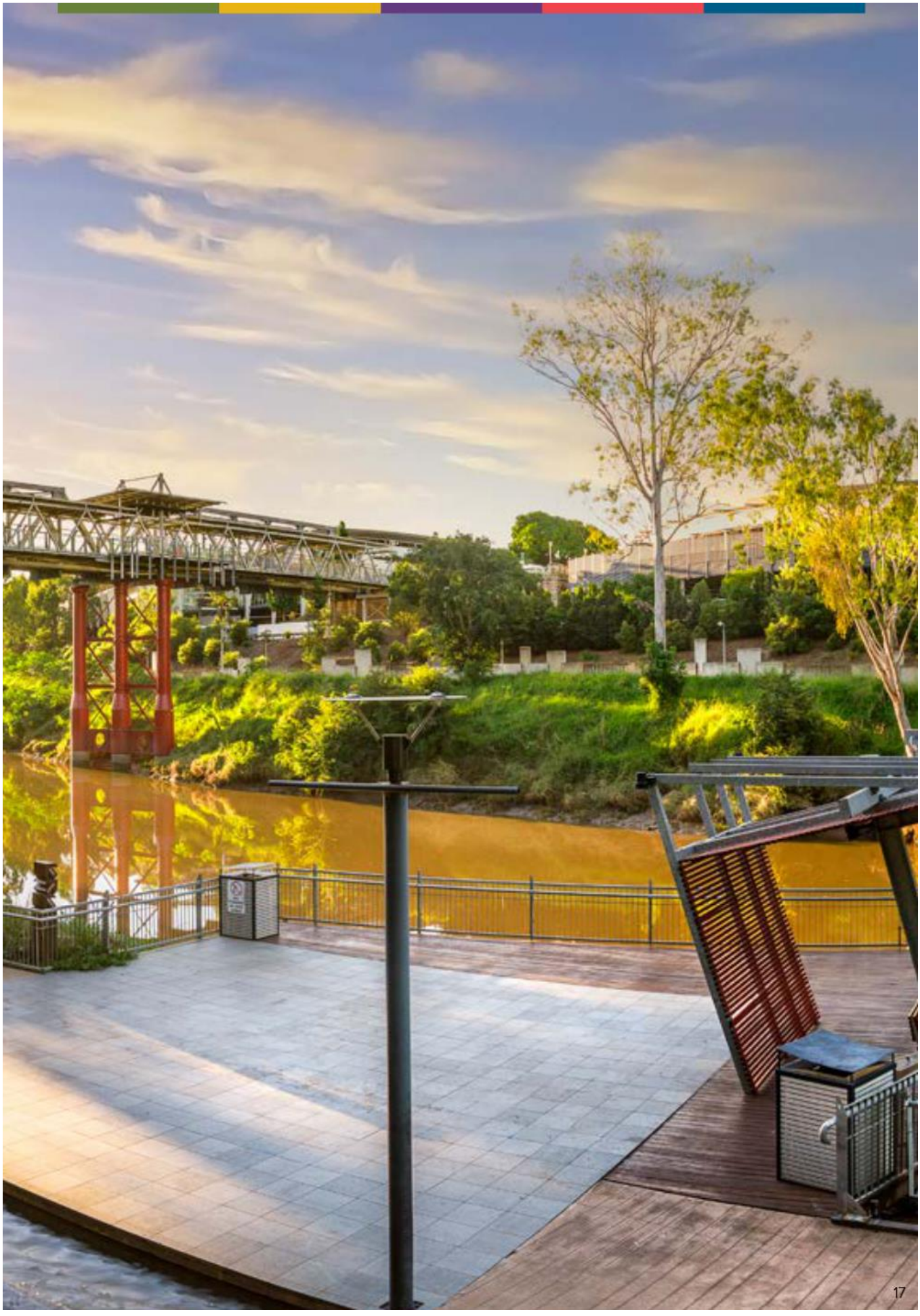
Waterway health management activities should be informed by an understanding of the current condition, local context and likely outcomes of the planned activities identified within the waterway corridor and its catchment. This approach allows an appropriate future target for each waterway to be developed, which reflects both its current condition and likely future trajectory. Appropriate actions can then be developed to achieve the overall target for the waterway corridor. For example urban waterways corridors are likely to be more constrained than rural waterway corridors, as they typically need to accommodate multiple outcomes in a designated area including flood conveyance, areas for recreation and open space, infrastructure as well as providing ecosystem services.

Section D provides an overview of the current condition of Ipswich sub-catchments.

1 'Valuation of economic, social and ecological costs and benefits of strategies and systems for water sensitive cities', CRC for Water Sensitive Cities https://watersensitivecities.org.au/wp-content/uploads/2016/05/FS_A1-2_ValuationEconomicSocialEcologicalCostsBenefitsWSC.pdf

2 'Business Case for Best Practice Urban Stormwater Management' Water by Design http://hlw.org.au/resources/documents?topic-Water+By+Design&category-0&term-business+case

3 'Managing what matters: The cost of environmental decline in South East Queensland, prepared for South East Queensland Catchments http://www.seqcatchments.com.au/managing-what-matters.html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# C. WATERWAY MANAGEMENT ACTION THEMES

The waterway channel, riparian and floodplain zone are referred to collectively as the waterway corridor in this strategy. The inclusion of the community as the fourth management action theme reflects the important role the community plays in improving waterway health across Ipswich (see Figure 5). While it is recognised that groundwater interactions are also important within waterway corridors it is not a focus of the strategy as there are currently considerable knowledge gaps.

This section provides an overview of each of these management action themes, describing their importance, threats and management considerations.

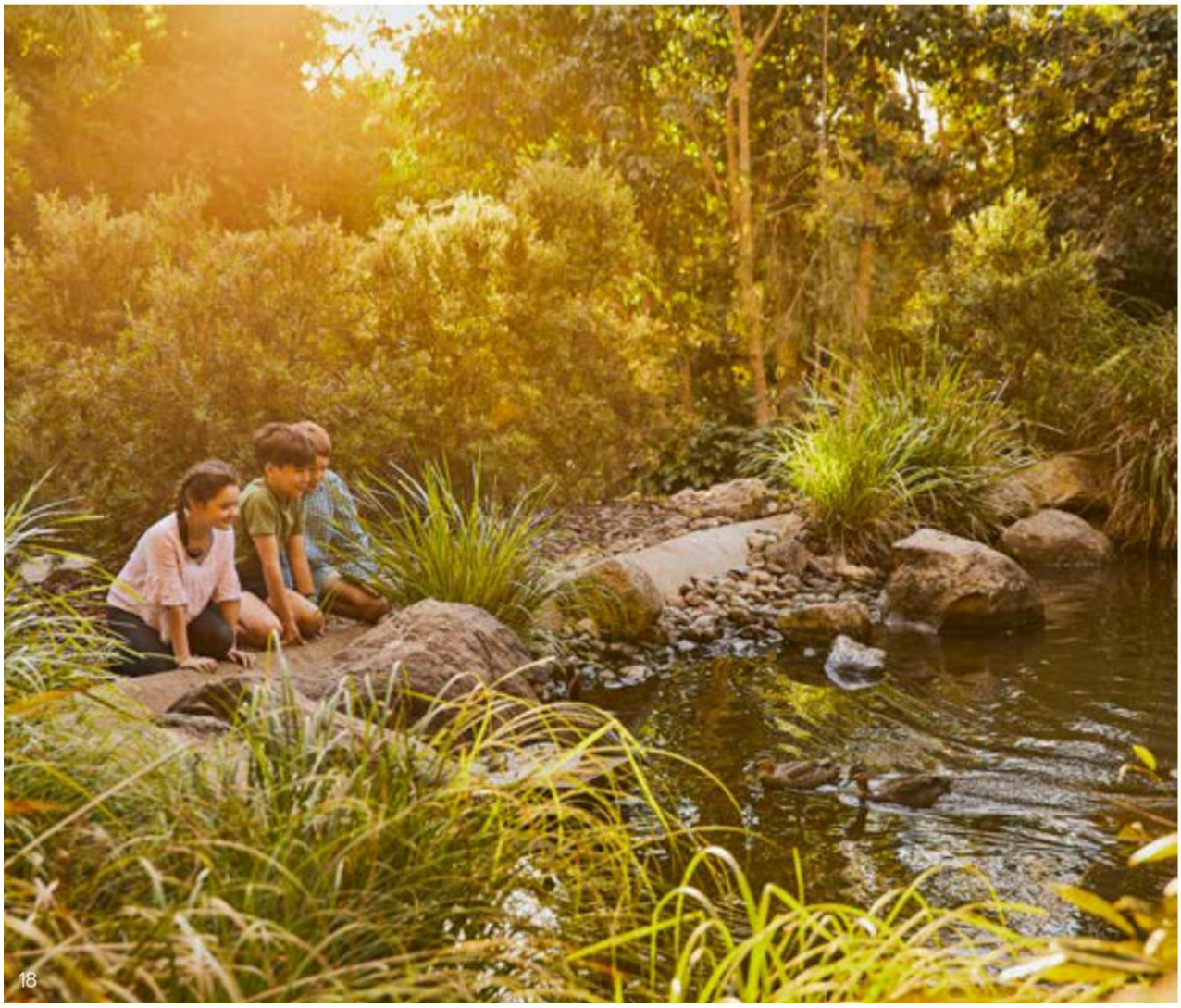
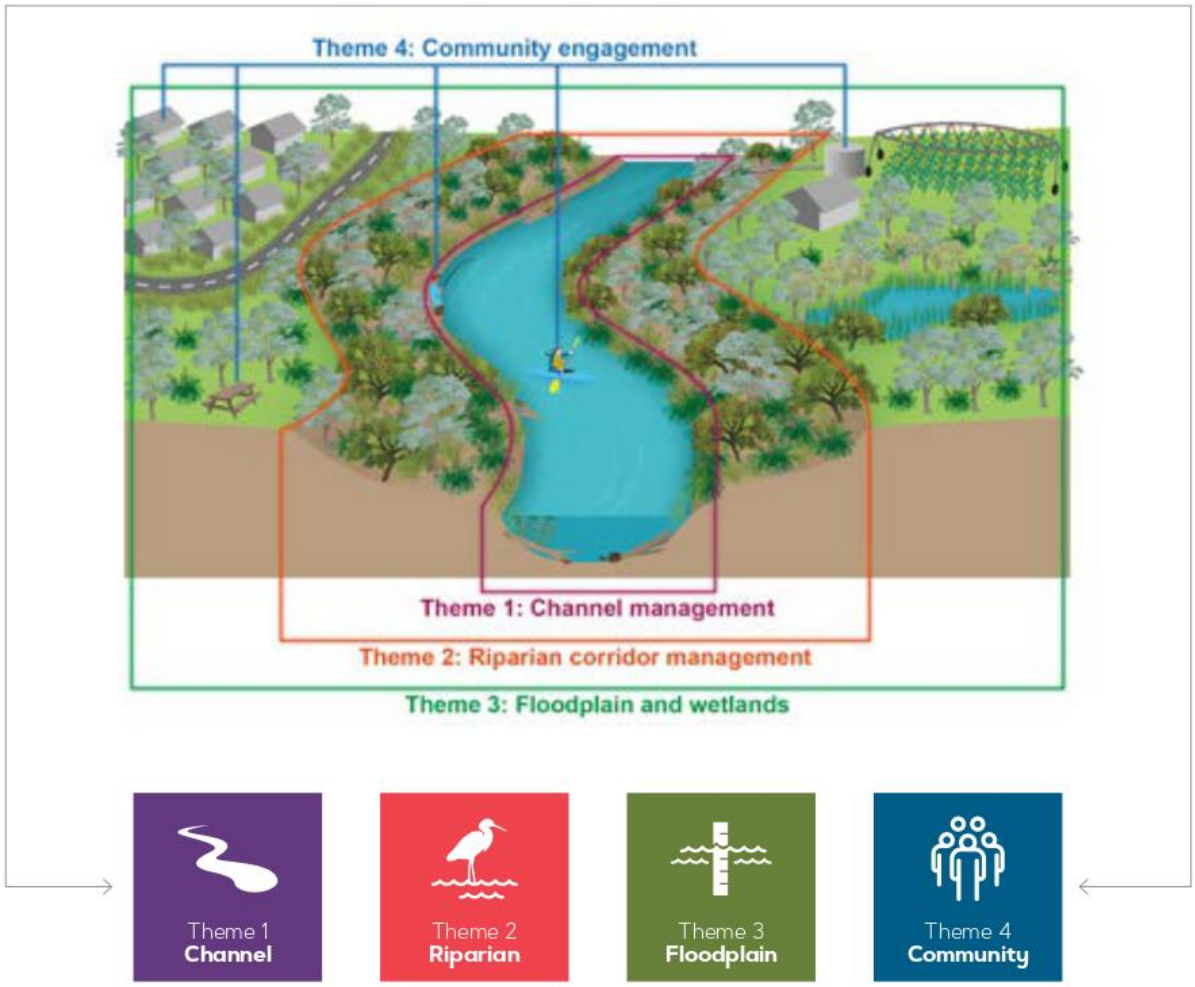


**FIGURE 5** – Management Action Themes identified to guide investment

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# MANAGEMENT THEME 1 – CHANNEL

## Description

### *What is a waterway channel?*

A waterway channel is defined in this strategy as a depression in the land which conveys water, including large rivers and smaller creeks which permanently hold water, as well as smaller channels which only convey water after rain. The channels can be in a natural state or may have been modified with the use of rock or concrete.

A healthy waterway channel will typically consist of the following attributes:

- stable bed and banks
- good water quality
- diversity of habitats (riffles, pools, woody debris, etc).

## The importance of waterway channels

Waterway channels provide a range of important values including:

- in-stream habitat for native fish, platypus and macroinvertebrates
- conveyance of water
- water source for drinking, agricultural or industrial uses
- recreation including fishing and kayaking.

## Threats to waterway channels

Waterway channels are impacted directly by activities in the channel or adjacent riparian zone as well as in the contributing catchment in four ways:

### *1. Bed and bank stability*

The bed and banks of waterway channels can be directly impacted by activities in the waterway channel (such as grazing or infrastructure works) and the removal of riparian vegetation resulting in exposure of bare banks, which are susceptible to erosion. The urbanisation of catchments increases stormwater volumes directly entering the waterways through a stormwater pipe network, which also contributes to the erosion of the channels.

### *2. Water quality*

Water quality in waterways is impacted by increased pollutants (such as nutrients, sediments and carbon) as well as increased salinity in a number of ways:

- Nutrients are a major threat to water quality in Ipswich waterways and come directly from wastewater treatment plants, industrial activities and are also carried in stormwater runoff from urban and rural areas
- Excess carbon loads drive the primary production of algae and bacteria which deplete dissolved oxygen levels in the waterway which impacts the aquatic biota in the channel
- High sediment loads come from new urban developments, rural activities, unsealed roads and unstable channel beds and banks
- Salinity impacts land and water biodiversity, productivity of agricultural land and the lifespan of infrastructure and occurs where mineral salts within the soil are carried to the surface with rising ground water. This is primarily caused through the removal of deep-rooted native vegetation.

### *3. Habitat*

Channel habitat diversity is impacted directly when channels are modified, for example when natural channels are converted into grassed or concrete channels, or from erosion and sediment deposition which results in the removal or smothering of channel habitat structures. The removal of riparian vegetation will also result in the reduction of large woody debris deposition into the channel which provides important habitat.

### *4. Loss of small lower order streams*

Small lower order streams are often lost or altered significantly due to their small size and ephemeral nature. Not only does this remove an important habitat, but it can also have large impacts on downstream waterways. For example, many lower order streams are converted into piped networks in urban developments. This conversion means that instead of surface runoff being conveyed in a vegetated depression which provides filtering and encourages infiltration, it enters a pipe which conveys the flows into a larger stormwater network and then directly into a waterway, causing water quality and bed and bank stability issues.

## Management approach

Waterway channel management is a complex issue as the channel condition is impacted both directly by activities within the channel as well as by broader catchment activities. Therefore the management approach also needs to be diverse.

### *Bed and bank stability*

- Within the channel stock access should be restricted into waterways and native vegetation should be retained or replanted in areas where works are undertaken
- Catchment-wide, the amount of impervious surfaces which are directly connected to waterways in the stormwater pipe network should be reduced.

### *Water quality*

- Point source solutions should include a wastewater treatment plant upgrade in which council has invested heavily in the past and this has resulted in the first major increase in water quality improvement
- Catchment-wide solutions must include reducing diffuse pollution at the source. As an example, council has adopted stormwater management, erosion and sediment control requirements for new developments.

### *Habitat*

- Within the channel a solution should use the natural channel design in order to rehabilitate waterways
- Catchment-wide, erosion and sediment on development sites and rural properties should be reduced as this lowers the volume of sediments entering the waterways.

### *Protection of lower order streams*

- Within channel solutions should include looking for opportunities to retain lower order streams and improve their function in terms of flow conveyance, stability, habitat and landscape cooling
- A catchment-wide solution must include replicating the function of lost lower order streams, with the design of stormwater management systems to promote detention, infiltration and treatment of flows.

## Current requirements

There are a number of state and local government policy and planning tools which aim to protect waterway channels from pollution and erosion.

The health of waterways in Queensland is predominately protected under the Environmental Protection (Water and Wetland Biodiversity) Policy 2019 which provides environmental values and water quality objectives which define the uses and long-term water quality goals for waterways.

The level of protection required for the waterway is based on its current condition. The State Planning Policy sets out requirements for development across Queensland to manage stormwater and wastewater in ways that supports the protection of environmental values identified in the Environmental Protection (Water and Wetland Biodiversity) Policy 2019. This includes setting stormwater management design objectives to manage the quality and quantity of stormwater entering waterways from developments.

Ipswich City Council's main tool for waterway protection is through its Planning Scheme, developed to reflect the state level requirements for waterway protection, including requirements related to the protection of natural hydrologic behaviour of catchments and protection of water quality. There are also a number of other council strategies and tools which support the protection and enhancement of waterway health including the Integrated Water Strategy 2015 and the Waterway and Channel Rehabilitation Guidelines. Extensive mapping and validation has been undertaken to identify all stream orders across Ipswich which can be used to inform stream order protection.

Council's stormwater quality offset framework also enables investment to be focused on landscape scale projects which will improve channel condition, reduce the amount of sediment and nutrients in the waterways and deliver multiple benefits. Projects which have been funded as part of this program include stock fencing and riparian revegetation in rural catchments.

## Management focus

- Erosion and sediment control and operational management of water quality and flows from urban development to provide best practice protection from pollution and changes in hydrology
- Appropriate design of natural channels as part of rehabilitation works to provide future resilience and habitat for native flora and fauna
- Protection of lower order streams or replication of their function in order to protect ephemeral habitats, provide landscape cooling and manage the bulk of flows across the catchments.

# CASE STUDY
## POLLARD PARK WATERWAY STABILISATION

Pollard Park in Camira contains a low order stream that is tributary of the ecologically significant Sandy Creek. The catchment contains a variety of land uses including bushland, residential and commercial areas, the development of which has caused and accelerated erosion in recent years. The erosion of this park is a threat to infrastructure, in addition to contributing excessive sediment and nutrient loads to the downstream waterway.

Council is using developer stormwater quality contributions to improve the waterway and prevent erosion issues through the construction of grade control structures, rock pools and revegetation. This will halt the export of sediment and nutrients from erosion downstream and improve the quality of runoff from the catchment. To improve the quality of water and restore base flow conditions, filtration basins have also been constructed which will assist in the removal of stormwater pollutants and reduce runoff to the receiving waterway.

# MANAGEMENT THEME 2 – RIPARIAN CORRIDOR

## Description

### *What is a riparian corridor?*

Riparian corridors are the area of land adjoining a waterway, providing a buffer between terrestrial and aquatic environments.

They provide important connected green corridors along a length of a waterway from the small headwaters to the larger channel areas downstream. Healthy riparian corridors have the following characteristics:

- contain structural and species diversity of native vegetation
- exist in continuous stands along the waterway
- be of a minimum width to perform specific functions.

## The importance of riparian corridor

Riparian corridors provide the following benefits:

- hold bank soil in place and reduce the risk of bed and bank erosion
- filter sediments and nutrients from surface run-off and groundwater
- regulate water temperature
- provide corridors for fauna movement, habitat and food along the length of waterways
- support in-stream ecosystems by dropping woody debris and organic materials
- provide shade to regulate water temperature, 'shade out' weeds and create cool landscapes for the community
- intercept and reduce the volume and frequency of stormwater runoff entering waterways
- improve the visual amenity and property values along waterways.

## Threats to riparian corridors

A threat to riparian corridors is their reduced width through removal for urban, peri-urban and rural land use practices. The condition and health of riparian corridors has a greater impact on the health and condition of aquatic ecosystems than land use practices alone, as the removal of riparian vegetation is linked to channel erosion which is a major source of nutrients and sediments reaching Moreton Bay.

Another threat to riparian corridors is the invasion of exotic grasses and woody weed species. Riparian corridor condition is heavily affected by the loss of native riparian vegetation and subsequent dominance of introduced species of woody weeds, grasses and vines.

Exotic weed species in riparian areas can have a myriad of impacts on surrounding land and water ecosystems including altering soil nutrient processes, impacting upon native aquatic food webs and inhibiting the recolonization and growth of native species. The number one riparian woody weed in Ipswich is Chinese celtis, *Celtis sinensis* (also known as Chinese elm).

