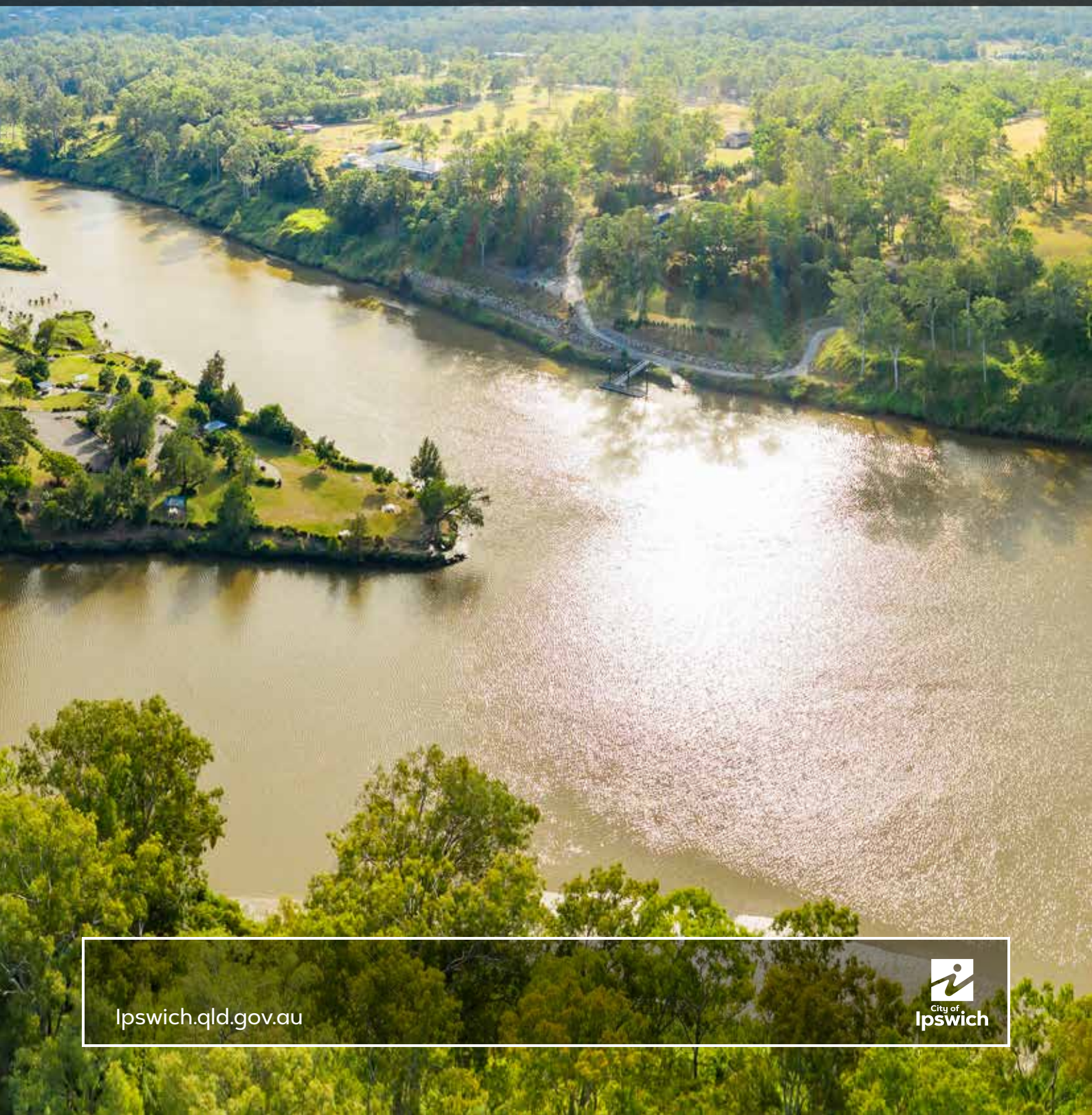
City of Ipswich

Waterway Health Strategy

2020



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City of Ipswich

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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.

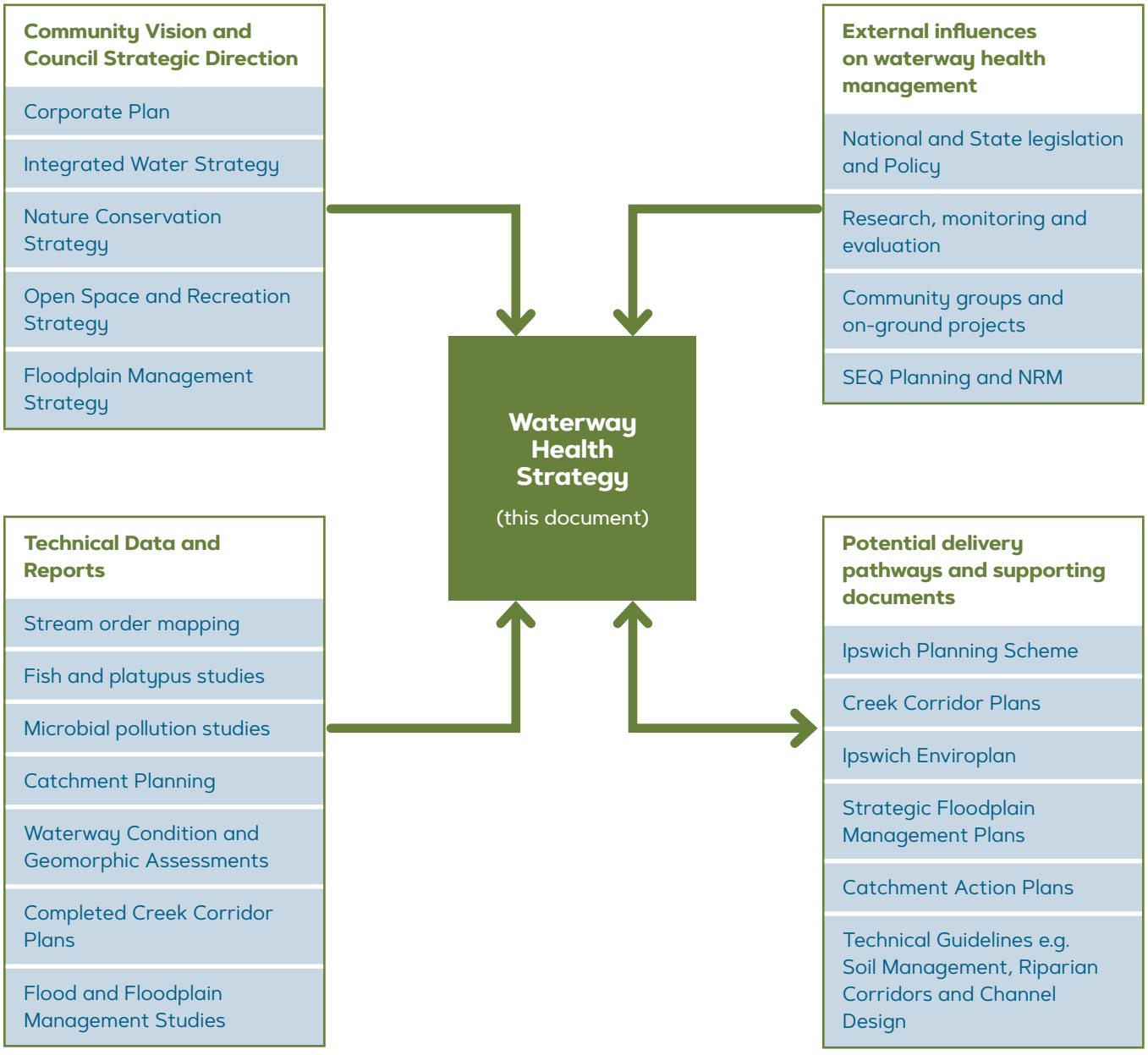
The strategy has taken a sub-catchment based approach for on-ground management actions to ensure that it adequately reflects the local context and condition for that catchment, and gives consideration to the varying constraints and opportunities associated with urban and rural waterways. The targeted 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