The loss of native riparian vegetation across Ipswich impacts the ability of riparian corridors to protect waterways from erosion and poor water quality or provide habitat, shade and visual amenity.

## Management approach

As the key interface between different catchment land uses and the waterway channel, riparian lands can be owned by a range of stakeholders and be either private or public land. Therefore the management of this land requires a partnership approach between all users, owners and managers for any development, major infrastructure, parks and open spaces and revegetation projects. Table 6 provides a snapshot of the types of activities and delivery mechanisms which can be undertaken to manage riparian lands.

**TABLE 6** – Riparian land management activities and delivery mechanisms

| Delivery mechanisms | |
|---|---|
| **Private rural land** | ▪ Landholder partnerships<br>▪ Land for wildlife<br>▪ Offset initiatives<br>▪ Legislative vegetation management requirements. |
| **Private urban lands** | ▪ Landholder partnerships<br>▪ Habitat gardens. |
| **Public land (e.g. parks)** | ▪ Community planting days<br>▪ Habitat connections program<br>▪ Corporate planting days<br>▪ Offset projects. |
| **New urban and industrial developments** | ▪ DA requirements<br>▪ Best practice guidance. |
| **Infrastructure projects (e.g. roads)** | ▪ Integrated design approach<br>▪ Best practice guidance. |

### *Riparian corridor widths*

The width of the riparian corridor influences how effectively it can filter surface flows, stabilise banks, and provide habitat and shade. Figure 6 presents a schematic representation of a riparian corridor, its key functions and the zone of influence for these functions. This diagram highlights that the wider the riparian corridor, the more services it will be able to provide. For example, to increase biodiversity and support native flora and fauna, the corridor needs to be wide enough to reduce edge effects, while bank stability can be provided by a narrower width of vegetation.

Optimal riparian widths can range from 5m to 200m depending on the landscape context for the waterway (e.g. urban vs rural), the management objective (e.g. surface water filtering vs terrestrial habitat) and the size of the waterway (e.g. lower order stream vs high order stream). The feasibility of providing wide riparian zones will be influenced largely by adjacent land uses, but it should be recognised that reducing riparian widths, will reduce the function provided by this vegetation.

Minimum riparian corridor widths from the top of bank were developed for the previous Waterway Health Strategy following a review of other local council and state government requirements. These widths remain relevant based on current research and provide a balance between the size of the waterway channel, and width required from the riparian zone, to provide the greatest benefit. For example, a 10m wide riparian corridor will have considerable influence on the stability and water quality of a small, lower order stream, but would have limited influence on these functions in a wide, major waterway. These widths would ideally be applied to both sides of the waterway.

**FIGURE 6** – Schematic representation of the zones of influence within a riparian zone (based on Clerici et al, 2013)[4]

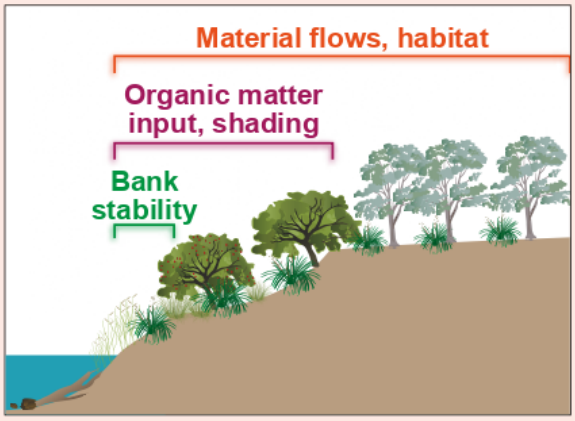



**TABLE 7** – Recommended minimum riparian corridor widths

| Wetland type | Stream order | Minimum riparian corridor width for each side of the waterway |
|---|---|---|
| High order waterways | 5 and above | 50 metres |
| Middle order waterways | 3 and 4 | 25 metres |
| Low order waterways | 1 and 2 | 10 metres |

4 Nicola Clerici, Christof J. Weissteinera, Maria Luisa Paracchinia, Luigi Boschettib, Andrea Baraldib and Peter Strobla (2012) 'Pan-European Distribution modelling of stream riparian zones based on multi-source Earth Obeservation data'

**TABLE 8** – Minimum riparian corridor widths, based on stream order for major waterways in Ipswich

| Waterway category | Low order | | Middle order | | High order | | | |
|---|---|---|---|---|---|---|---|---|
| Stream order | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Riparian widths | 10m | 10m | 25m | 25m | 50m | 50m | 50m | 50m |
| Black Snake Creek | | | | | | | | |
| Bremer River | | | | | | | | |
| Brisbane River | | | | | | | | |
| Bundamba Creek | | | | | | | | |
| Deebing Creek | | | | | | | | |
| Franklin Vale Creek | | | | | | | | |
| Goodna Creek | | | | | | | | |
| Ironpot Creek | | | | | | | | |
| Mihi Creek | | | | | | | | |
| Mountain Creek | | | | | | | | |
| Opossum Creek | | | | | | | | |
| Plain Creek | | | | | | | | |
| Purga Creek | | | | | | | | |
| Sandy Creek (Camira) | | | | | | | | |
| Sandy Creek (Tivoli) | | | | | | | | |
| Six Mile Creek | | | | | | | | |
| Warrill Creek | | | | | | | | |
| Western Creek | | | | | | | | |
| Woogaroo Creek | | | | | | | | |
| Lockyer (Woolshed) Creek | | | | | | | | |

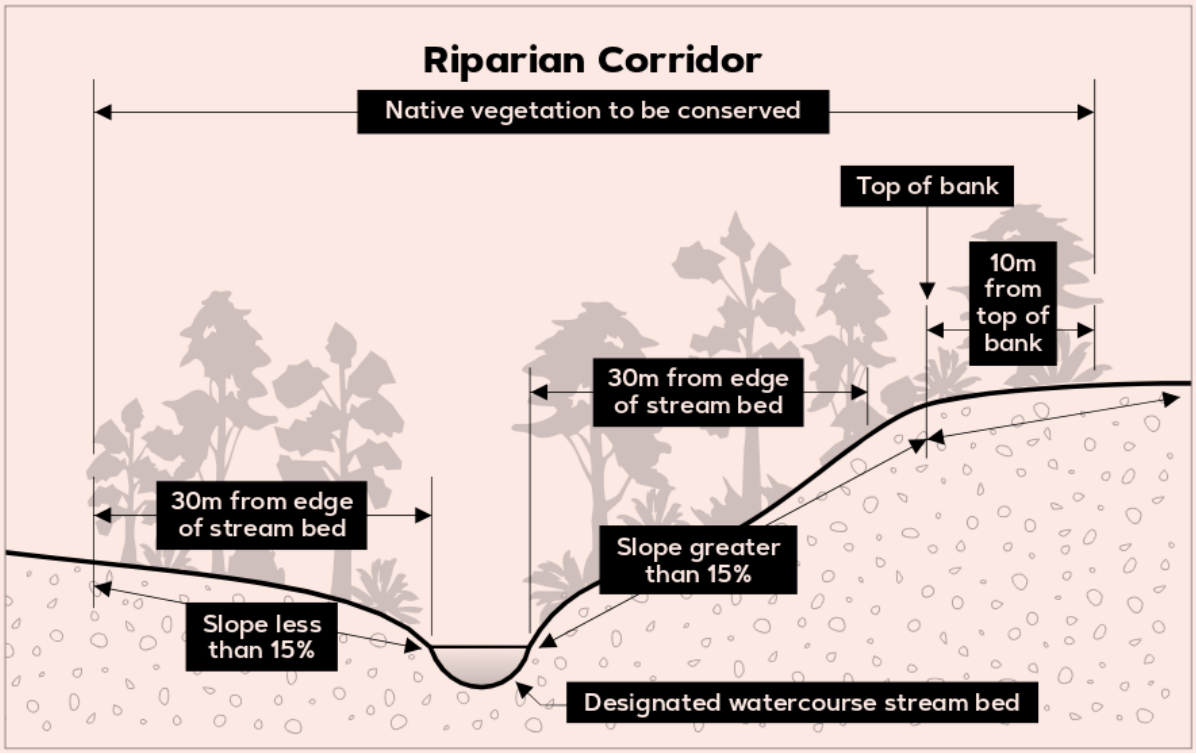
### *Weed management*

Management of riparian lands should aim to protect existing native vegetation wherever practical, and ensure that local native species are used when revegetation is undertaken. Weed control should also be undertaken on identified environmental and declared weed species as described in council's Riparian Corridor Revegetation Guideline.

## Current requirements

A range of government policies and legislation may come into play when working within riparian corridors. For example, the clearing of vegetation in Queensland is regulated by the *Vegetation Management Act 1999* and the *Planning Act 2016* while the conservation of natural resources is also regulated by the *Nature Conservation Act 1992* and the *Environmental Protection and Biodiversity Act 1999*. Weed control is regulated under the *Biosecurity Act 2014*. Ipswich City Council's Planning Scheme has also been developed to reflect these requirements. For example, the vegetation management code restricts clearing of native vegetation from land within 30m from the waterway edge or within 10m of the top of the bank, where the slope of the bank exceeds 15 per cent (refer Figure 10). These requirements are currently only applicable for designated watercourses which only include the large, major waterways in Ipswich and is limited in its ability to ensure protection and rehabilitation of riparian corridors, for waterway health outcomes, in smaller waterways across Ipswich.

**FIGURE 7** – Defining extent of riparian corridor for protection of native vegetation (from Vegetation Management Code)




The Local Government Infrastructure Plan – Supporting Document: Public Parks (2016) sets some clear principles for the fit-for purpose works required for drainage and waterway channels (typically top of bank to top of bank) within parks, to be constructed and rehabilitated, in order to achieve a fully vegetated corridor outcome.

In addition to relevant legislation and policies, there are also a number of Ipswich City Council strategies that support riparian land management including the Nature Conservation Strategy 2015 and Integrated Water Strategy 2015. Council's Riparian Corridor Rehabilitation Guideline also provides guidance on the reinstatement of native vegetation along Ipswich waterways, including recommended minimum vegetated widths for all waterways (not just major designated waterways) and weed control techniques.

## Management focus

- Protect suitable riparian corridors where practical on both sides of waterways, or replicate the ecosystems services lost, to ensure multiple benefits can be provided across Ipswich waterways
- Removal of exotic weeds and replacement with native vegetation to protect and enhance native biodiversity.

# CASE STUDY
## HABITAT CONNECTIONS – BUNDAMBA CREEK

Since 2012 Bundamba Creek has been one of a number of focal waterways and sites for the Habitat Connections program. Habitat Connections is an investment strategy aiming to create and enhance riparian corridors in and around Ipswich.

Bundamba Creek provided a good location for this program, with the waterway containing some of the remaining native vegetation in the catchment. Beginning around Mount Flinders, Bundamba Creek flows through Ripley Valley into outskirts of the CBD through the suburbs of Swanbank, Blackstone and its namesake Bundamba before finding the Bremer River. In these lower reaches, much of the creek flows on or through council owned parks and reserves which typically consist of dispersed mature trees and riparian corridors which are susceptible to weedy ingress.

High profile sites that were neither well used or highly visual located next to highways were identified as a priority and the removal of weedy mats in between the waterway and the mown grasses areas were tackled initially. These areas were then revegetated using a mixture of native riparian or waterway species known to naturally occur along waterways.

The plants were planted using a combination of contractors and more importantly, community volunteers. As the locations were already popular or visual there was a great deal of interest from schools and catchment groups in the local community. Corporate and community planting days were organised and in 2014 over 6,000 plants were installed by groups such as the Bremer River Fund, Thiess staff, Japanese environmental students and children from Bundamba State High school. One notably successful event was the Trees for Mum day. This concept of planting a tree for, or with, your mum for Mother's Day has continued to grow in popularity. Those taking part regularly return year on year to check 'their' trees and plant more and develop a vested interest in the site and its wellbeing. The site has grown from a single 95m site to over half a kilometre of riparian corridor along George Palmer Park with over 10,000 plants now in the ground.

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## MANAGEMENT THEME 3 – FLOODPLAIN AND WETLANDS

### Description

*Maintain flood conveyance capacity*

Floodplains are areas of land adjacent to a waterway which stretch from the banks of the waterway channel, to the base of the enclosing valley walls including wetlands and riparian corridors. Floodplains experience periodic inundation when a waterway floods and are an integral part of healthy waterways and flood mitigation. The periodic inundation from the waterway is critical for floodplains so that they can continue to provide a range of important services such as flood mitigation, water quality improvement, habitat and soil replenishment.

Healthy floodplains have the following characteristics:

- longitudinal connectivity along waterways
- lateral connectivity with the waterway
- species diversity of native vegetation, capable of responding to the different frequencies of inundation
- broad, wide and shallow landscapes, often comprising of wetlands.

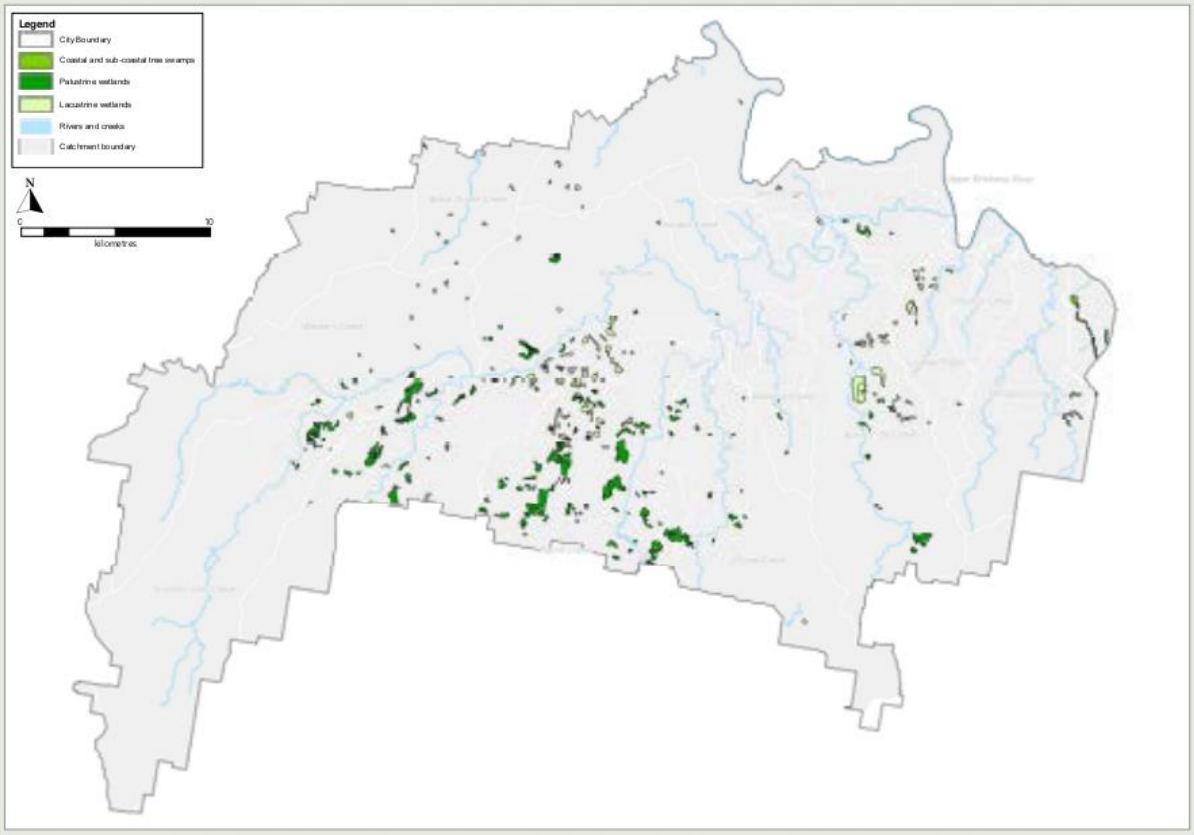
Floodplain wetlands are areas of permanent or intermittent inundation, with water that is static or flowing, fresh, brackish or salt. While a wetland might only be 'wet' for some of the time, it remains defined as a wetland when it is a dry state (DEHP Wetlands). There are approximately 543 lacustrine/palustrine wetlands within the Ipswich City Council LGA (DEHP Wetlands), falling within the floodplains of the region.

### The importance of floodplains and wetlands

Healthy and connected floodplains and wetlands provide the following important benefits:

- flood mitigation by slowing, conveying and storing floodwaters
- improved water quality by reducing soil erosion, and capturing and treating pollutants when inundated
- provide important landscape connectivity and habitat for many plants and wildlife (e.g. important fish nurseries)
- sustainable agriculture through productive and fertile soils
- carbon sequestration
- recreation and visual amenity
- recharging of aquifers.

**FIGURE 8** – Mapped non-riverine wetlands across Ipswich



## Threats to floodplains and wetlands

Many of the natural floodplain features, including wetlands, across Ipswich have been lost or altered due to urban development and agricultural practices.

### *Floodplain disconnection*

Floodplains rely on the periodic inundation of floodwaters and are therefore impacted by activities which alter this connection including:

- piped stormwater flows draining under the floodplain directly into the channel, disconnecting these catchment surface flows from the floodplain area
- change in hydrology associated with creation of levees, dams and weirs
- the deepening of channel beds due to erosion which means that flows no longer regularly inundate the floodplain from the channel.

### *Removal/filling of wetlands*

Many wetlands are ephemeral in nature, meaning that they only hold water after rainfall events and are difficult to identify in extended dry periods. These wetlands can be subject to draining or filling as part of development or agricultural practices.

## Management approach

### *Re-engagement of floodplains*

Floodplain management aims to identify floodplain locations where reconnection with the contributing catchment and/or the waterway channel is possible, practical and will provide multiple benefits, including flood mitigation, water quality improvements, habitat, recreation and urban cooling. The approach for floodplain management will depend on what is possible based on the current condition of the floodplain. Ideally, an appropriate floodplain extent will be provided which allows the waterway to move naturally without impacting on infrastructure.

Table 9 provides an overview of the types of floodplain management activities which may be undertaken in different settings.

**TABLE 9** – Floodplain management activities in rural and urban areas

| Floodplain current condition | Description | Key management driver | Approach |
|---|---|---|---|
| Rural floodplain | Rural floodplains may still contain remnants of floodplain wetlands, but these may no longer be inundated regularly, due to channel incision which has lowered the bed level resulting in the majority of storm flows being conveyed within the channel. The channel erosion and removal of floodplain vegetation in these upstream rural areas also results in flood flows moving more quickly downstream. These could be an opportunity to re-engage the floodplains with the channels in certain locations to provide flood improvement downstream, as well as provide local floodplain functions such as soil improvement and habitat. | Reconnect floodplain with the channel and catchment flows to slow flows and support floodplain wetlands. | Identify locations which will provide local downstream benefits by:<br>▪ addressing channel erosion and raising the bed level through channel works, to increase the number of floodplain inundation events<br>▪ increasing the amount of vegetation in the floodplain areas to slow and hold back flood flows which enter the floodplain<br>▪ working with landholders to ensure there is no loss or compensation for impact on productive land. |
| Urban floodplain | The majority of urban floodplains have been developed, therefore maintaining flood conveyance and flood immunity within these build-up areas is critical. Raising the bed level and reconnecting the channel with the floodplain often may not be possible. Where this is the case, there could be an opportunity to re-engage the floodplain by intercepting local catchment flows, which form part of the linear open space and stormwater treatment networks. | Reconnect floodplain with catchment subsurface flows to improve water quality. | Identify suitable locations to provide local and downstream improvements by:<br>▪ increasing pervious areas within the catchment to encourage infiltration of stormwater runoff which will help to reconnect the floodplain to catchment subsurface flows<br>▪ the use of treatment trains throughout the catchment to help to improve water quality and enhance infiltration of stormwater flows. |

### *Protection of wetlands*

Changes in water regime and water quality can have detrimental impacts on wetlands. An understanding of the frequency and timing of inundation is required to ensure that the wetland vegetation can be sustained, especially if there are planned changes to the contributing catchment flows (e.g. increased flow frequency and duration from urban development). While natural wetlands provide water quality treatment, they should be treated as receiving environments, so appropriate pre-treatment of flows is required to maintain the on-going function of the natural wetland.

## Current requirements

Ipswich City Council's main land use planning tool for floodplain management (relating to development) is the Ipswich Planning Scheme which strategically governs and guides the city's development. The primary form of regulation is through an Adopted Flood Regulation Line (AFRL) and associated codes and provisions which assist in identifying suitable areas for development, setting development levels and land use outcomes.

In addition to the Planning Scheme, resilient and effective floodplain management is also supported by council's Integrated Water Strategy 2015. Ipswich's future floodplain management will also consider outcomes of the Brisbane River Catchment Flood Study and the Ipswich Integrated Catchment Plan. The latter document includes the consideration of natural floodplain management options and takes a holistic catchment-wide approach to flood management.

Wetland protection, management and responsibility is shared over federal, state and local governments. The Ramsar Convention aims to reduce the loss of wetlands and protect remaining wetlands and at a federal level, the protection of these major wetlands is provided under the *Environment Protection and Biodiversity Conservation Act*. At a state level, the State Planning Policy under the Biodiversity State Interest requires local planning schemes to consider, identify and manage any significant adverse environmental impacts on matters of state environmental significance, which includes wetlands.