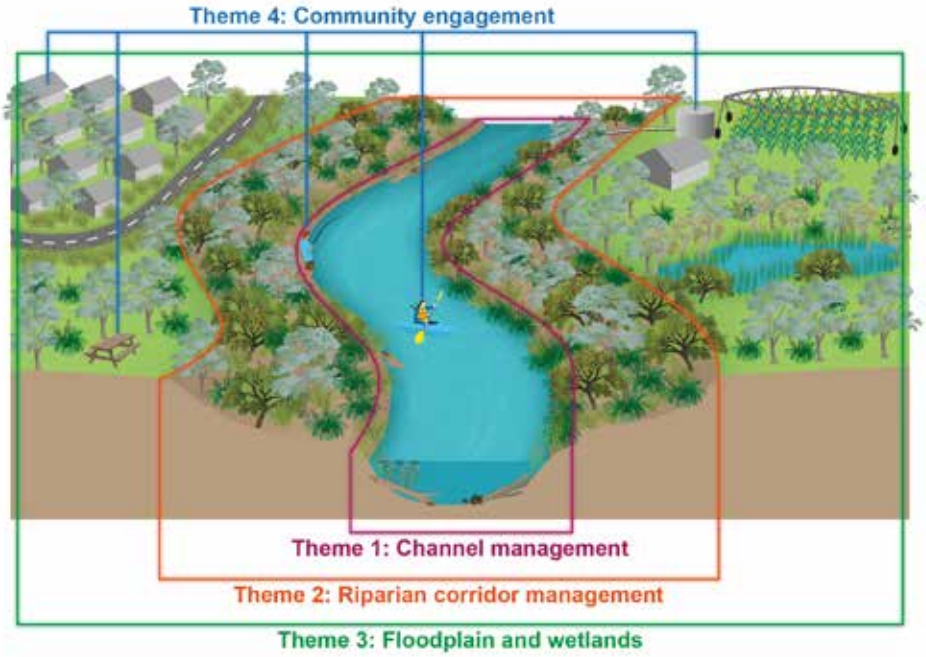
Ipswich waterways and wetlands provide important values to the community regardless of where they sit within the landscape, from mountain peaks, rural landscapes, to urban backyards and the heart of the city. They help sustain our way of life and play a pivotal role in maintaining a liveable city. Ipswich 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.

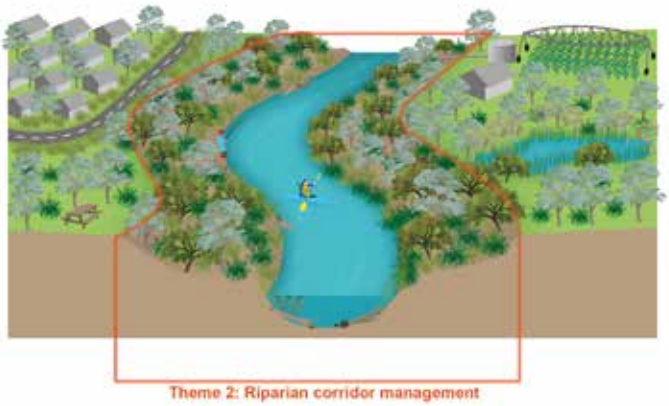
The waterway channel, riparian and floodplain zone together are referred to as the waterway corridor. Community engagement and participation are essential to achieving the vision of improving waterway health, and have been considered as the fourth theme of a waterway corridor, as shown on Figure 2.

FIGURE 2 – Waterway management action themes within the waterway corridor

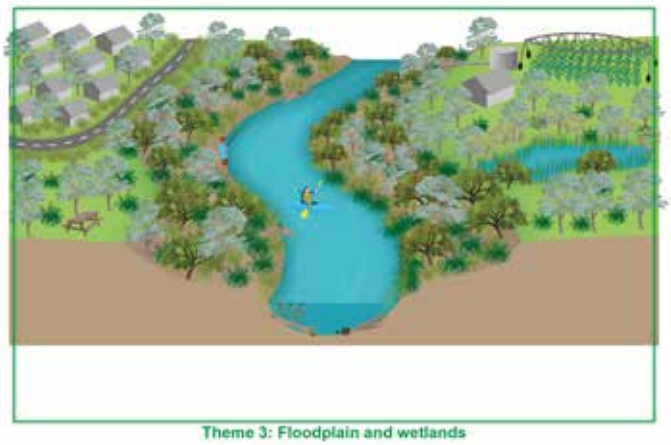


Theme 1: **Channel**

Theme 2: **Riparian**



Theme 3: **Floodplain**



Theme 4: **Community**

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.