## Management focus

- Preservation of natural floodplain function by re-instating connections between the floodplain, the channel and/or the catchment and allowing room for water to move
- Identify and protect natural wetlands from changing flow patterns and water quality impacts.

## CASE STUDY
## EVELYN DODDS CULTURAL RESERVE WETLANDS

Evelyn Dodds Cultural Reserve was once the site of an Aboriginal meeting place, or bora ring. The location was chosen due to its proximity to Bundamba Creek and the waterholes and wetlands present. These wetlands remain to this day set amongst lilies and gum trees within the floodplain of the creek. Small wetlands are ephemerally connected to the creek in hi-flows and are topped up by inflows possibly from ground water. The wetlands are home to many insects and birds including species such as Spoonbills and Egrets as well as turtles and fish. The area also still has a local wallaby population and these animals call this area home despite its proximity to the CBD. The wetlands would have been typical of the floodplain systems found in the flatter lower reaches of many of the Ipswich systems, before the advent of modified conveyance drainage and land use change.

# MANAGEMENT THEME 4 – COMMUNITY ENGAGEMENT

## Description

### *What is community engagement?*

Waterways provide a range of services for the community including recreation, water supply and native biodiversity. The community also undertake a range of activities which affect the health of our waterways. Therefore community awareness and long-term engagement is critical to the improvement of waterway health in Ipswich.

The following stakeholders are considered as part of this 'community' in the Waterway Health Strategy:

- landholders – rural, urban and peri-urban
- community groups, sporting groups, schools, educational facilities and alike
- business and industry
- federal, state and local governments
- natural resource management bodies
- development bodies
- Traditional Owners.

## The importance of community engagement

Understanding that we all live within a catchment and that our day-to-day activities have the potential to impact on the health of our waterways is an important component of community awareness. The protection and rehabilitation of waterway health cannot be realised without a working partnership between council and the community. To ensure the long-term sustainability of the city's resources and to achieve the vision of 'clean and healthy waterways' it is essential that the community is informed and can be involved in on-ground implementation. This will assist community stakeholders in understanding the ecological, economic and social values of Ipswich waterways.

## Threats to community engagement

Key threats to the successful engagement of the Ipswich community in terms of waterway and wetland health improvement include:

- lack of resources available to support community activities
- conflicting or difficult to understand information on waterway and wetland management requirements.

## Management approach

Council can help to support community engagement by providing the following:

- accessibility to waterways, pathways, parks and boat ramps
- education about waterway management issues to raise community awareness
- building partnerships to provide institutional arrangements, monetary support and implementation on the skills and expertise of community members.

The type of involvement and engagement will differ for the key community stakeholder groups according to their specific interests, objectives and typical waterway management activities (refer Table 10).

**TABLE 10** – Community engagement opportunities across different stakeholder groups

| Stakeholder group | Description | Waterway health objectives | Management approach |
|---|---|---|---|
| **Landholders – rural and peri-urban** | ▪ Many Ipswich waterways drain through rural lands which are privately owned<br>▪ Waterway health is threatened by agricultural runoff, uncontrolled stock access, gully and channel erosion, loss of native vegetation, invasive weed species and water extraction. | ▪ Improved land use practices<br>▪ Increased native riparian vegetation cover and floodplain function. | ▪ Knowledge transfer (factsheets, information sessions)<br>▪ Partnership programs<br>▪ Monetary assistance to deliver on-ground works. |

| Stakeholder group | Description | Waterway health objectives | Management approach |
|---|---|---|---|
| **Community – urban** | ▪ Most of the city's population lives within the urban footprint<br>▪ Waterway health is threatened by domestic impacts of poor urban stormwater quality, clearing for new developments, garden escapees and unmanaged recreational access<br>▪ Combination of both private and public ownership of riparian land – majority of public land is designed as linear open space. | ▪ Improve urban stormwater quality and quantity management<br>▪ Provide public access and recreational opportunities along urban waterways<br>▪ Increase the social and environmental values of riparian corridors<br>▪ Encourage urban landholders to participate in waterway health management initiatives. | ▪ Educations (fact sheets, signage)<br>▪ Creation and support of catchment groups<br>▪ Community events (e.g. planting days, workshops, competitions)<br>▪ Provision of safe access to waterway. |
| **Business and industry** | ▪ Impacts on waterway health from both point and diffuse source pollutants through direct discharge and runoff from impervious surfaces<br>▪ Most point source discharges are regulated as Environmentally Relevant Activities (ERA's) under the *Environmental Protection Act 1994*. | ▪ Reduce the impact of point and diffuse source pollutants<br>▪ Improve the public image of businesses and industries working towards Ipswich as a liveable city with 'clean and health waterways'. | ▪ Education (fact sheets, information sessions)<br>▪ Partnerships<br>▪ Consistent approach to compliance regulation. |
| **Federal, state and local governments** | ▪ Many urban waterways lie within or adjacent to public open space which is owned and/or managed by local governments<br>▪ Ipswich City Council has many departments which work within waterway corridors<br>▪ Waterways in Ipswich flow through multiple council jurisdictions (e.g. Lockyer, Scenic Rim and Brisbane council areas)<br>▪ State government produce the legislation and guidance for the overall protection of QLD waterways. | ▪ Ensure waterways are protected in a consistent manner to provide multiple benefits for the environment and community. | ▪ Knowledge transfer/advice<br>▪ Holistic waterways planning studies<br>▪ Coordinated enforcement (joint investigations)<br>▪ Monitoring. |
| **NRM bodies** | ▪ Independent, not-for-profit organisations which have a focus on improving the condition of land and waterways in South-East Queensland (e.g. Health Land and Water, Landcare groups, etc)<br>▪ Provide range of activities including monitoring, educational materials, community education and on-ground works. | ▪ Bringing together industry, research, government and the community in the improvement of waterway and wetland health. | ▪ Knowledge transfer/education<br>▪ Monitoring<br>▪ Regional committees/ advisory groups<br>▪ Joint planning and delivery of on-ground works. |
| **Traditional Owners** | ▪ Traditional Owners have a strong spiritual connection and long history with waterways across Ipswich<br>▪ Waterways were used for food, materials, living and celebrations and there are many registered sites of Aboriginal cultural significance. | ▪ Engage with the Traditional Owners to gain an understanding of the history of Ipswich waterways and requirements for their ongoing management<br>▪ Recognise sites of Aboriginal cultural significance. | ▪ Engagement through Native Title and Cultural Heritage Officer. |

| Stakeholder group | Description | Waterway health objectives | Management approach |
|---|---|---|---|
| **Development bodies** | ▪ Rapidly expanding urban development including greenfield and infill projects<br>▪ Impacts on waterway health associated with large areas of exposed soil during the construction phase of development, followed by increased areas of impervious surfaces. | ▪ Reduce the impacts of soil disturbance and sediment movement from new development sites<br>▪ Contain, control and manage urban stormwater quality and quantity as close to the source as possible. | ▪ Legislative requirements and supporting guidance material<br>▪ Consistent approach to development assessments. |

## Current requirements

Council have a range of current activities which support the community in improving waterway and wetland health across Ipswich, including:

- development of publically accessible educational materials and waterway planning documents
- supporting on-ground works through partnership programs such as voluntary conservation agreements (which includes agreement and partnerships focused on improving waterway health), community planting days
- provision of clear requirements and advice for waterway management, in the planning and design of urban development
- involvement in regional advisory groups
- planning and design of linear open spaces, which provide for community and environmental outcomes.

## Management focus

- Holistic planning of waterway health outcomes with relevant stakeholders
- Support community and external stakeholders to be able to deliver on-ground works
- Provide a clear point of contact for waterway health activities within council.
- Provide safe points of access and recreation in waterway corridors.

# CASE STUDY
## UPPER BLACK SNAKE CREEK IMPROVEMENT PLAN

Ipswich City Council works closely with the communities and professional stakeholders to deliver social and economic outcomes.

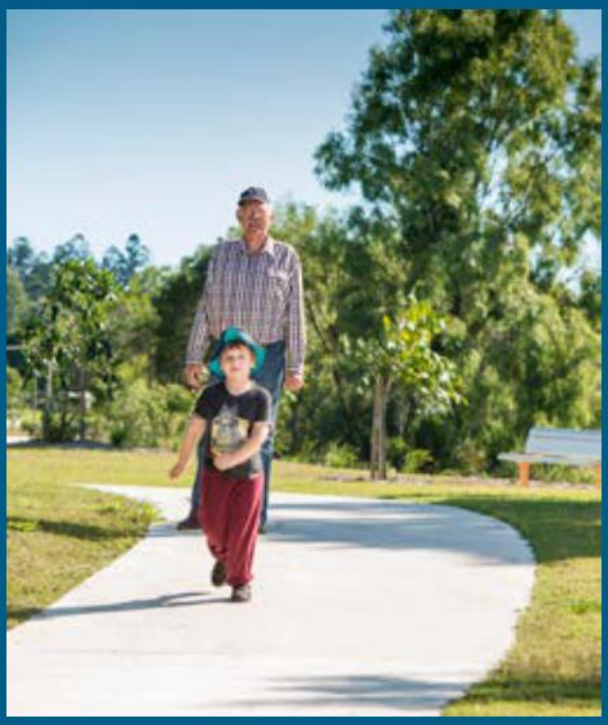
The Upper Black Snake Creek Improvement Plan was developed and delivered in partnership with a reference group representing a cross section of the community including the local school, land owners, the Marburg Show Society and the local Landcare group, West Moreton Landcare.

Through a number of workshops, door knocking activities and follow up steering meeting, the plan pieced together local knowledge and academic reports, as well as models and data to identify the major challenges and signpost some directions towards integrated solutions.

Since completion, the plan has led to the following outcomes:

- the securing of funds for a community pathway alongside the creek with corresponding native revegetation
- the production of the "Living in Black Snake Creek" booklet for the residents of the catchment in partnership with West Moreton Landcare and Healthy Land and Water
- clearing and reshaping of the creek channel upstream of the highway bridge
- stabilisation of the creek floodway with rock and revegetation downstream of the detention basin
- securing of funding from the SEQ Council of Mayors through the Resilient Rivers Initiative for targeted revegetation of the midslopes, to assist with flood resilience and salinity to be delivered alongside private landholders
- several landholder workshops focusing on salinity and paddock/grazing management with the local community.

Work continues in the catchment and does so with the support and assistance of the local community.

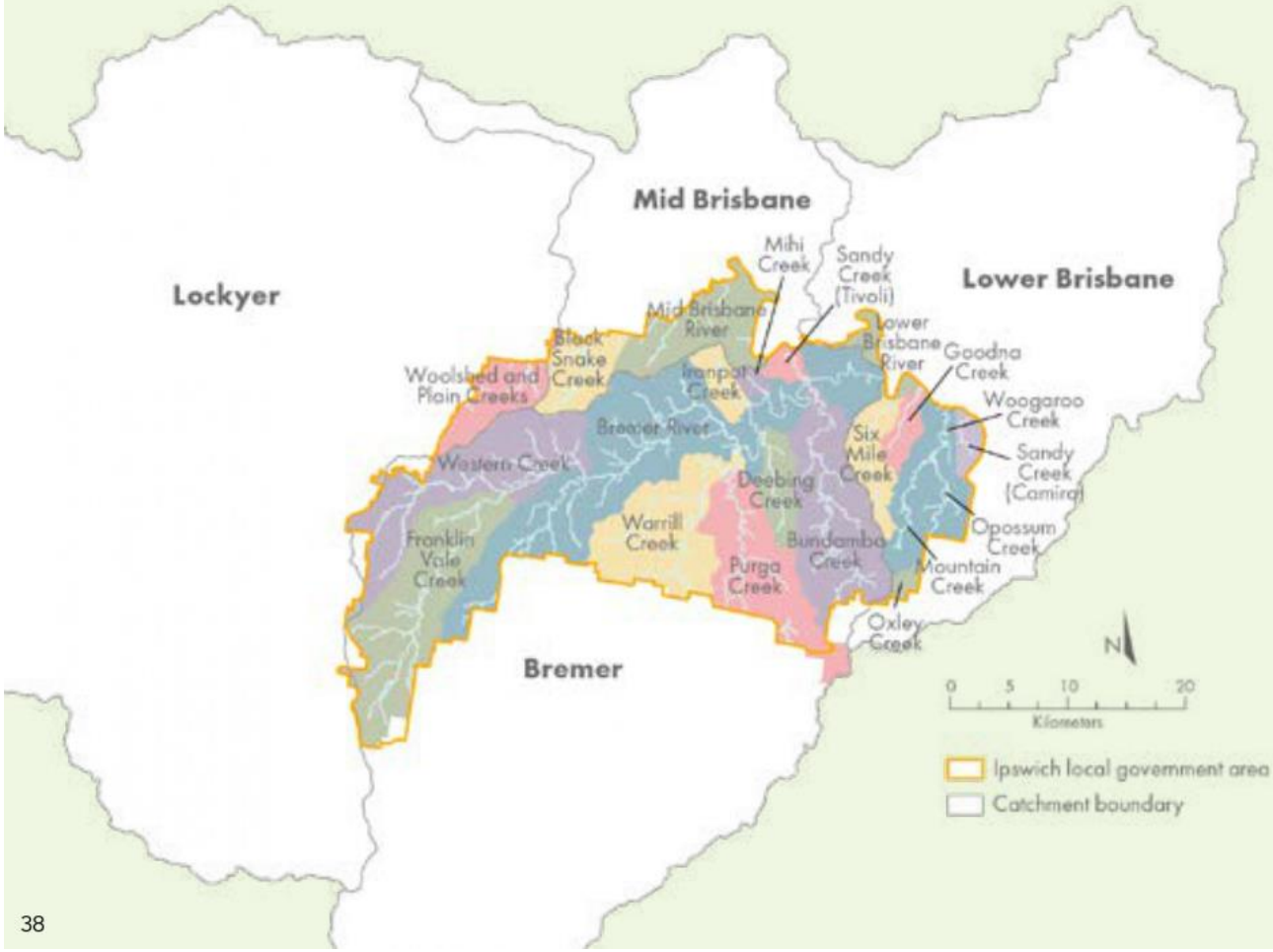


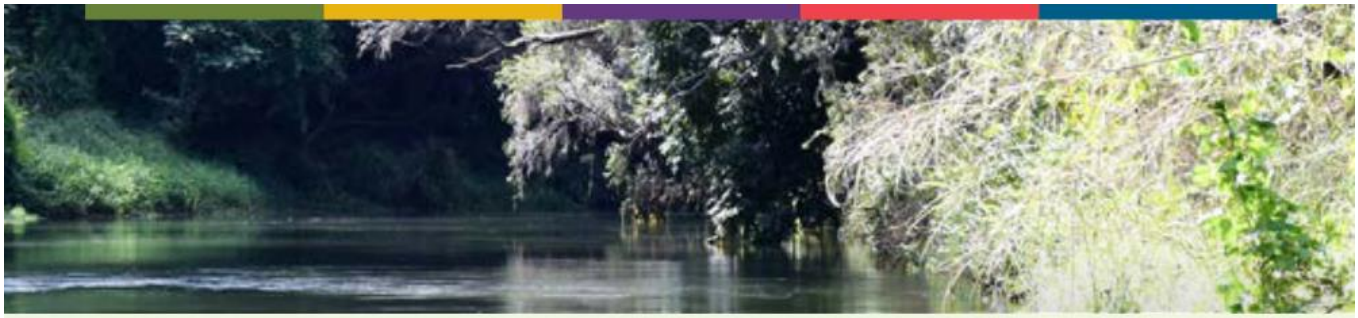
# D. SUB-CATCHMENT SUMMARIES – CURRENT CONDITION

Figure 9 presents the many waterway sub-catchments within the Ipswich City Council LGA including those within the Bremer River catchment and sections of the Lockyer Creek, Mid Brisbane and Lower Brisbane River catchments.

This section of the Waterway Health Strategy Background Report presents a summary of the current condition of these sub-catchments. Refer to the Waterway Health Strategy 2020 for information on targeted actions for each sub-catchment.

**FIGURE 9** – Catchments and sub-catchments within the Ipswich City Council boundary





## BREMER RIVER CATCHMENT

The Bremer River Catchment covers a total area of 2028km² and flows through the Scenic Rim and Ipswich local government areas. It is comprised of the following sub-catchments:

- Bremer River (estuary)
- Bremer River (freshwater)
- Bundamba Creek
- Deebing Creek
- Franklin Vale Creek
- Iron Pot Creek
- Mihi Creek
- Sandy Creek (Tivoli)
- Purga Creek
- Warrill Creek
- Western Creek.

**FIGURE 10** – Bremer River Catchment and Sub-Catchments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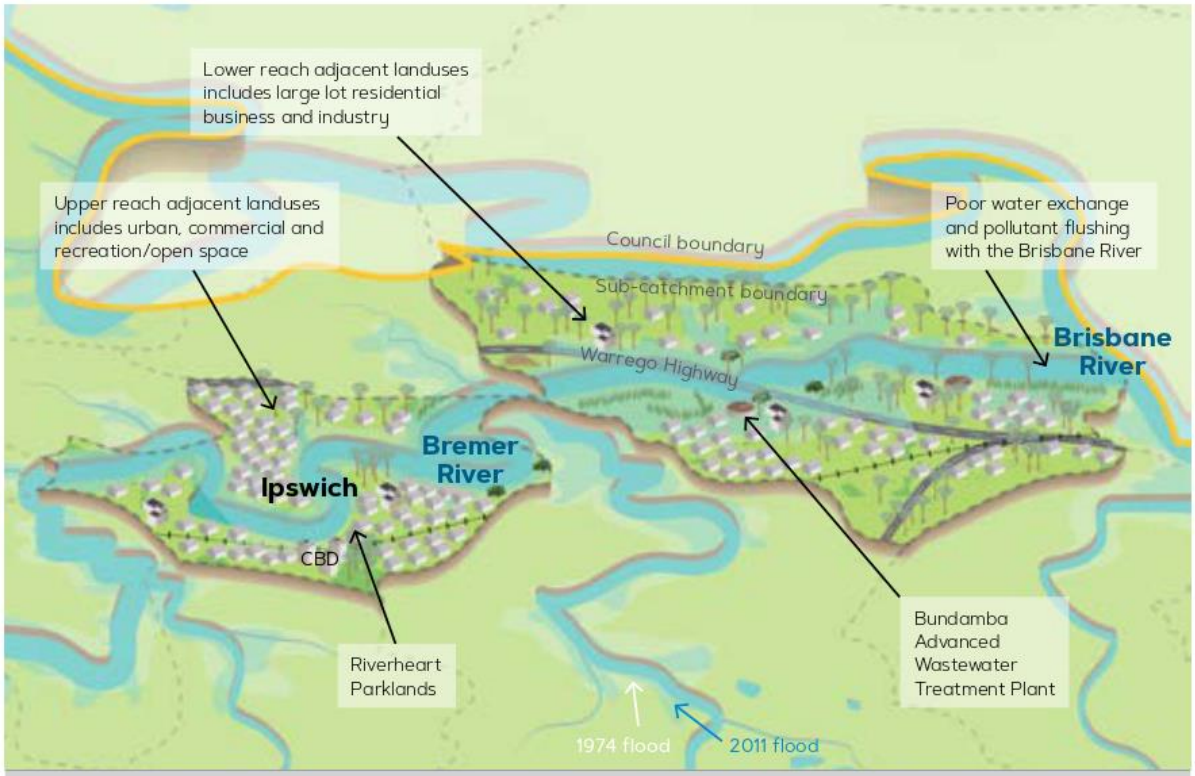
## BREMER RIVER (ESTUARY)

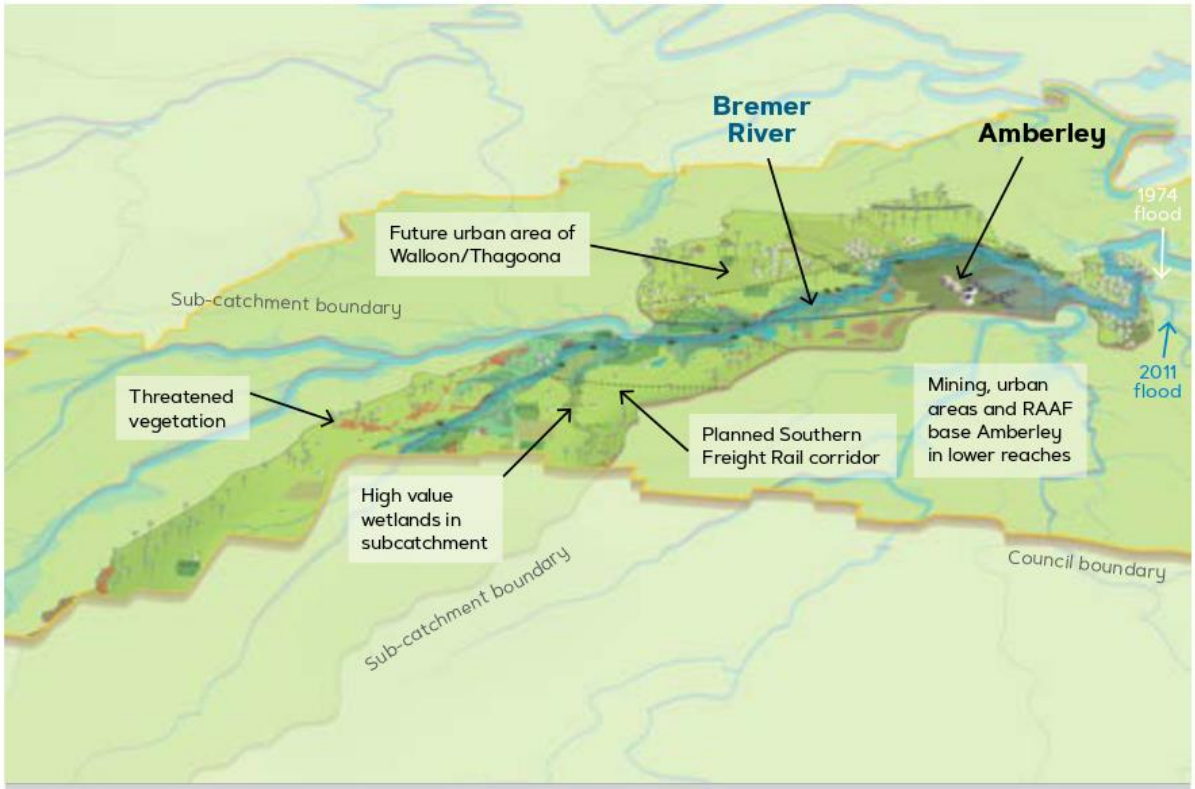
The Bremer River is a major tributary of Brisbane River, whose confluence is to the east of Ipswich.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Channel form is variable with major instabilities in the CBD area<br>▪ Limited aquatic habitat provided and native and introduced fish species identified in fish surveys<br>▪ Poor water quality due to very low levels of compliance with water quality objectives<br>▪ Wastewater treatment plants including at Bundamba have licenced discharge points directly into the Bremer River<br>▪ Tidal influences from the Brisbane River reach about 19km upstream. |
| Riparian | ▪ Variable riparian condition due to a range of vegetation widths, however longitudinal connectivity is generally maintained. |
| Floodplain | ▪ Consists of a mix of land uses including urban, industrial, commercial, parks and sports grounds and bushland<br>▪ Wetlands mapped in this catchment have been heavily impacted. |
| Community | ▪ Accessible to the community with about 6.8km adjacent to public parks and reserves<br>▪ The Bremer Catchment Association and Ipswich Rivers Improvement Trust have undertaken works in the past<br>▪ There are a number of voluntary environmental agreements with private landholders. |

## BREMER RIVER (FRESHWATER)

The freshwater sub-catchment arises in the Main Range National Park (World Heritage Area) and enters the Bremer River estuarine section at West Ipswich.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Channel form is generally stable with areas that have been impacted by cattle<br>▪ Moderate aquatic habitat with native and introduced fish species identified in fish surveys<br>▪ Good water quality condition<br>▪ Waterway contains pools connected by meandering channels. During extended dry periods, connectivity is reduced within the channel with the formation of isolated pools. |
| Riparian | ▪ Variable riparian condition with many areas having been cleared in the past and a presence of weeds. |
| Floodplain | ▪ Floodplain mostly cleared for grazing and agriculture<br>▪ Palustrine wetlands present providing important habitat and water quality improvements<br>▪ Significant water resource development including farm dams and mining voids reducing floodplain connectivity. |
| Community | ▪ Majority of the waterway is adjacent to private land<br>▪ A number of voluntary conservation agreements in the lower section of the catchment<br>▪ The Bremer Catchment Association and Ipswich Rivers Improvement Trust have undertaken works in the past. |

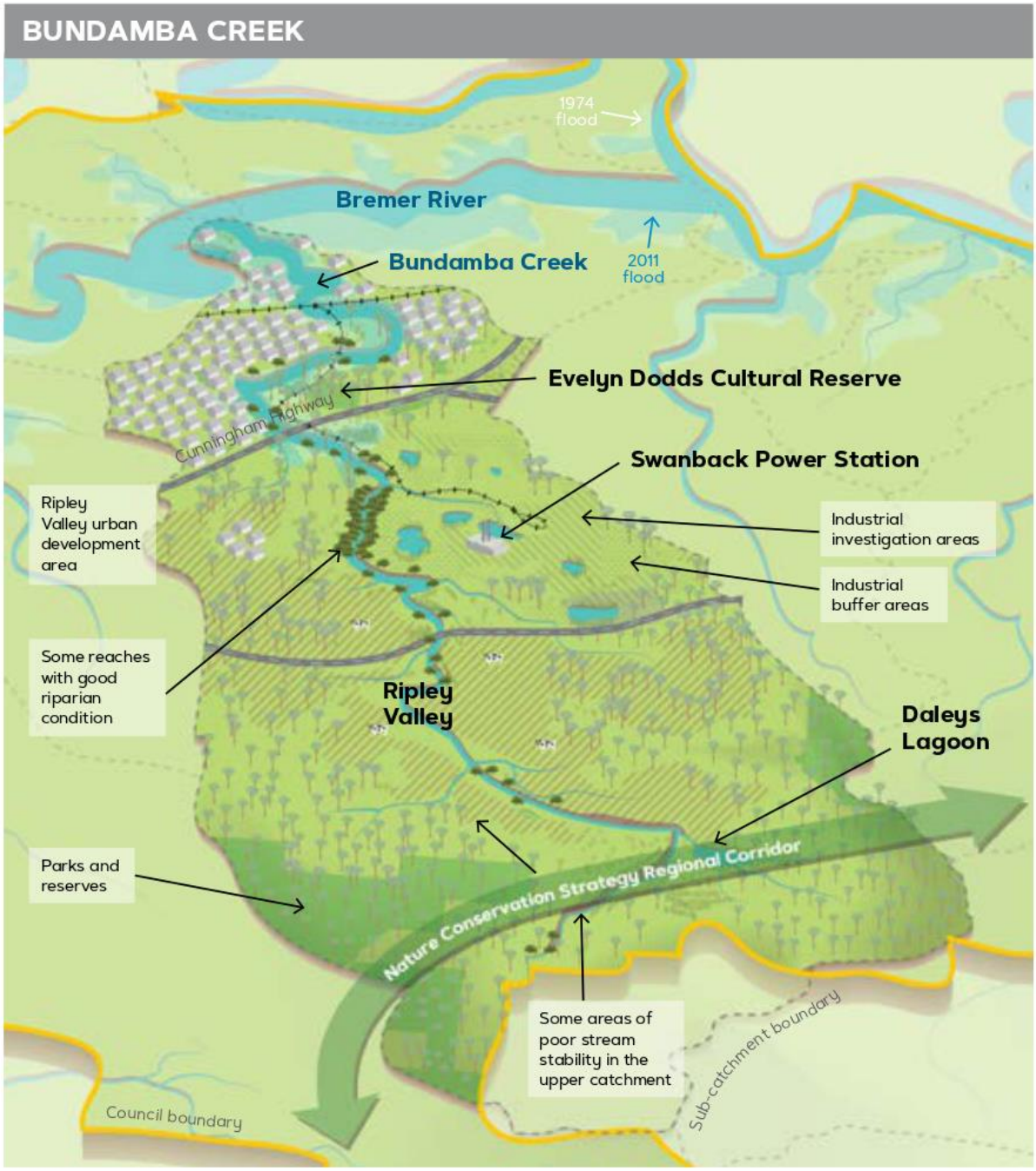
## BUNDAMBA CREEK

The sub-catchment covers a total area of 114km² and arises in the Flinders-Goolman Conservation Estate, flowing into the Bremer River estuary.

| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Sections flow over bedrock which controls bed incision and provides diversity of pool, run and riffle habitats<br>▪ Channel form varies with some degradation present and areas of erosive soils place waterway at high risk<br>▪ Platypus detected in creek. Fish surveys identified both native and introduced fish species<br>▪ Good aquatic habitat and water quality condition. |
| Riparian | ▪ Variable riparian condition with bushland present in the upper catchment<br>▪ Riparian weed species identified across the corridor. |
| Floodplain | ▪ Much of the floodplain has been cleared previously for grazing with extensive urban development planned<br>▪ Wetland systems identified including Daly's (Bundamba) Lagoon<br>▪ Significant water resource development including farm dams and mining voids reducing floodplain connectivity. |
| Community | ▪ Evelyn Dodds Cultural Reserve is an important cultural site for local Indigenous peoples<br>▪ Currently a mix of private and public land with corridor planned to be a major linear open space in the future<br>▪ A number of voluntary conservation agreements, especially in the upper catchment<br>▪ The community has been active in creating a plan for the corridor and delivering on-ground works, including revegetation and weed management activities. |

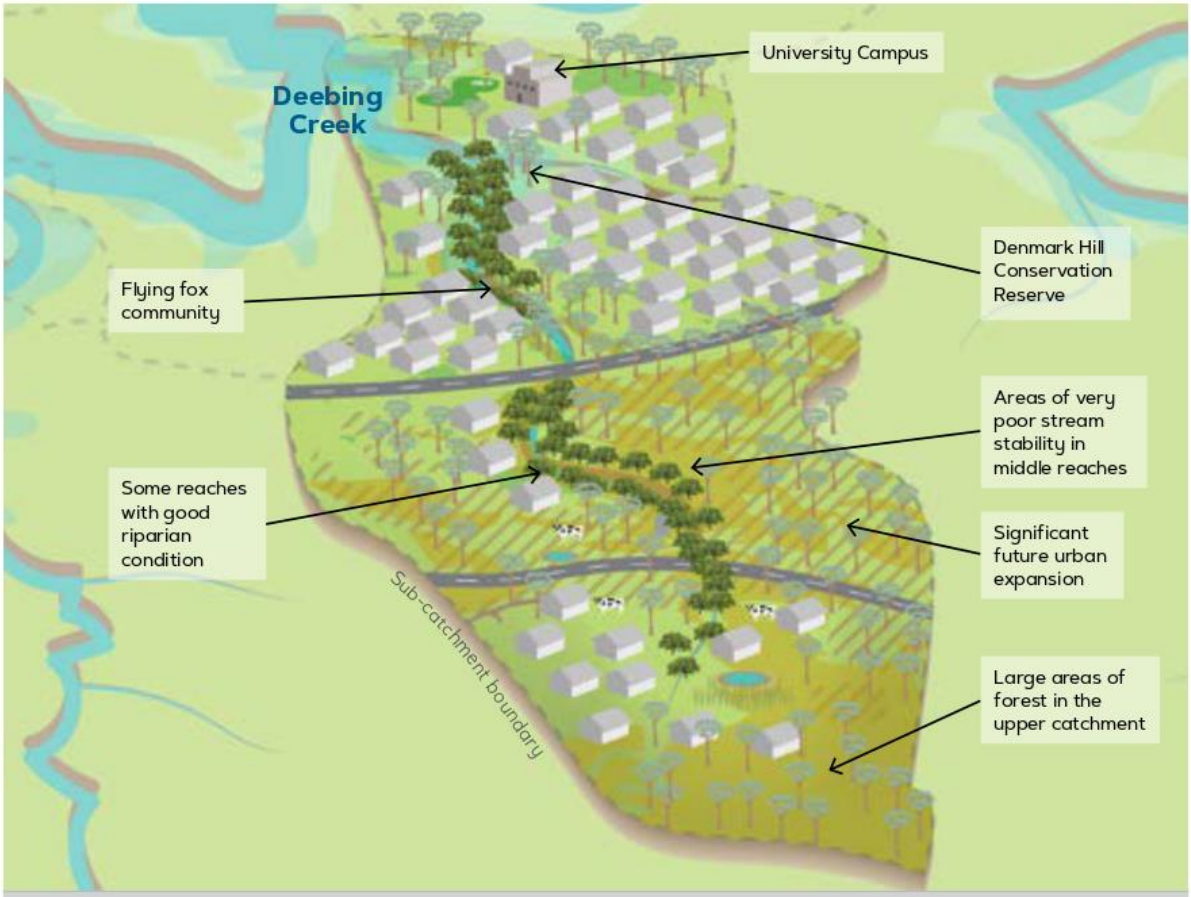
Darter Sun Bathing by L Hardwick
Ipswich Enviroplan Photo Competition

Duck Reflection by S Smolenski
Ipswich Enviroplan Photo Competition


BUNDAMBA CREEK
1974 flood
Bremer River
2011 flood
Bundamba Creek
Evelyn Dodds Cultural Reserve
Cunningham Highway
Swanback Power Station
Ripley Valley urban development area
Industrial investigation areas
Industrial buffer areas
Some reaches with good riparian condition
Ripley Valley
Daleys Lagoon
Parks and reserves
Nature Conservation Strategy Regional Corridor
Some areas of poor stream stability in the upper catchment
Sub-catchment boundary
Council boundary

## DEEBING CREEK

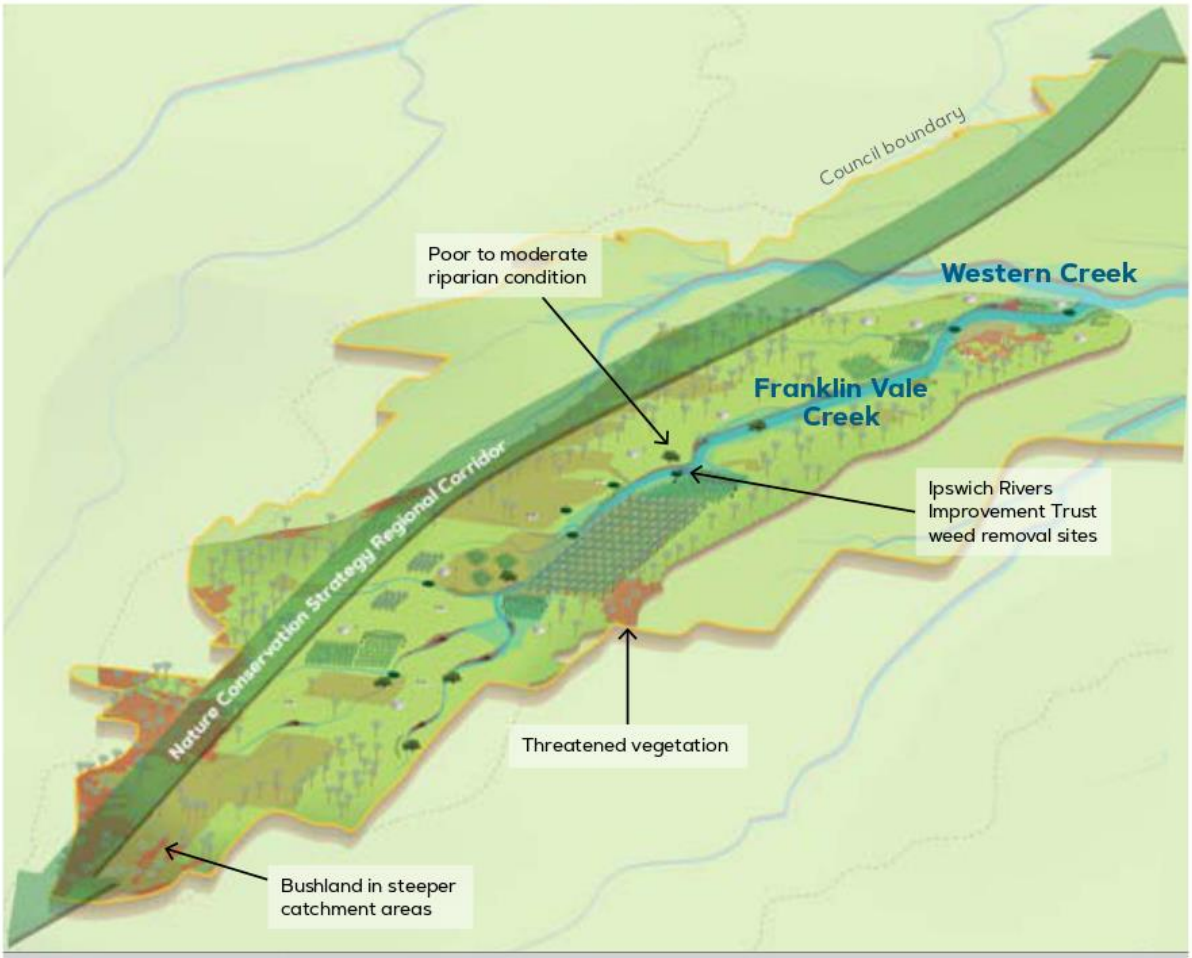
The sub-catchment headwaters arise in the Grampian Hills and flow into the freshwater section of the Bremer River, near One Mile Bridge in West Ipswich.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Channel form is predominately natural although some concrete sections in urban area<br>▪ Some major erosion issues in the upper catchment area<br>▪ Major sand slug is completely infilling the channel about 2km downstream of Centenary Highway<br>▪ Moderate aquatic habitat provided due to good riparian vegetation cover in most areas. |
| Riparian | ▪ Variable riparian condition with a significant proportion in good condition. |
| Floodplain | ▪ About half the floodplain is currently identified as bushland with the remaining floodplain containing grazing land, historic residential development, parks, golf courses and sports grounds<br>▪ The area faces significant changes as part of the Ripley Valley urban development. |
| Community | ▪ Connected to the important Indigenous cultural heritage site of Deebing Creek Mission and cemetery<br>▪ Currently a mix of private and public land with corridor planned to be a major linear open space and active transport corridor in the future. |

## FRANKLIN VALE CREEK

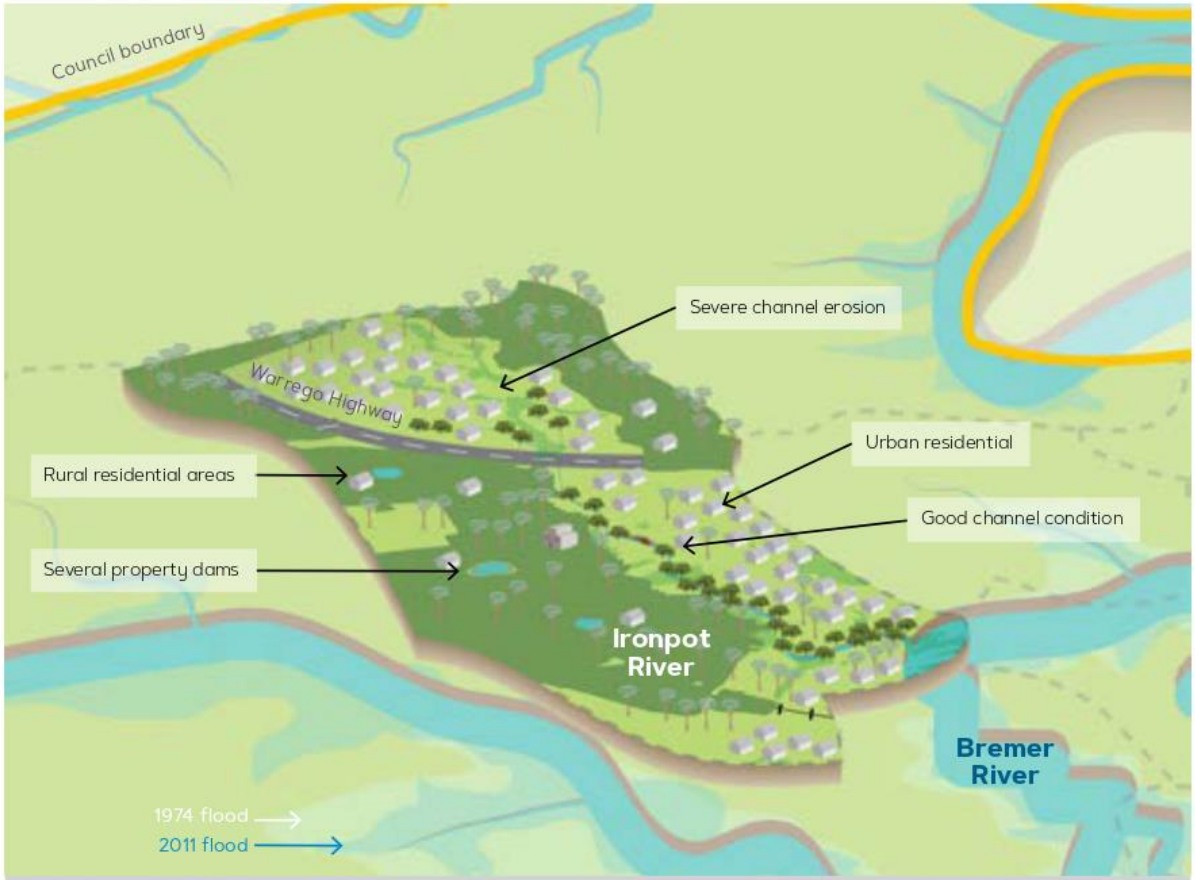
The Franklin Vale Creek sub-catchment flows northeast to enter Western Creek at Calvert. About 90 per cent of the catchment is within Ipswich LGA.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Single continuous channel with anabranching sections<br>▪ Channel form degraded with minor instabilities in lower reaches<br>▪ Erosion resulting in significant sediment sources within the Bremer Catchment. |
| Riparian | ▪ Poor to moderate riparian condition along the creek with some sections devoid of riparian vegetation<br>▪ Creek instabilities due to removal of vegetation and stock access. |
| Floodplain | ▪ Majority of floodplain cleared for grazing, crops and pasture and is zoned Agricultural Land Classification – Class A and B<br>▪ Wetlands are present, most of which are in good condition<br>▪ Farm dams are also present throughout catchment. |
| Community | ▪ Registered Indigenous cultural heritage sites present throughout the sub-catchment<br>▪ Creek adjacent to privately owned land<br>▪ Large number of landholders have voluntary conservation agreements with council. |