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

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

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.

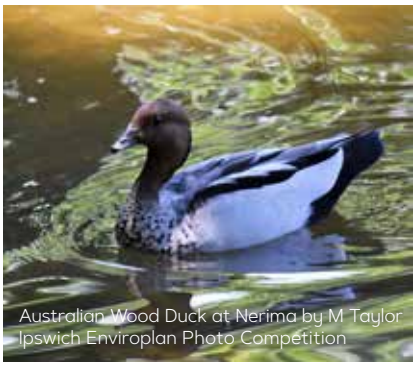
These activities are done as components of council's core activities and functions, including:

- **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

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.

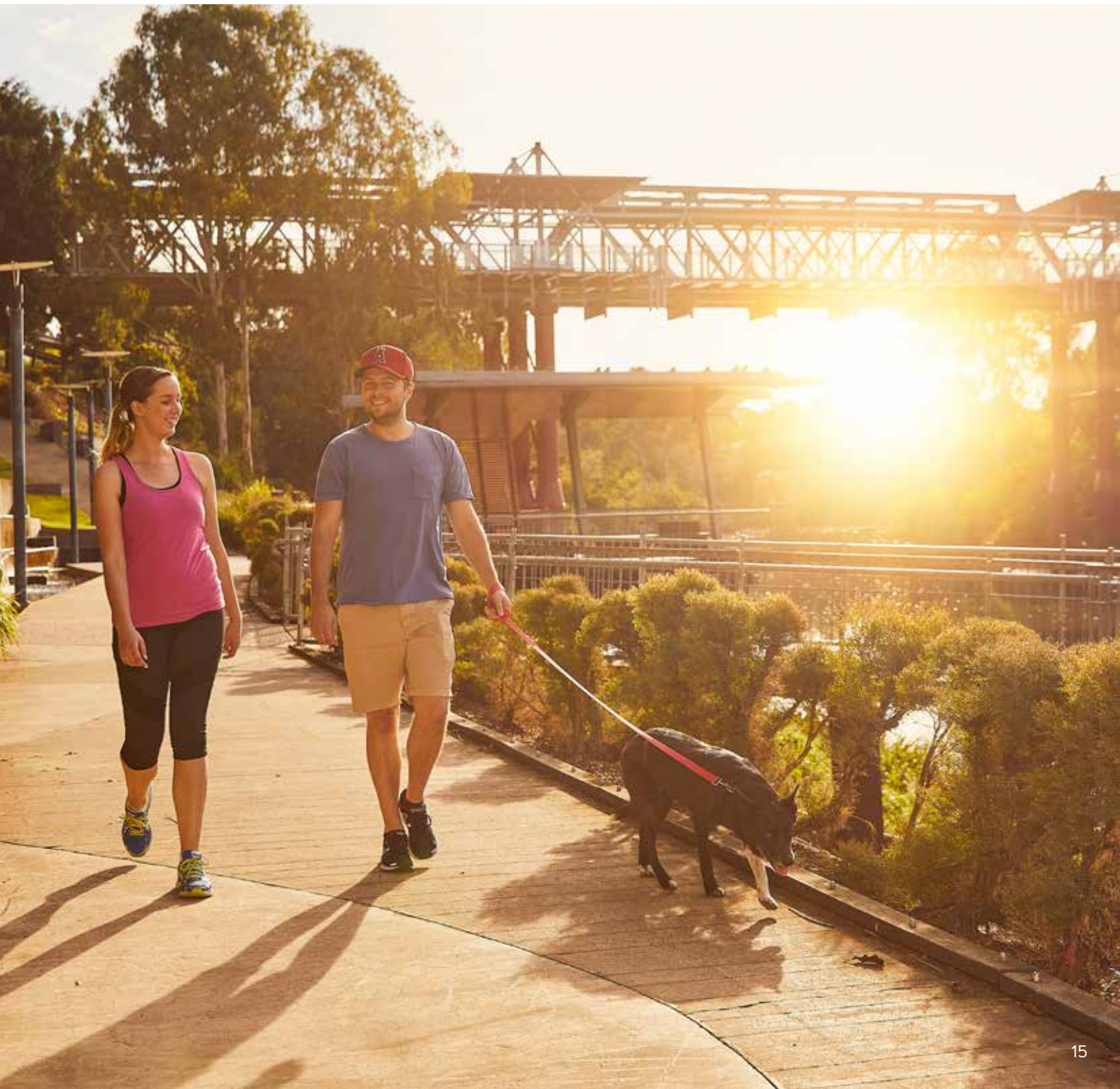
HOW WILL WE GET THERE?