## IRON POT CREEK

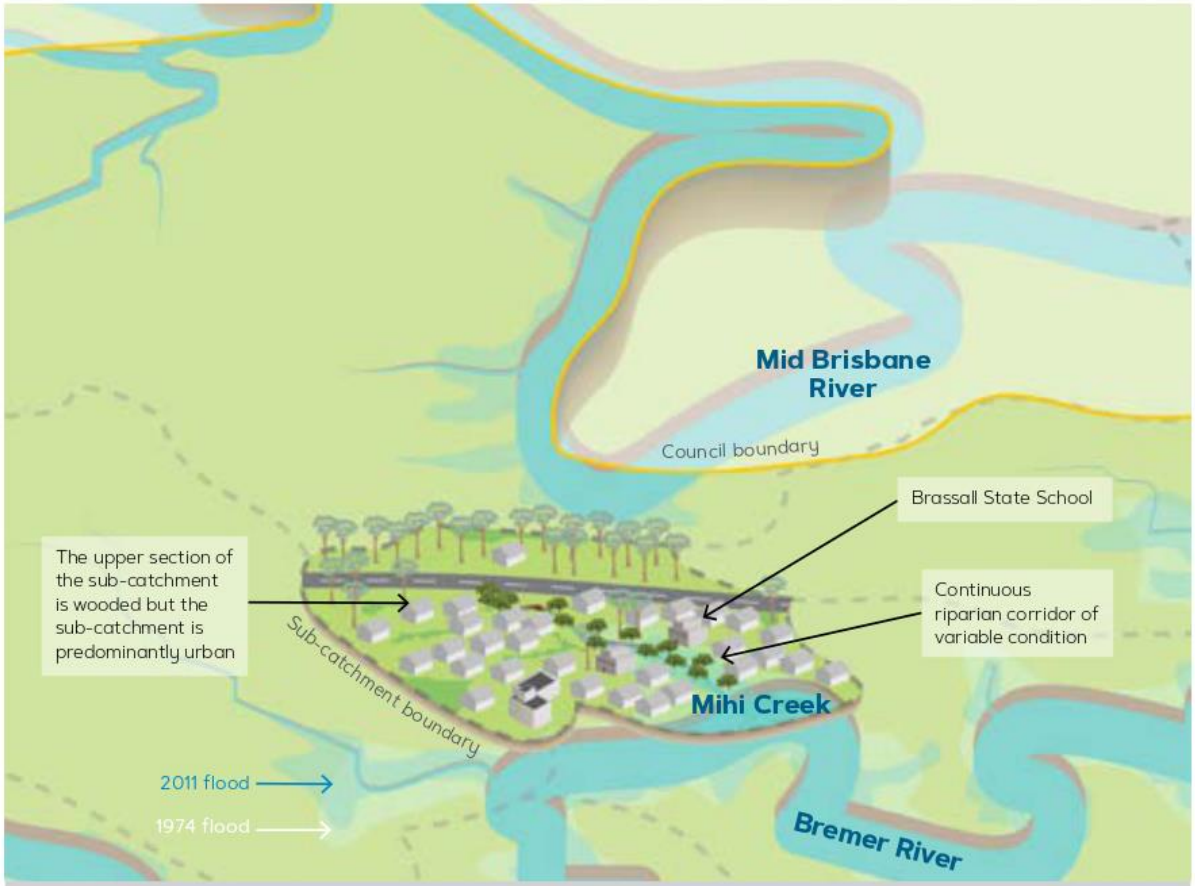
Iron Pot Creek is a tributary of the Bremer River and is a small 16.7km² largely urbanised sub-catchment that flows through Blacksoil, Brassall, Karrabin, Pine Mountain and Wulkuraka.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable channel form with extensive erosion in the upper reaches and more stable channel conditions downstream with chains of ponds sections<br>▪ Active incision still occurring in upper reaches which is lowering the bed level and resulting in steep, unstable banks<br>▪ Good aquatic habitat present in some locations<br>▪ No water quality, invertebrate or fish data available. |
| Riparian | ▪ Predominately in good condition providing a good buffer and longitudinal connectivity<br>▪ Number of studies and works carried out including erosion and riparian works in upper reaches and weed management in lower reaches. |
| Floodplain | ▪ Predominately bushland with some cleared for urban, parks, sports grounds and grazing lands. |
| Community | ▪ About 4.5km of total 9.9km length is next to public parks and reserves, allowing community access to creek. |

## MIHI CREEK

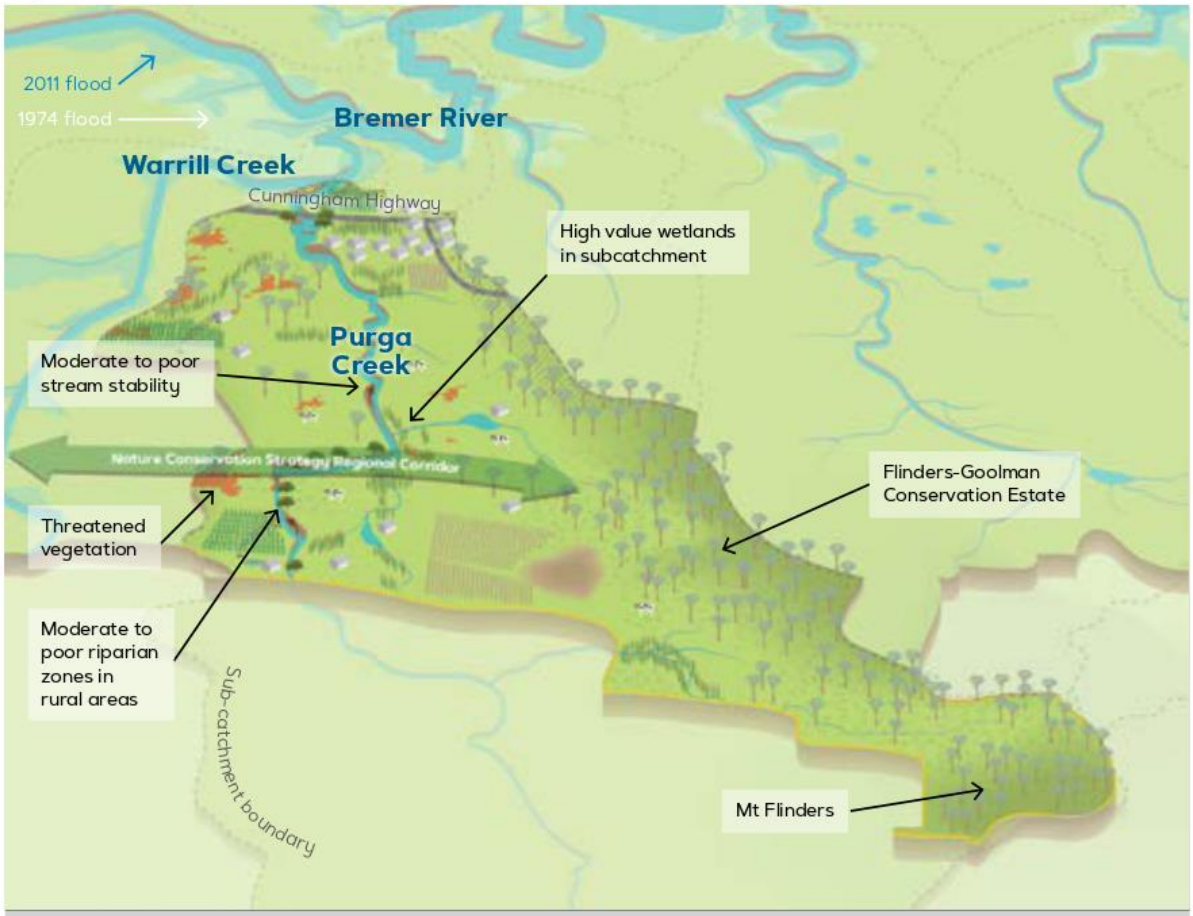
The Mihi sub-catchment is 5.9km² in area and drains the ridgeline which separates the Bremer and Brisbane River catchments, and flows into the estuarine section of the Bremer River.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable stream condition with a mix of natural and constructed channel forms<br>▪ Severe gully erosion in upper catchment<br>▪ Moderate aquatic habitat present<br>▪ No water quality, invertebrate or fish data available. |
| Riparian | ▪ Moderate riparian condition overall with good riparian condition in the upper reaches<br>▪ The urban riparian zone provides good longitudinal connectivity but of limited width and dominated by weeds. |
| Floodplain | ▪ The floodplain is a mix of urban, parks and bushland. |
| Community | ▪ Anecdotal evidence suggests that Aboriginal Corroboree were held on the site that is currently Ipswich State High School<br>▪ About 2.3km of the total 3.36km length of the creek is adjacent to public parks and reserves<br>▪ Number of environmental partnerships that enable community-driven improvement and ownership of the waterway. |

## PURGA CREEK

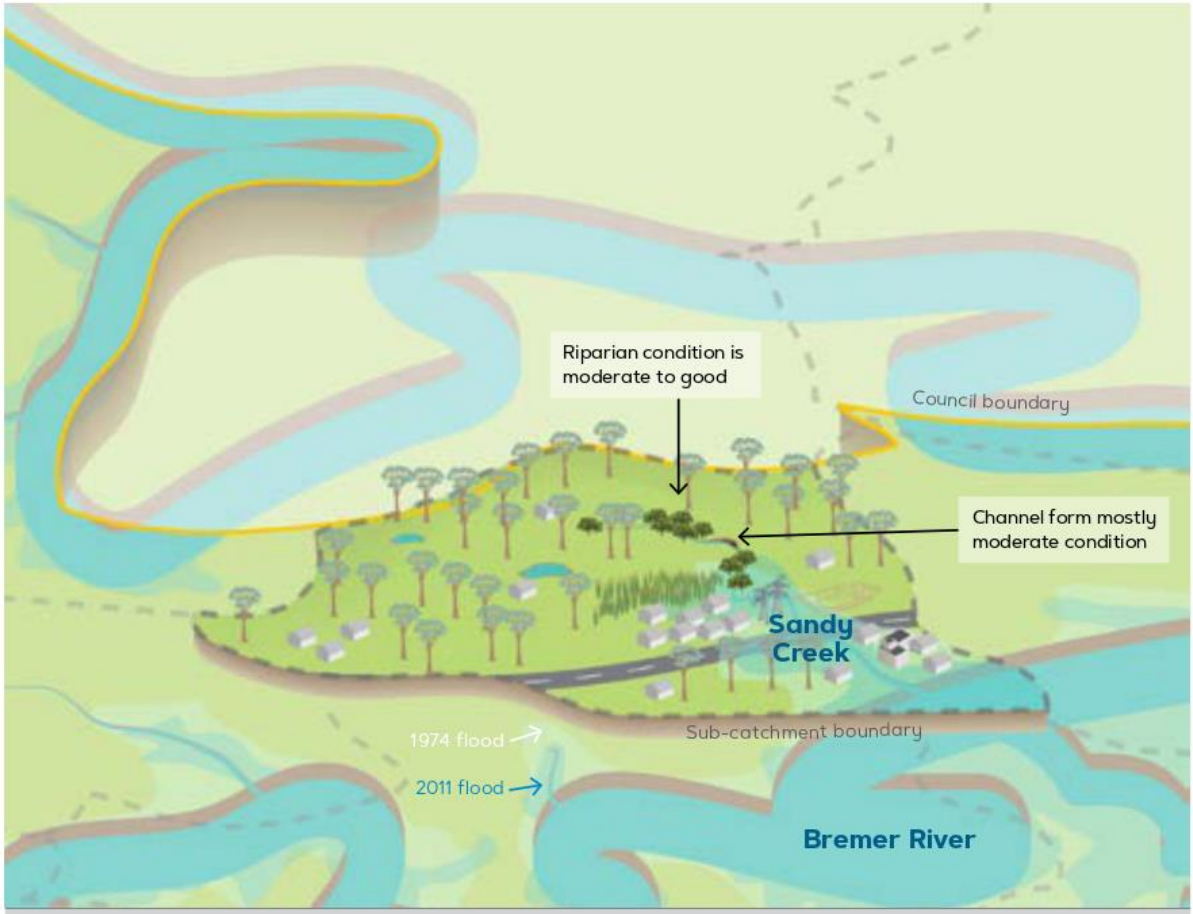
Purga Creek is a major tributary of Warrill Creek, joining the waterway approximately 3km upstream of the Bremer River and Warrill Creek confluence. The sub-catchment has a total area of 227km², about half of which is within the Ipswich LGA.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Moderate channel form overall with degradation present due to lack of riparian vegetation<br>▪ Minor instabilities observed<br>▪ Moderate aquatic habitat with good water quality<br>▪ Native and introduced fish species identified in fish surveys. |
| Riparian | ▪ Poor riparian condition due to lack of vegetation and presence of weeds. |
| Floodplain | ▪ The majority of the floodplain has been cleared with mostly irrigated horticulture on the floodplains and grazing on the hillslopes<br>▪ Remaining floodplain area has been identified as bushland, some of which is within Flinders-Goolman Conservation Estate and Purga Nature Reserve<br>▪ There are mapped wetlands within the floodplain identified as in good condition. |
| Community | ▪ Majority of the waterway channel drains through privately owned land<br>▪ Important Indigenous cultural heritage sites mapped in the sub-catchment. |

## SANDY CREEK (TIVOLI)

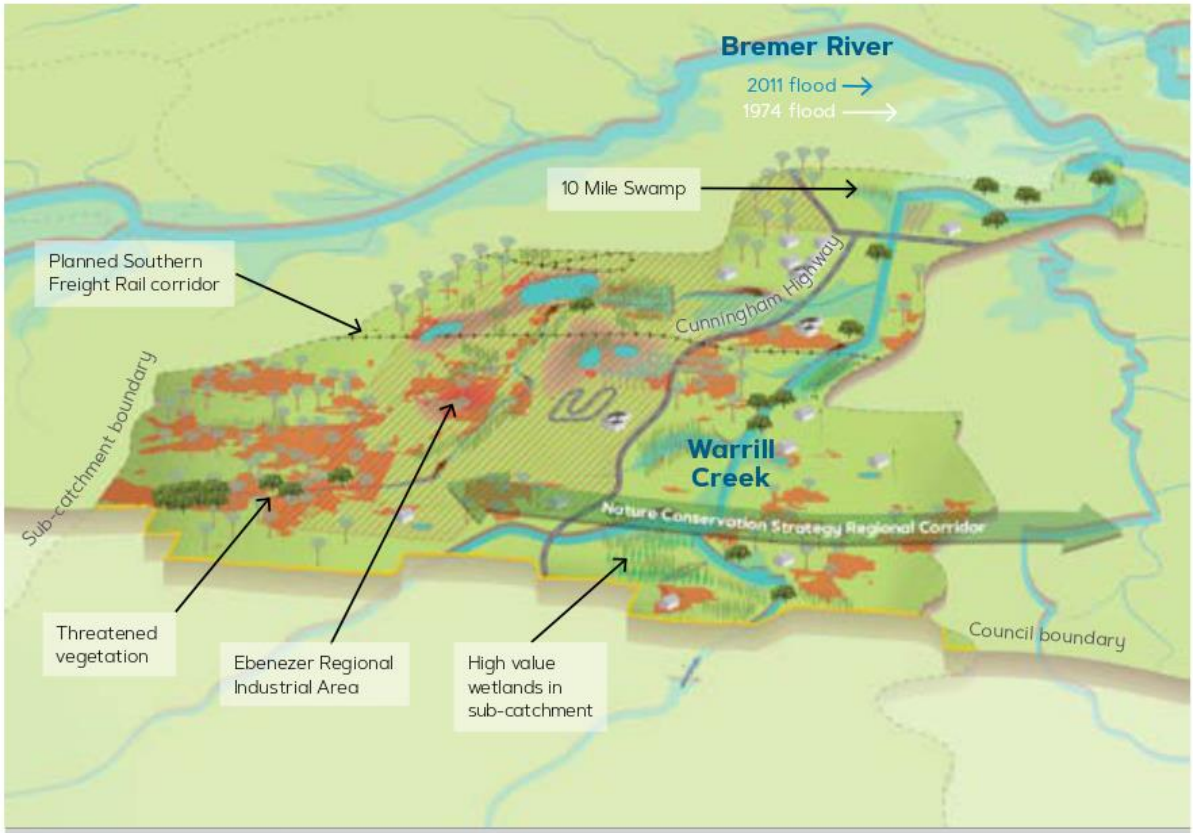
The sub-catchment covers an area of 8.7km² and flows from the ridge line which separates the Bremer and Brisbane River catchments, through the suburbs of Chuwar, Tivoli and North Tivoli into the Bremer River estuarine zone, 8km upstream of the Brisbane River confluence.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Waterway consists of both continuous and discontinuous sections of channel, which are all generally stable<br>▪ Aquatic habitat is in moderate condition, with no water quality, macroinvertebrate or fish data available. |
| Riparian | ▪ Variable riparian conditions due to some impacts from land uses and presence of weeds. |
| Floodplain | ▪ Floodplain consists of mainly bushland with the remaining areas being urban and cleared grasslands<br>▪ A number of water storages identified in the sub-catchment. |
| Community | ▪ No community access to waterway. |

## WARRILL CREEK

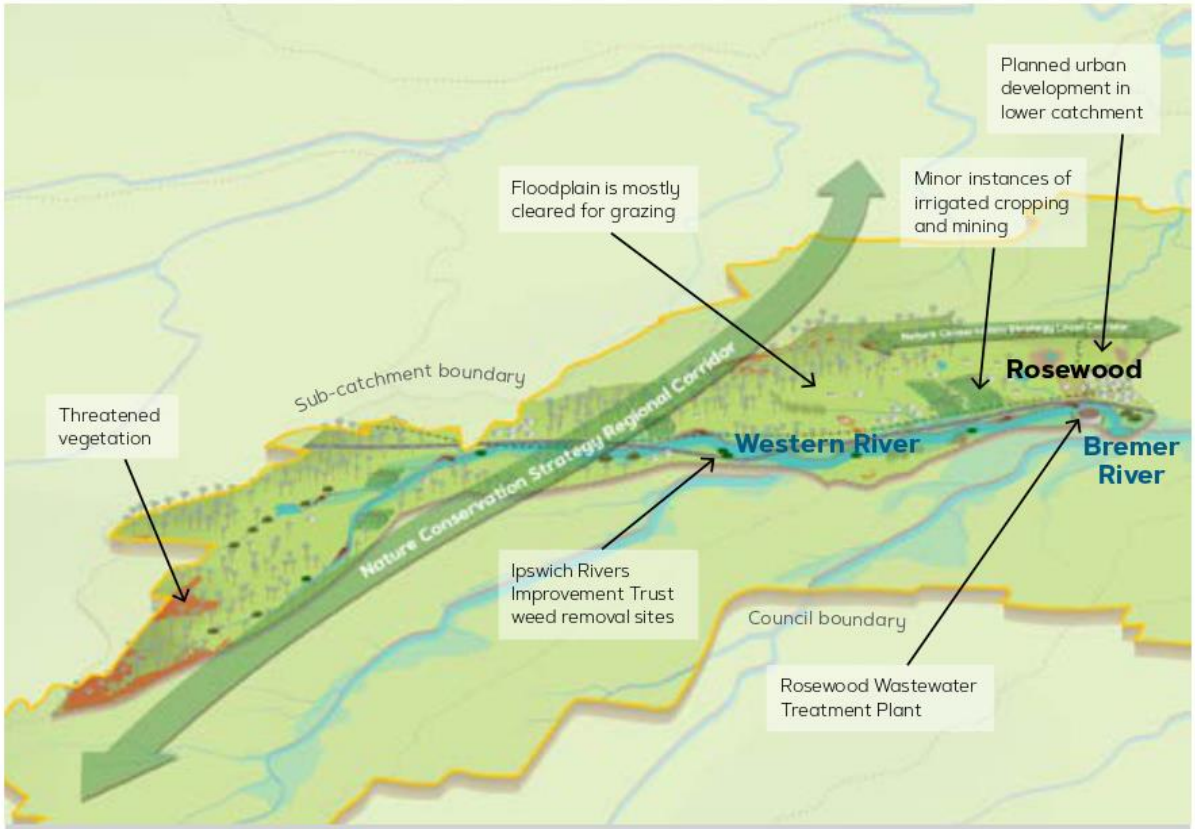
Warrill Creek rises in the Main Range National Park (World Heritage Area) and flows about 70km down to its confluence with the Bremer River near Amberley. Only the lower reaches are within the Ipswich LGA.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| **Channel** | ▪ Transitions between single continuous channel and anabranching low flow channels within a wide floodplain valley<br>▪ Channel bed and banks are generally stable with some localised degradation<br>▪ Channel erosion outside of Ipswich LGA is generating high sediment loads which may impact pools<br>▪ Moderate aquatic habitat with native fish species identified in fish surveys. |
| **Riparian** | ▪ Variable riparian condition with moderate condition riparian corridor in Warrill Creek with some clearing and weeds<br>▪ Poor condition riparian corridor in Ebenezer Creek as there is limited extent of riparian vegetation due to previous mining. |
| **Floodplain** | ▪ Floodplain mostly cleared for grazing and agriculture<br>▪ Remaining floodplain areas identified as bushland but negligible amount within Ipswich.<br>▪ Significant water resource development including Moogerah Dam, weirs, farm dams and mining voids reducing floodplain connectivity and impact stream flow regimes and fish movements<br>▪ Mapped high value wetlands. |
| **Community** | ▪ Majority of waterway is adjacent to private land<br>▪ A number of voluntary environmental agreements across the catchment. |

## WESTERN CREEK

Western Creek sub-catchment headwaters arise in the Little Liverpool Range and it includes the townships of Rosewood, Calvert and Grandchester.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Minor instabilities present with cattle observed to be impacting on bank stability<br>▪ Moderate aquatic habitat supporting native fish species<br>▪ Good macroinvertebrate and water quality results<br>▪ Rosewood Wastewater Treatment Plant discharges to Western Creek via a series of lagoons and constructed wetlands. |
| Riparian | ▪ Poor to moderate riparian condition with the exception of the headwaters within bushland which is in good condition<br>▪ Vegetation in the remaining areas has been impacted by agricultural land uses but longitudinal connectivity has been maintained. |
| Floodplain | ▪ Majority of floodplain cleared for grazing, crops and pasture with remainder identified as bushland<br>▪ Water storages including farm dams and mapped wetlands. |
| Community | ▪ Registered Indigenous cultural heritage sites, predominately in floodplains<br>▪ Creek adjacent to privately owned land<br>▪ Large number of voluntary conservation agreements with council. |

## MID BRISBANE RIVER CATCHMENT

The Mid Brisbane River Catchment covers a total area of 552km$^2$ and is the primary drinking water catchment for South-East Queensland, providing water for most of Brisbane and Ipswich. It is also a key water resource for irrigation, stock grazing, passive recreational use and ecological function.

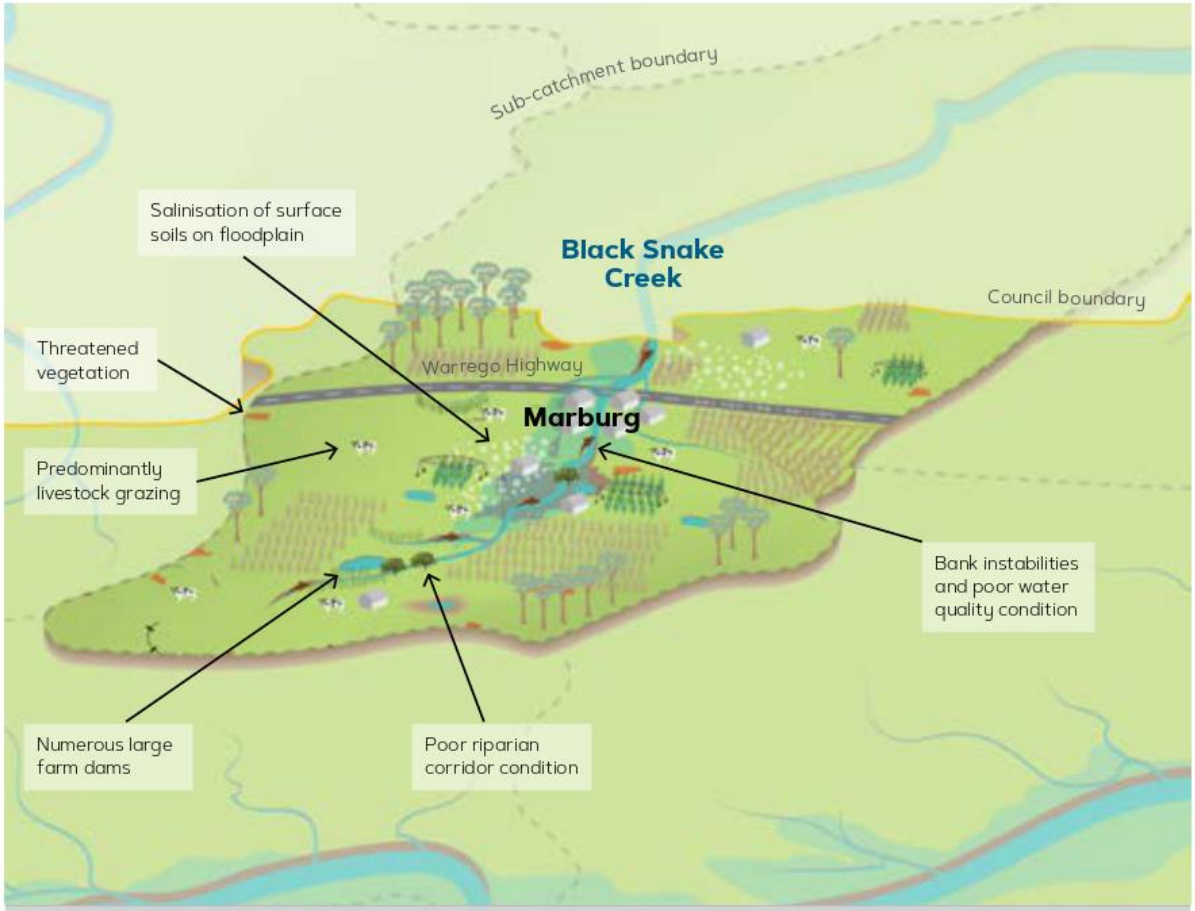
The Mid Brisbane River comprises the following sub-catchments within the Ipswich LGA boundary:

- Black Snake Creek
- Mid Brisbane River.

**FIGURE 11** – Mid Brisbane River Catchment and Sub-Catchments

## BLACK SNAKE CREEK

About 35km² of the the sub-catchment is within the Ipswich LGA. The creek drains the northern slopes of the rolling hills which separate the Bremer and Brisbane River catchments, and enters the Brisbane River between Wivenhoe Dam and Mt Crosby Weir.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Channel form is highly modified and degraded and a continuous channel along much of its length due to historic channel incision<br>▪ Widespread bed and bank erosion<br>▪ Little aquatic habitat present<br>▪ Water quality is poor with salinity and microbiological as the two key water quality issues. |
| Riparian | ▪ Consistently poor riparian habitat and vegetation corridor across the catchment. |
| Floodplain | ▪ Extensive clearing of the floodplain for grazing, crops and pasture<br>▪ Significant flooding experienced and many water resource developments including farm dams and flood retention basins. |
| Community | ▪ Mostly private land with only a small section of the creek adjacent to public land<br>▪ Number of properties with voluntary environmental agreements with council<br>▪ West Moreton Landcare has completed various projects within the sub-catchment. |

## MID BRISBANE RIVER

The sub-catchment covers an area of 63km² within the Ipswich LGA out of a total sub-catchment area of 454km², and includes Sandy Creek (Pine Mountain) and Watercress Creek. It is upstream of Mt Crosby Water treatment plant offtake.


| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable channel form with some significant degradation in some areas<br>▪ Moderate water quality but good presence of native fish and macroinvertebrates<br>▪ Platypus sighted with evidence of healthy and breeding population. |
| Riparian | ▪ Generally poor riparian condition and connectivity along the main channels. |
| Floodplain | ▪ Floodplain predominately grassland and bushland with small area of urban development<br>▪ Wivenhoe Dam and Somerset Dam have significantly altered flow regimes, with flow variability reduced. |
| Community | ▪ Number of public parks and reserve adjacent to the waterway<br>▪ Number of voluntary conservation agreements with private landholders. |

## LOWER BRISBANE RIVER CATCHMENT

The Lower Brisbane River Catchment covers a total area of 1,195km² and is a highly urbanised catchment with sections of the river used regularly for passive and active recreational use, including jet boating, water skiing and fishing.

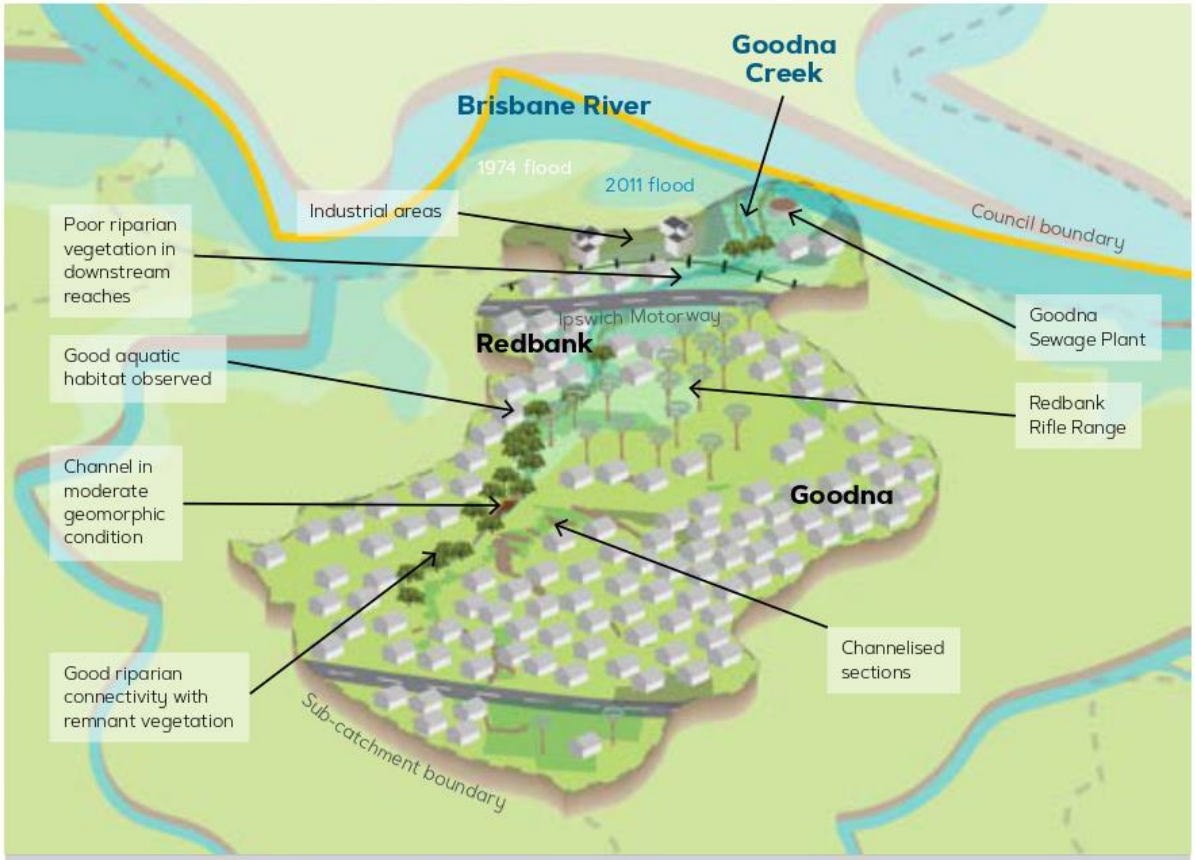
It is comprised of the following sub-catchments within the Ipswich LGA:

- Goodna Creek
- Lower Brisbane River
- Sandy Creek (Camira)
- Six Mile Creek
- Woogaroo Creek, including Mountain and Opossum creeks.

**FIGURE 12** – Lower Brisbane River Catchment and Sub-Catchments

## GOODNA CREEK

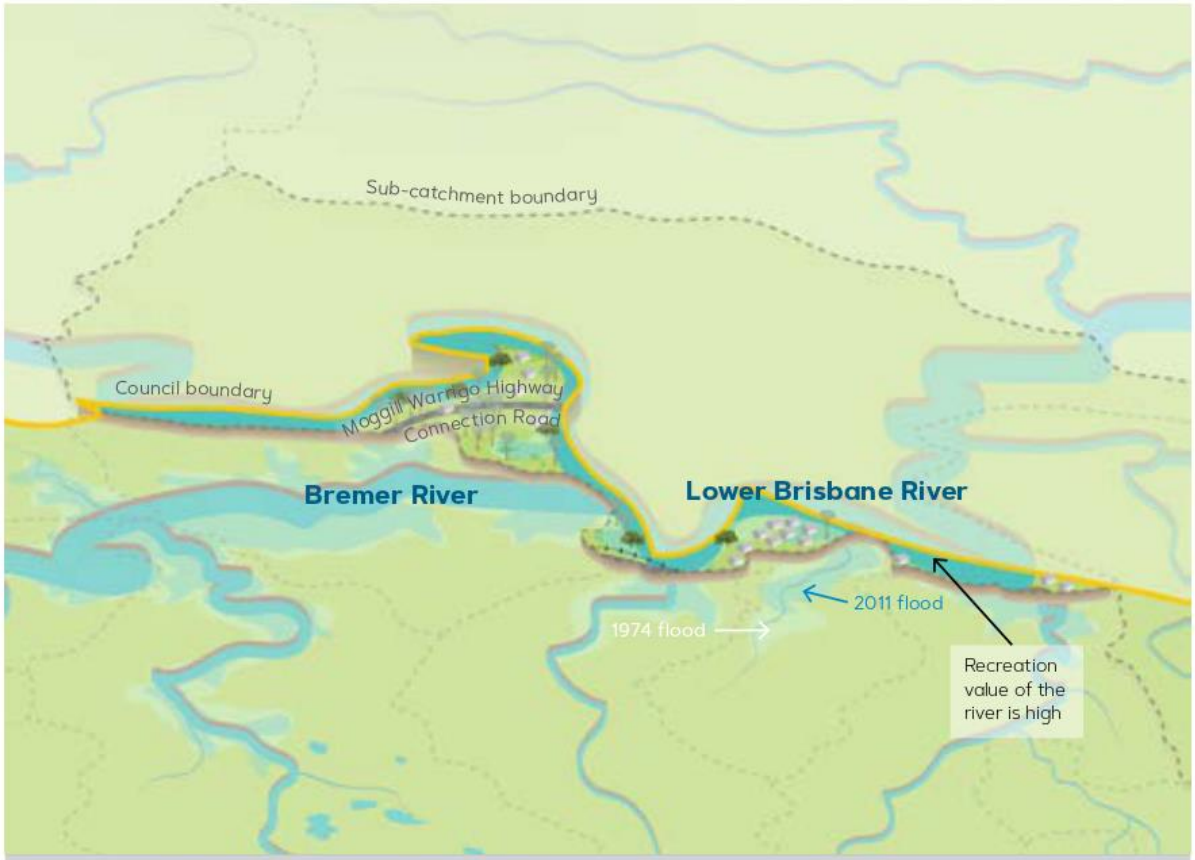
The Goodna Creek sub-catchment covers only 14km². The creek flows through the suburbs of Redbank Plains and Collingwood Park, before entering the Lower Brisbane River 5km downstream of the Moggill Ferry crossing.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable channel form with a mixture of chain of ponds, constructed and continuous channels<br>▪ Historic widening however current rates of erosion appear low<br>▪ Good aquatic habitat present with no water quality, invertebrate or fish data available<br>▪ Goodna Sewage Treatment Plant discharges directly into the Brisbane River. |
| Riparian | ▪ Riparian condition varies along the creek with good connectivity upstream of the Ipswich Motorway and poor vegetation cover in the lower reach. |
| Floodplain | ▪ Floodplain is a mix of urban, light industrial, grassland, parks, sportsgrounds and bushland<br>▪ No non-riverine wetlands mapped in the sub-catchment. |
| Community | ▪ Indigenous artefacts have been located in the sub-catchment<br>▪ About 3.3km of the creek is adjacent to public parks and reserves. |

## LOWER BRISBANE RIVER

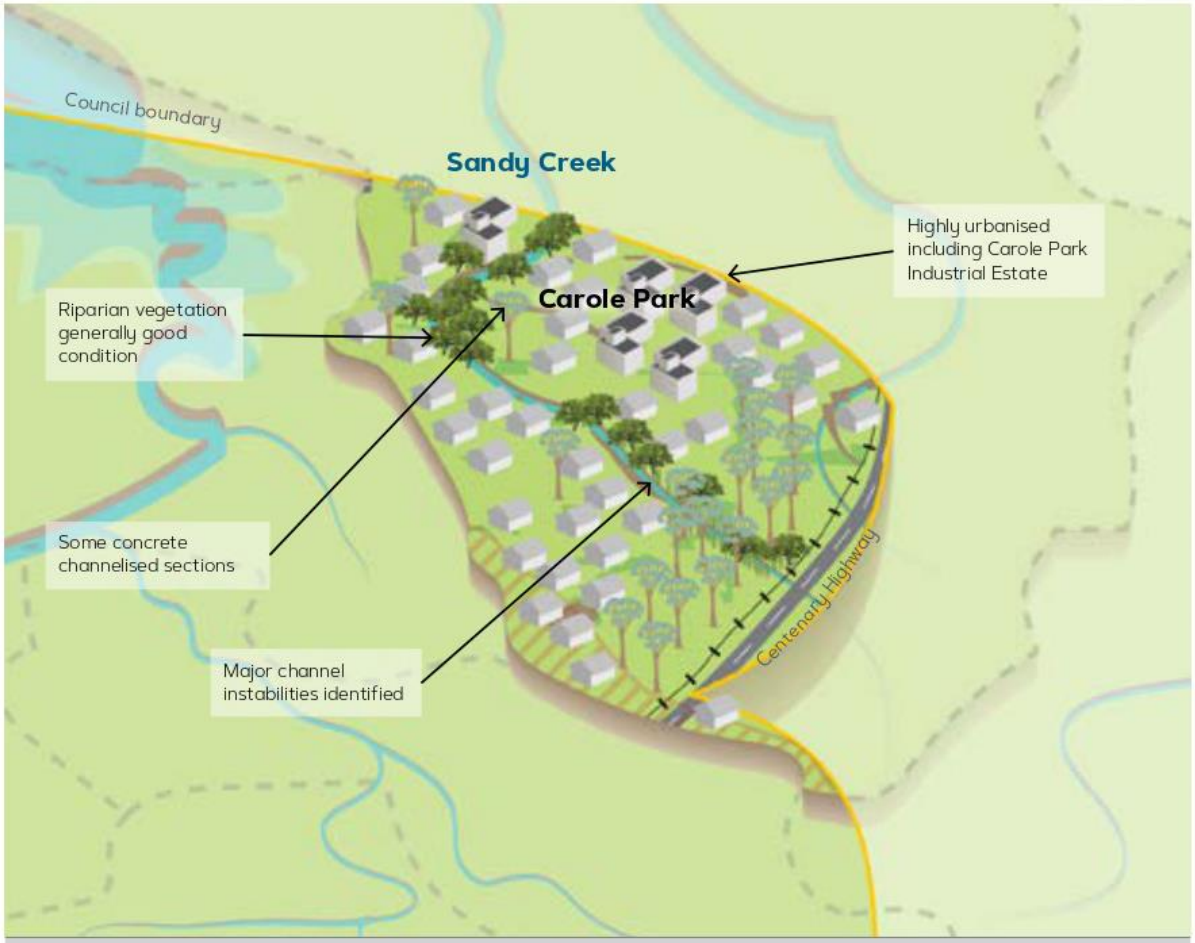
The Lower Brisbane River is estuarine and receives flows from the Goodna, Woogaroo, Six Mile and Sandy Creek (Camira) sub-catchments.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable channel form with some areas of degradation<br>▪ Good to moderate water quality with risk for potential microbial pollution due to on-site sewerage systems at Riverdale Park<br>▪ Moderate aquatic habitat. |
| Riparian | ▪ Poor riparian condition. |
| Floodplain | ▪ Floodplain is predominately grassland and bushland with small area of urban development<br>▪ Wivenhoe Dam and Somerset Dam have significantly altered flow regimes with flow variability significantly reduced. |
| Community | ▪ About 7km of the waterway is adjacent to public parks and reserves with the remaining areas privately owned. |

## SANDY CREEK (CAMIRA)

The 25km² sub-catchment area within the Ipswich LGA flows through Camira and Carol Park before entering Wolston Creek.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable channel form with some concrete channel sections and areas of active erosion due to increased runoff from urbanisation<br>▪ Poor aquatic habitat with no water quality, invertebrate or fish data available<br>▪ Anecdotal sightings and recent detection of Platypus. |
| Riparian | ▪ Moderate riparian condition with good longitudinal connectivity but some weeds present. |
| Floodplain | ▪ Land use is a mixture of urban, light industrial (Carole Park Industrial Estate) and bushland predominantly within the Greenbank Military Camp.<br>▪ Mapped palustrine wetlands in the upper sub-catchment. |
| Community | ▪ Registered Indigenous cultural heritage site of the Camira Bora Ring<br>▪ About 1.4km of Sandy Creek's length is adjacent to public parks and reserves<br>▪ Council has a number of conservation partnerships with landholders. |