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.



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:

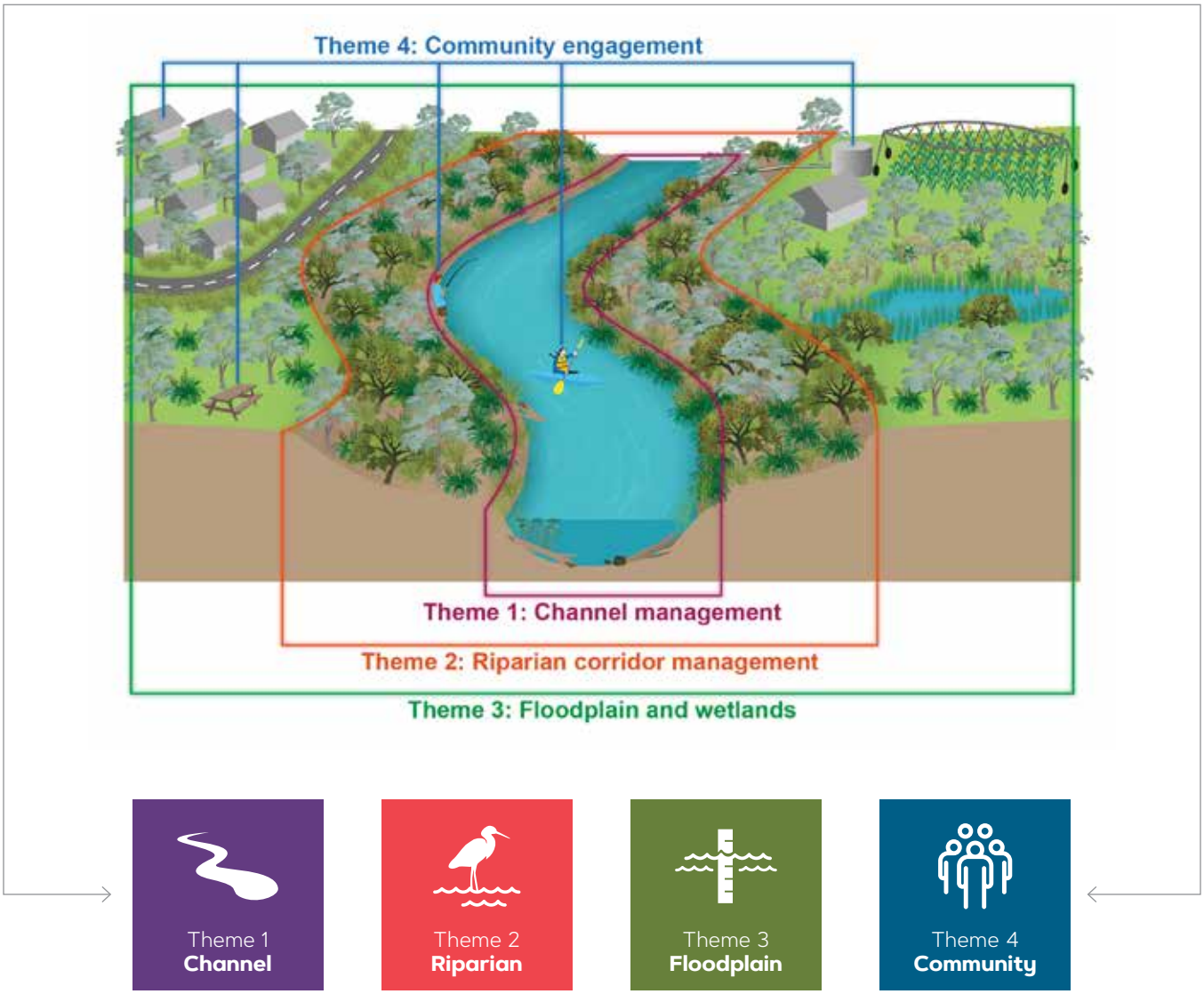
1. Deliver strategic tree planting and revegetation with the community along urban waterways
2. Support community and natural resource management groups to deliver weed removal and revegetation projects
3. Update the Riparian Revegetation Guideline to include wetland revegetation
4. Provide riparian 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