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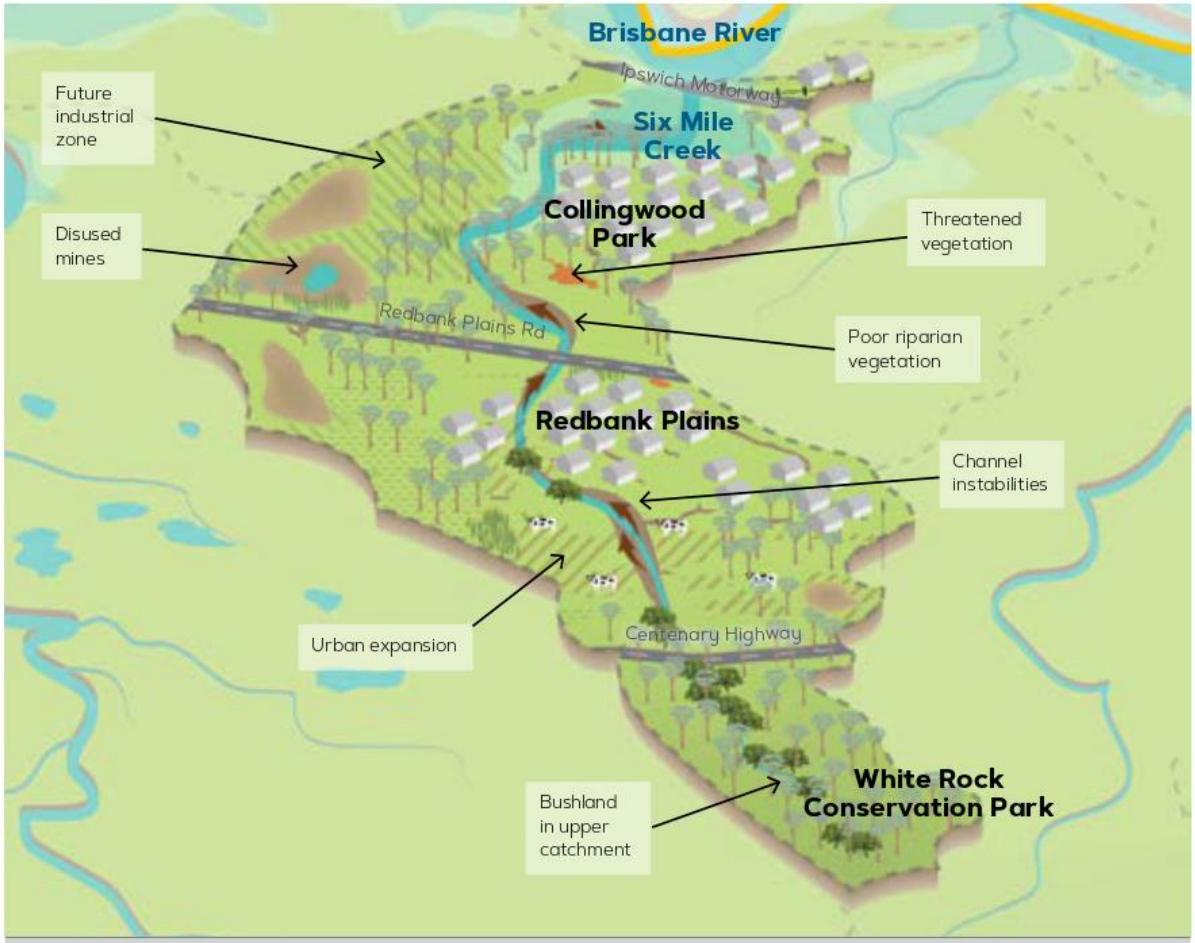
## SIX MILE CREEK

The sub-catchment covers an area of 31km². The creek flows north from the White Rock – Spring Mountain Conservation Estate and through suburban areas to join the Brisbane River downstream of Moggill Road Ferry.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Channel form and condition varies with bed and bank instabilities evident in multiple locations due to clearing of riparian vegetation and modification of channels<br>▪ Moderate aquatic habitat with no water quality, macroinvertebrate or fish data available<br>▪ Anecdotal sighting and recent detection of Platypus. |
| Riparian | ▪ Riparian condition varies with poor connectivity overall and presence of weeds<br>▪ Degradation in the middle and lower reaches as a result of riparian vegetation removal, channelization and impoundments (voids from historic mine sites). |
| Floodplain | ▪ Floodplain is a mix of bushland, cleared grassland and urban land uses<br>▪ Vegetation contains some mapped endangered communities<br>▪ Water storages including large mining voids. |
| Community | ▪ Registered Indigenous artefacts have been located<br>▪ About 7.8km of the length of Six Mile Creek is adjacent to public parks and reserves<br>▪ Number of voluntary conservation partnerships with landholders. |

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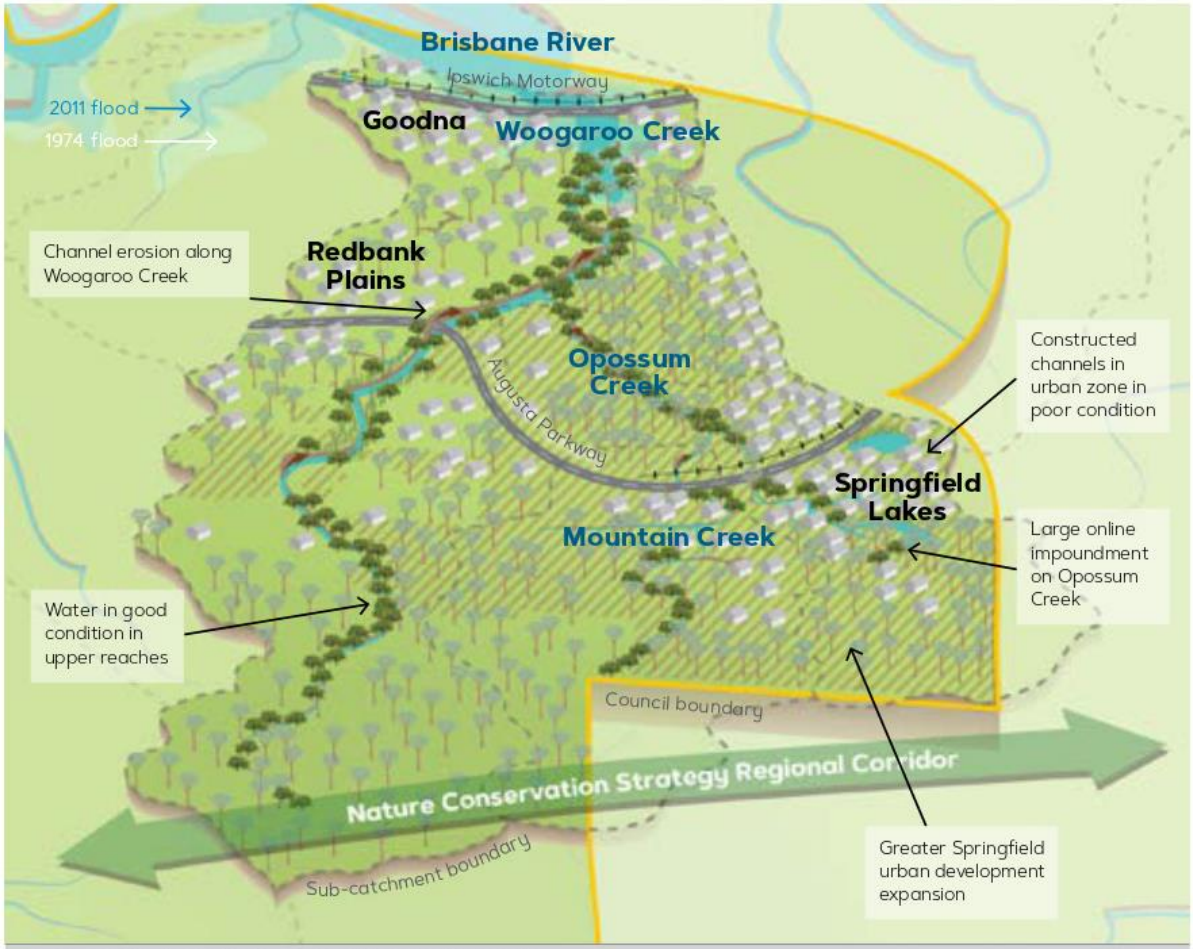
## WOOGAROO CREEK

The sub-catchment area of Woogaroo Creek and its tributaries, Mountain Creek and Opossum Creek, covers 65km² within the Ipswich LGA. The creek headwaters arise in the White Rock – Spring Mountain Conservation Estate.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Variable channel form with upper reaches in good condition and some modifications and instabilities in urbanised areas<br>▪ Moderate aquatic habitat present overall, although poor condition in the constructed channels in the urban zone<br>▪ No water quality, invertebrate or fish data available<br>▪ Platypus sighted and detected. |
| Riparian | ▪ Good riparian condition overall with good cover and connectivity along the creek but weeds are present. |
| Floodplain | ▪ Floodplain consists mostly of grassland and bushland and only a small area of urban land uses. |
| Community | ▪ Registered Indigenous cultural heritage sites identified and large number of artefacts located near Mountain Creek<br>▪ About 20km of waterways adjacent to public parks and reserves<br>▪ A number of council partnerships with landholders and community-driven initiatives. |

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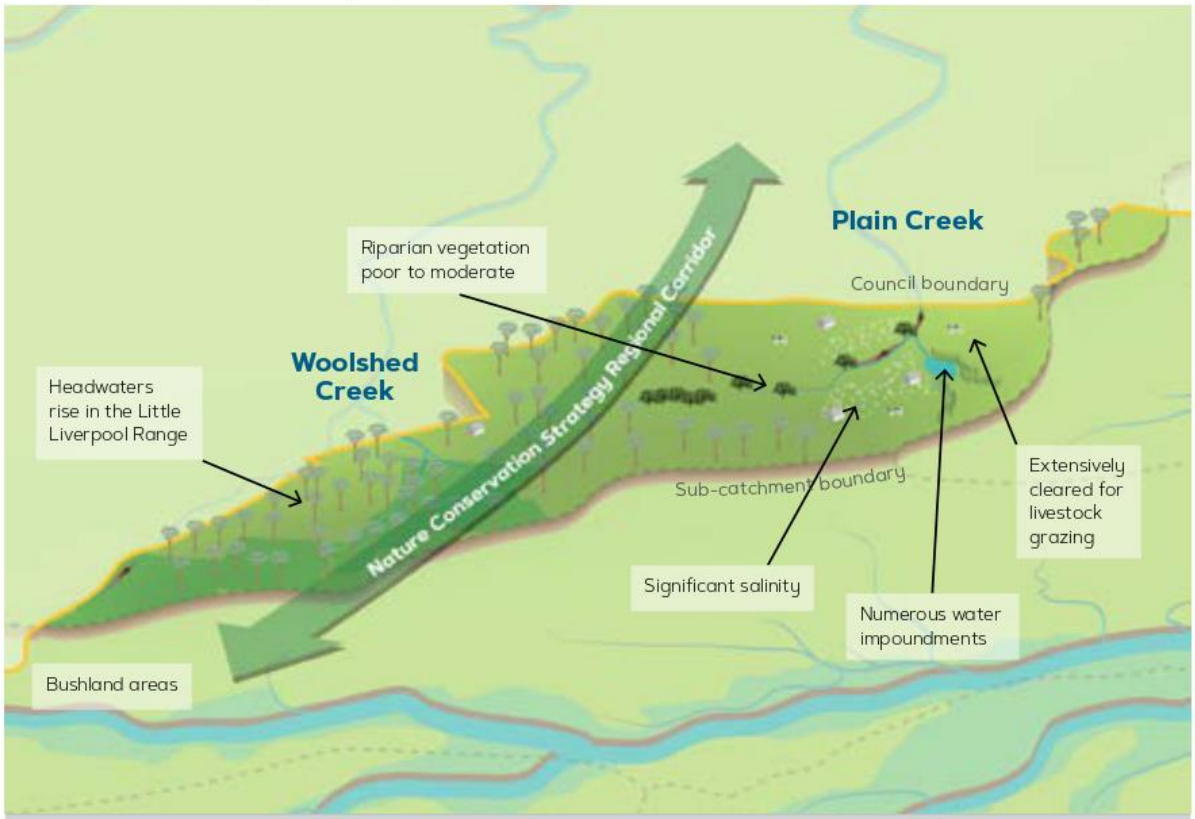
## LOCKYER CREEK CATCHMENT

The Lockyer Creek Catchment covers a total area of 2,974km$^2$ and as a whole has the highest proportion of land used for intensive agriculture in South-East Queensland. Only a small portion of the upper reaches of the sub-catchment (which includes Woolshed and Plain Creeks) are located in the Ipswich LGA.

**FIGURE 13** – Lockyer Creek Catchment

## LOCKYER CREEK

Only the upper reaches of Woolshed and Plain Creeks have a partial area within the Ipswich LGA. The headwaters of these creeks rise in the Little Liverpool Range and cover 38km² within the Ipswich LGA before they continue to flow north into the Lockyer Valley Regional Council area.




| MANAGEMENT THEME | CURRENT CONDITION |
|---|---|
| Channel | ▪ Woolshed Creek is a continuous channel with minor instabilities, while Plain Creek is a continuous, sinuous channel<br>▪ Variable channel form with widespread degradation due to stock impacts and lack of riparian vegetation<br>▪ Variable aquatic habitat condition with only six species of native fish identified in Woolshed Creek<br>▪ Macroinvertebrates and water quality in moderate condition with extremely high salinity measurements. |
| Riparian | ▪ Riparian corridor in moderate condition in Woolshed Creek and poor condition in Plain Creek. |
| Floodplain | ▪ Floodplain predominately grazing and bushland. |
| Community | ▪ Waterway mostly flows through private land except for a section of Woolshed Creek which drains through Mount Grandchester Conservation Estate<br>▪ A number of voluntary conservation agreements with landholders. |

# APPENDICES

# APPENDIX A –
## WQOs AND EVs FOR IPSWICH WATERWAYS

**TABLE A1 –** Bremer River WQOs

| Parameter | Unit | Scheduled WQOs – Bremer River | | | | |
|---|---|---|---|---|---|---|
| | | Mid estuary | Upper estuary | Lowland freshwater | Upland freshwater | FW lakes / reservoirs |
| **Turbidity** | **NTU** | <8 | <25 | <17 (<5 for Warrill Ck) | <17 (<5 for Warrill Ck) | 1–20 |
| **SS** | **mg/L** | <20 | <25 | <6 | <6 | |
| **Chl A** | **µg/L** | <4 | <8 | <5 | <2 | <5 |
| **TN** | **µg/L** | <300 | <450 | <500 | <250 | <350 |
| **TP** | **µg/L** | <25 | <30 | <50 | <30 | <10 |
| **DO** (20th – 80th percentile) | **% sat** | 85–105 | 80–105 | 85–110 | 90–110 | 90–110 |
| **pH** | | 7.0–8.4 | 7.0–8.4 | 6.5–8.0 | 6.5–8.2 | 6.5–8.0 |
| **Cond** | **µS/cm** | | | <770 (<500 for Warrill Ck) | <770 (<500 for Warrill Ck) | |
| **Secchi** (20th percentile) | **m** | >1.0 | >0.5 | | | |

**TABLE A2 –** Brisbane River WQOs

| Parameter | Unit | Scheduled WQOs – Mid Brisbane River | | Scheduled WQOs – Mid Brisbane River | | |
|---|---|---|---|---|---|---|
| | | Upland freshwater | Lowland freshwater | Upper estuary | Middle estuary | Lowland freshwater |
| **Turbidity** | **NTU** | <5 | <5 | <25 | <8 | <50 |
| **SS** | **mg/L** | <6 | <6 | <25 | <20 | <6 |
| **Chl A** | **µg/L** | <2 | <5 | <8 | <4 | <5 |
| **TN** | **µg/L** | <250 | <500 | <450 | <300 | <500 |
| **TP** | **µg/L** | <30 | <30 | <30 | <25 | <50 |
| **DO** (20th – 80th percentile) | **% sat** | 90–110 | 85–110 | 85–105 | 85–105 | 85–110 |
| **pH** | | 6.5–8.2 | 6.5–8.0 | 7.4–8.4 | 7.0–8.4 | 6.5–8.0 |
| **Cond** | **µS/cm** | <380 | <380 | | | <600 |
| **Secchi** (20th percentile) | **m** | | | >0.5 | >1.0 | |

**FIGURE A1 –** Bremer River EVs and key identifying location of different waterway types within ICC LGA

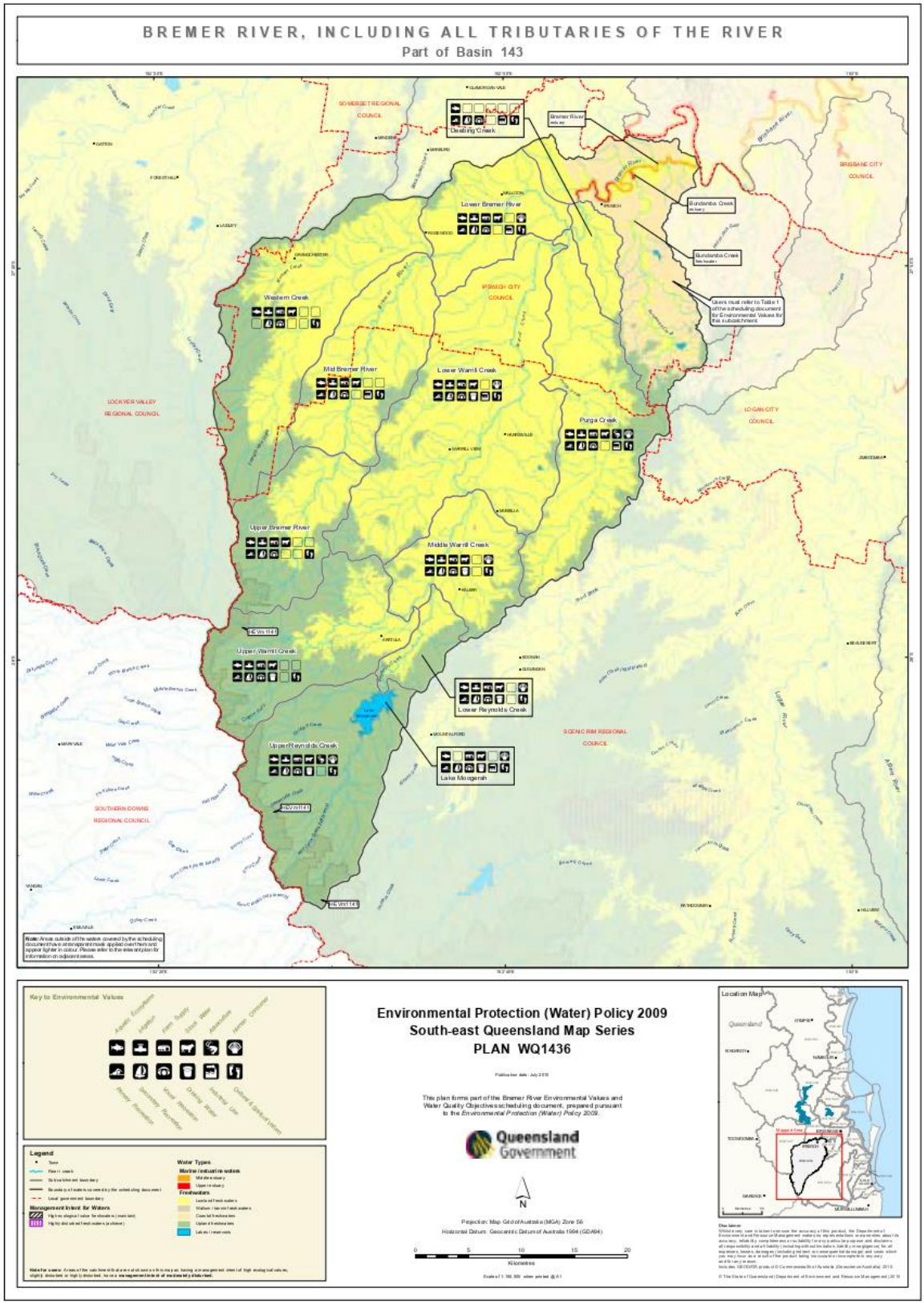
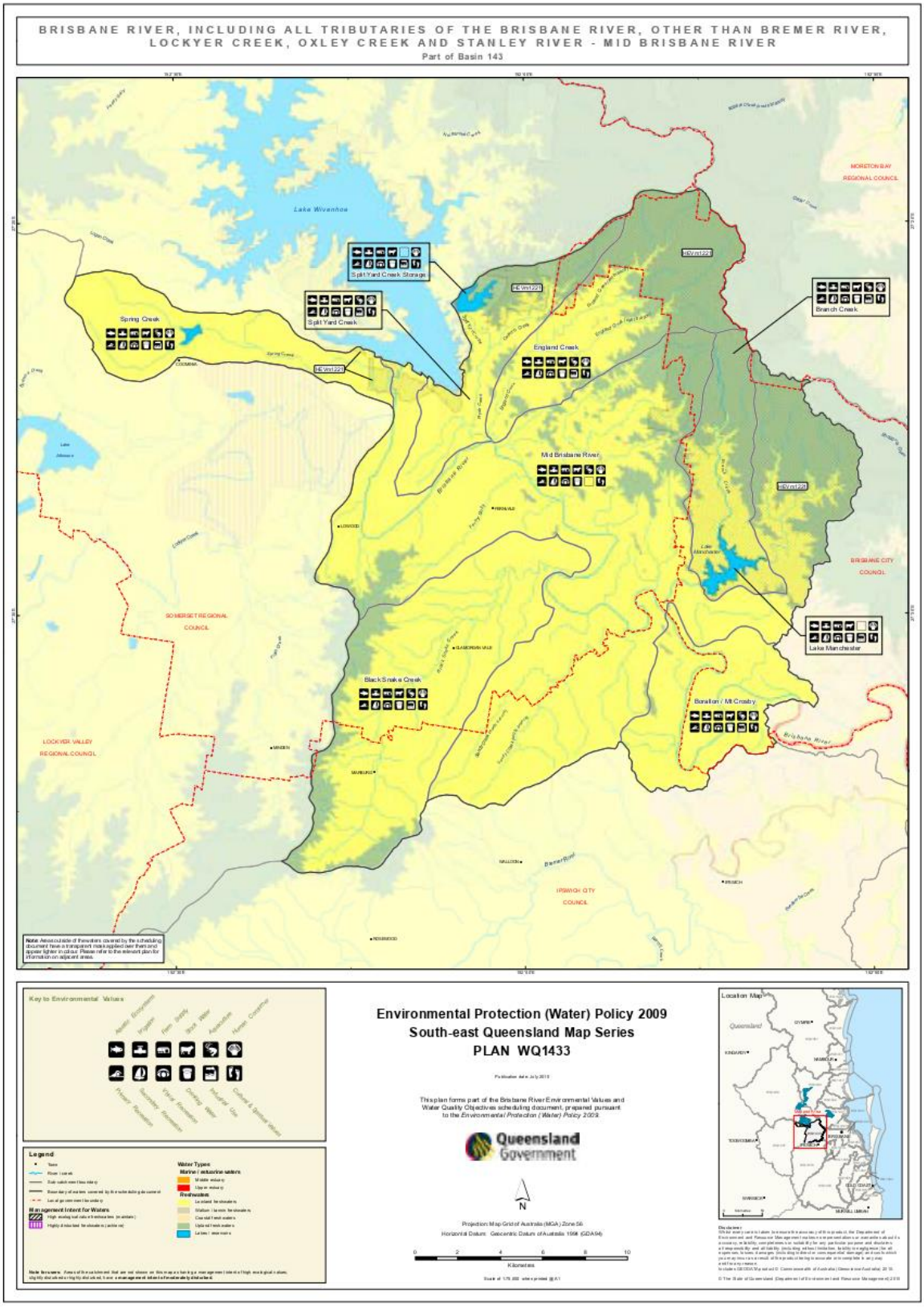


**FIGURE A2 –** Brisbane River mid (below) and Brisbane River estuary (page 67) EVs and key identifying location of different waterway types within ICC LGA



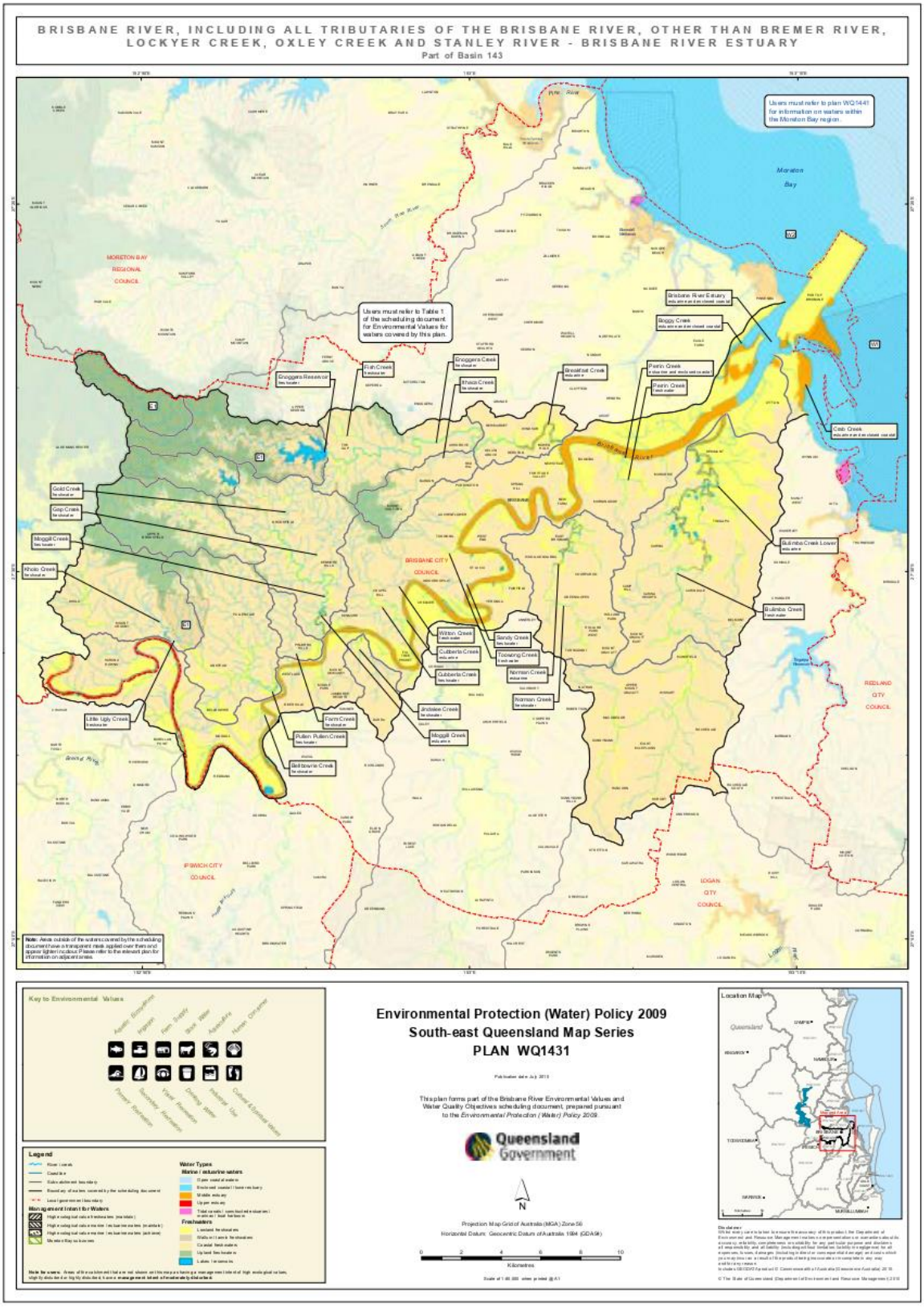
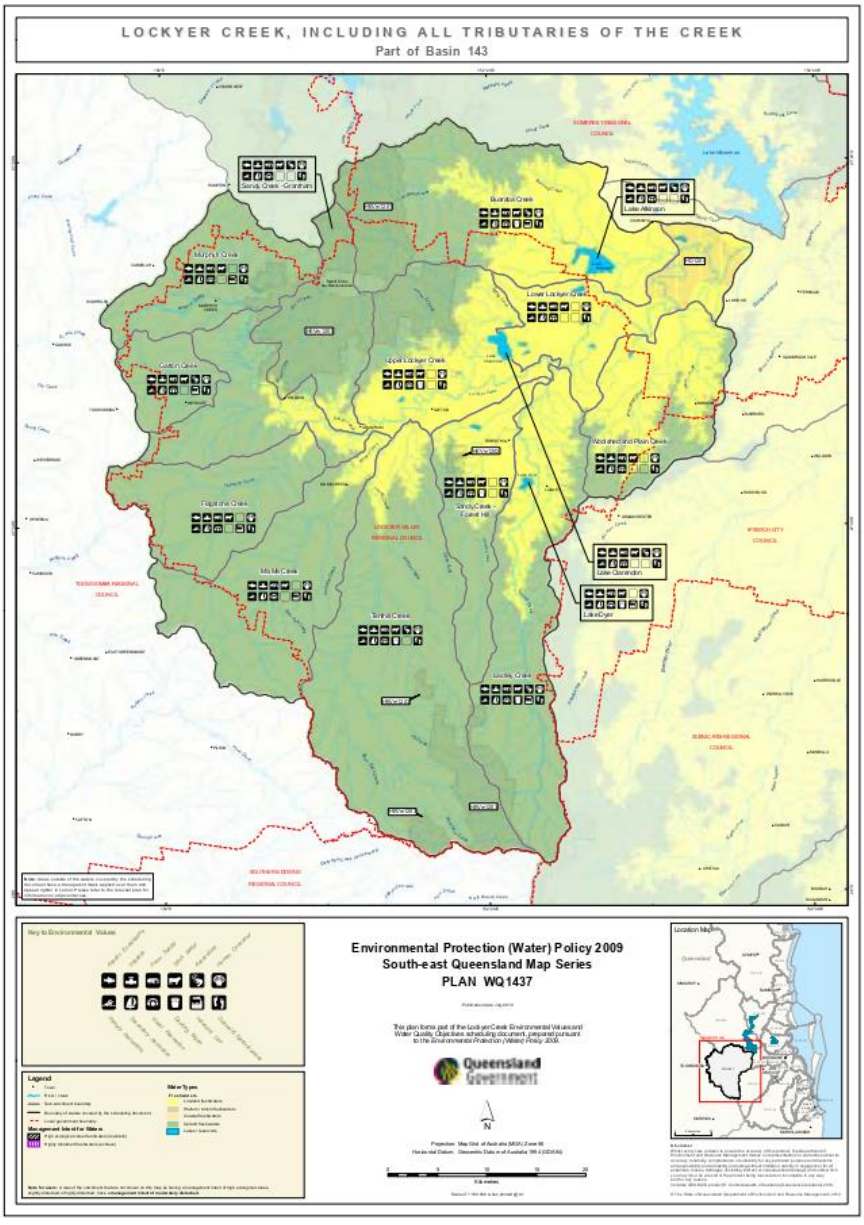

BRISBANE RIVER, INCLUDING ALL TRIBUTARIES OF THE BRISBANE RIVER, OTHER THAN BREMER RIVER, LOCKYER CREEK, OXLEY CREEK AND STANLEY RIVER - BRISBANE RIVER ESTUARY
Part of Basin 143
Users must refer to plan WQ1441 for information on waters within the Moreton Bay region.
Users must refer to Table 1 of the scheduling document for Environmental Values for waters covered by this plan.
Moreton Bay
MORETON BAY REGIONAL COUNCIL
BRISBANE CITY COUNCIL
IPSWICH CITY COUNCIL
LOGAN CITY COUNCIL
REDLAND CITY COUNCIL
Brisbane River Estuary
Boggy Creek
Breakfast Creek
Perrin Creek
Enoggera Creek
Enoggera Reservoir
Fish Creek
Ithaca Creek
Ceb Creek
Gold Creek
Gap Creek
Moggill Creek
Kholo Creek
Bulimba Creek Lower
Bulimba Creek
Wilton Creek
Sandy Creek
Cubberla Creek
Toowong Creek
Norman Creek
Jindalee Creek
Farm Creek
Pullen Pullen Creek
Bellbowrie Creek
Little Ugly Creek
Moggill Creek
Key to Environmental Values
Legend
Water Types
Marine / estuarine waters
Freshwaters
Environmental Protection (Water) Policy 2009
South-east Queensland Map Series
PLAN WQ1431
This plan forms part of the Brisbane River Environmental Values and Water Quality Objectives scheduling document, prepared pursuant to the Environmental Protection (Water) Policy 2009.
Queensland Government
Projection Map Grid of Australia (MGA) Zone 56
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
Kilometres
Location Map

**TABLE A3 –** Lockyer Creek WQOs

| Parameter | Unit | Scheduled WQO's – Lockyer Creek | |
|---|---|---|---|
| | | Upland freshwater | Lowland freshwater |
| **Turbidity** | **NTU** | <5 | <6 |
| **SS** | **mg/L** | <6 | <6 |
| **Chl A** | **µg/L** | <2 | <5 |
| **TN** | **µg/L** | <250 | <500 |
| **TP** | **µg/L** | <30 | <50 |
| **DO** (20th – 80th percentile) | **% sat** | 90–110 | 85–110 |
| **pH** | | 6.5–8.2 | 6.5–8.0 |
| **Cond** | **µS/cm** | | <380 |
| **Secchi** (20th percentile) | **m** | | |

**FIGURE A3 –** Lockyer Creek EVs and key identifying location of different waterway types within ICC LGA



# APPENDIX B – KEY NATIONAL AND STATE LEGISLATION RELEVANT TO WATERWAY HEALTH MANAGEMENT

| Document title | Description | Relevance to Ipswich City Council |
|---|---|---|
| **Federal legislation** | | |
| ***Environment Protection and Biodiversity Conservation (EPBC) Act 1999*** | Protection and conservation of nationally significant ecological communities, wetlands and species, including: world heritage properties, national heritage properties and Ramsar wetlands. | Referral agency for development applications that impact on species or communities listed under the *EPBC Act 1999*. |
| **State legislation** | | |
| ***Water Act 2000*** | Provides for the sustainable management of water in respect to: works for taking or interfering with water; water allocation; and protection and improving the physical integrity of watercourses, lakes and springs.<br>The Act controls the removal of native vegetation from nontidal watercourses through the Riverine Protection Permit, administered by DNRM&E. Includes sub-ordinate legislation:<br>▪ Water Regulation 2002<br>▪ Moreton Resource Plan<br>▪ Resource Operations Plan<br>▪ Drought Management Plans<br>▪ System Leakage Management Plans. | Council is required to develop and implement operational plans that meet requirements of the act, such as:<br>▪ Water Efficiency Management Plans (WEMPs)<br>▪ Drought Management Plan. |
| ***Environmental Protection Act 1994*** | Protection and control of degradation and Queensland's environment, encompassing the principles of Ecologically Sustainable Development.<br>Includes sub-ordinate legislation and requirements, including:<br>▪ environmental protection policys<br>▪ environmental values and water quality objectives<br>▪ state of the environment reporting. | Council is required to develop plans and address compliance to the Act, through regulatory enforcement of Environmentally Relevant Activities (ERAs) etc. |
| ***Nature Conservation Act 1992*** | Provides a framework for identifying, gazetting and managing protected areas to maintain natural conditions, and provides a list of faunal and floral scheduled species. | Council's Nature Conservation Strategy sets the direction for the protection and enhancement of Ipswich's natural areas. |
| ***Vegetation Management Act 1999*** | Regulate the clearing of vegetation in a way that:<br>▪ conserves endangered, of concern and not of concern regional ecosystems<br>▪ vegetation in declared areas<br>▪ doesn't cause land degradation<br>▪ prevents loss of biodiversity<br>▪ maintains ecological processes<br>▪ reduce greenhouse gas emissions.<br>Provides vegetation management codes that quantify riparian buffer widths for different water types. Sets retention of riparian vegetation and retention of clumps or corridors. | Council meets requirements under the Act through planning codes for assessment of vegetation clearing. |

| Document title | Description | Relevance to Ipswich City Council |
|---|---|---|
| ***Fisheries Act 1994*** | Management and protection for fish resources and fisheries habitats. | Council meets requirements under the Act through referral of activities that impact on freshwater and marine fish habitats and the clearing of marine plants in tidal areas. |
| ***Coastal Protection and Management Act 1995*** | Provides for the protection, conservation, rehabilitation and management of the coast, coastal zone and its resources. Includes:<br>▪ Regional Coastal Management Plans<br>▪ Coastal Management Districts. | Restricts the type and amount of development within the Coastal Management Districts. Council meets requirements under the Act through referral of relevant development applications that impact on tidal waterways. |
| ***Planning Act 2016*** | Provides the planning framework for ecological sustainable development across Queensland. This includes:<br>▪ planning<br>▪ development assessment<br>▪ infrastructure (charges etc)<br>▪ offences and enforcement<br>▪ dispute resolution. | Council is required to develop local planning instruments (planning scheme, planning scheme policies etc). This includes requirements for development to protect the natural environment, waterways and wetlands. |
| ***Biosecurity Act 2014*** | Provides a framework for controlling declared plants and animal pests, diseases and contaminants. | Council's Biosecurity Plan (2018–2023) sets the direction for the Management of invasive plants and animals across Ipswich. Council is responsible for controlling invasive species on council land and to work with landholders in a regulatory function. |
| ***State Planning Policy 2017*** | Supports the *Planning Act 2016* by setting the State's interests that apply to planning. These state interests include the following environment and heritage interests:<br>▪ biodiversity<br>▪ coastal environment<br>▪ cultural heritage<br>▪ water quality. | Council's planning scheme reflects the state interests in terms of requirements for environmental and waterway protection. |
| ***Environmental Offsets Act 2014*** | Council's planning scheme reflects the state interests in terms of requirements for environmental and waterway protection. | Council offsets reflects the Act requirements. |
| ***Rivers Improvement Trust Act 1940*** | Outlines responsibilities of River Improvement Trusts which are statutory bodies established to protect and improve rivers. | Council works with the Ipswich Rivers Improvement Trust to undertake works within waterways across Ipswich. |
| ***Aboriginal Cultural Heritage Act 2003*** | Recognises, protects and conserves Aboriginal cultural heritage in Queensland. | Council recognises waterways and wetlands have deeply embedded significant value as part of cultural landscapes and are offered protections as such. |

# APPENDIX C – REFERENCES

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*Healthy Waterways and QUT (2016) Social Science Research Report*

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*Ipswich City Council (2015) Ironpot Creek Corridor Plan*

*Ipswich City Council (2015) Bundamba Creek Corridor Plan*

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*Ipswich City Council (2016) Local Government Infrastructure Plan Supporting Documents Public Parks*

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*Lakshyyata Suri (2016) An Investigation of Microbial Pollution at Recreational Water Sites within the Local Government Area of Ipswich*

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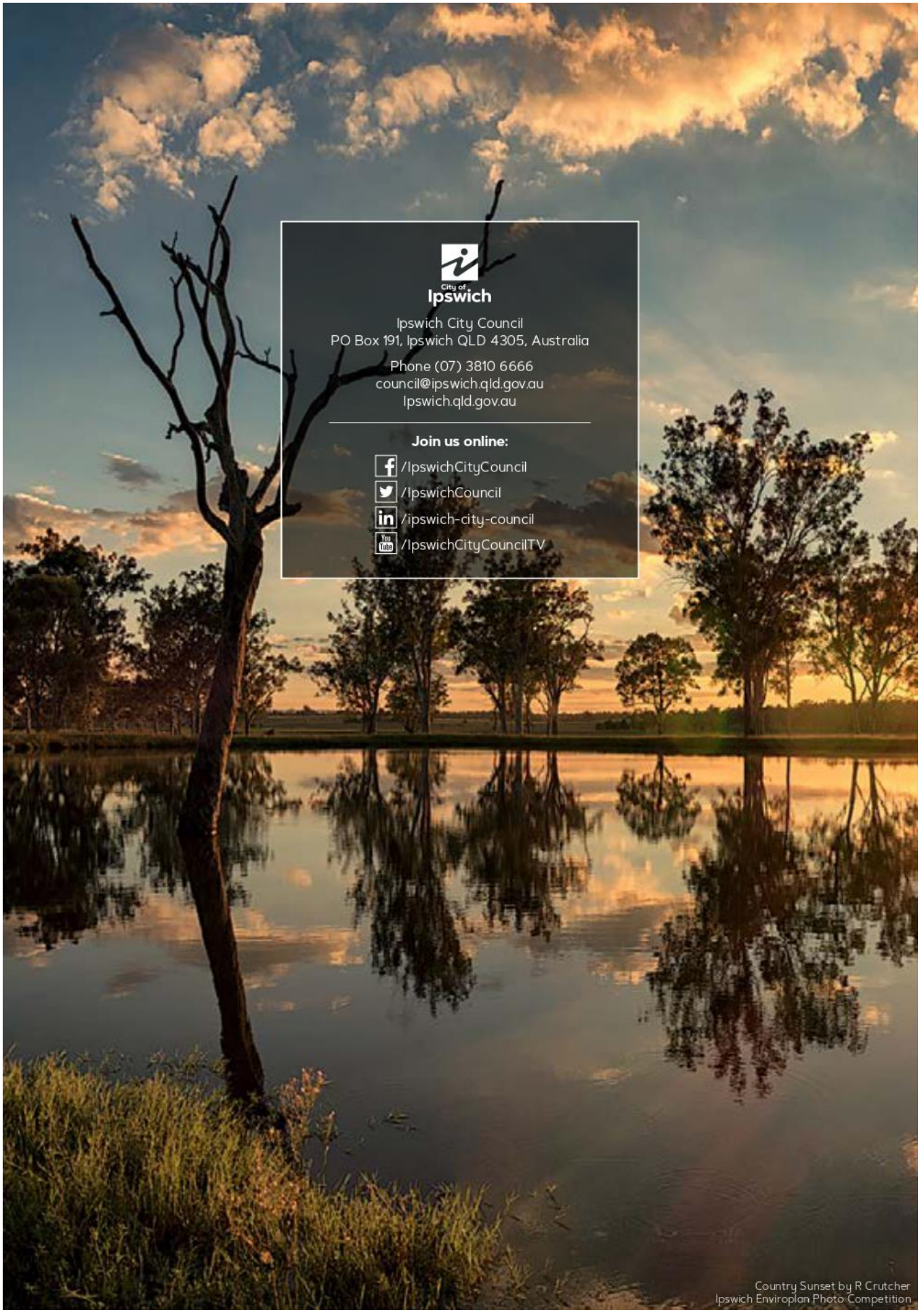
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Ipswich Enviroplan Photo Competition