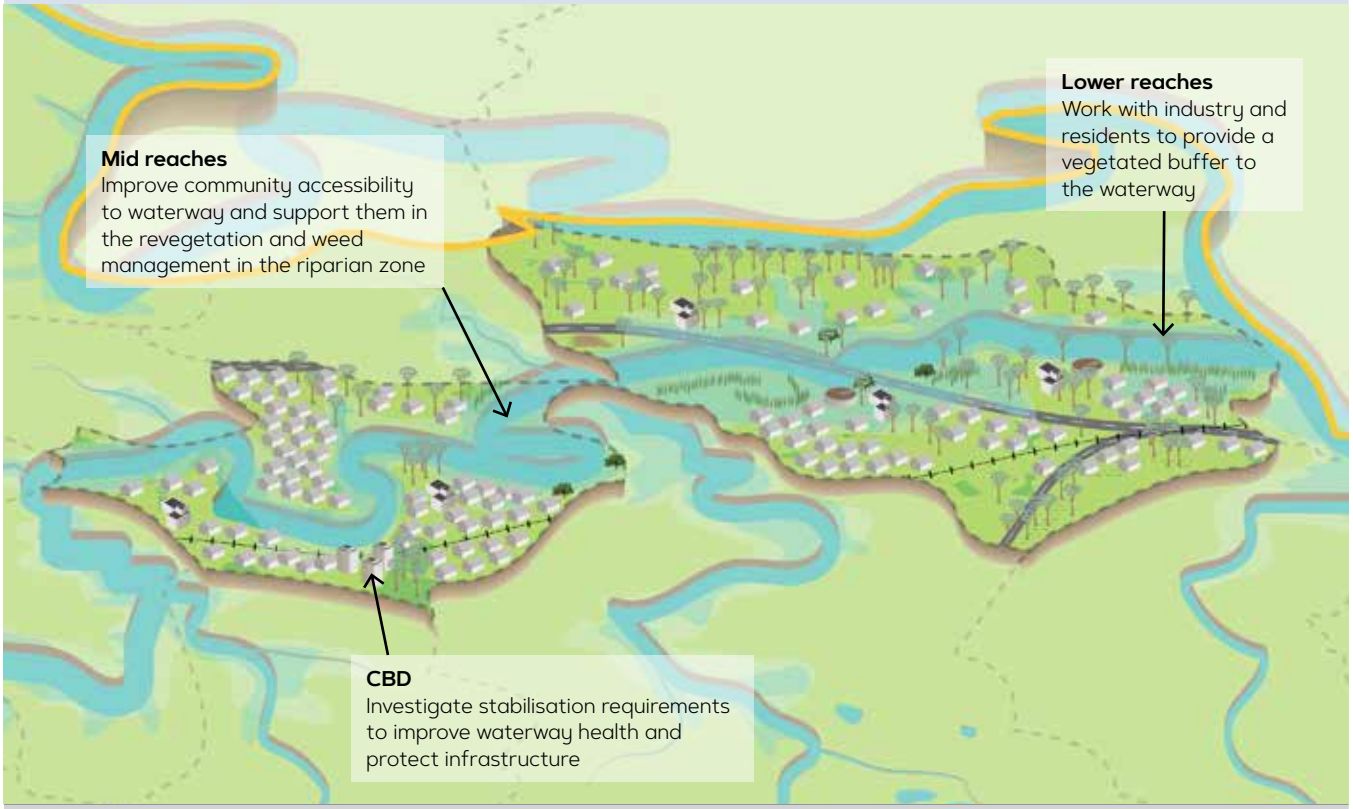
FIGURE 5 – Bremer River Catchment and Sub-Catchments

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.



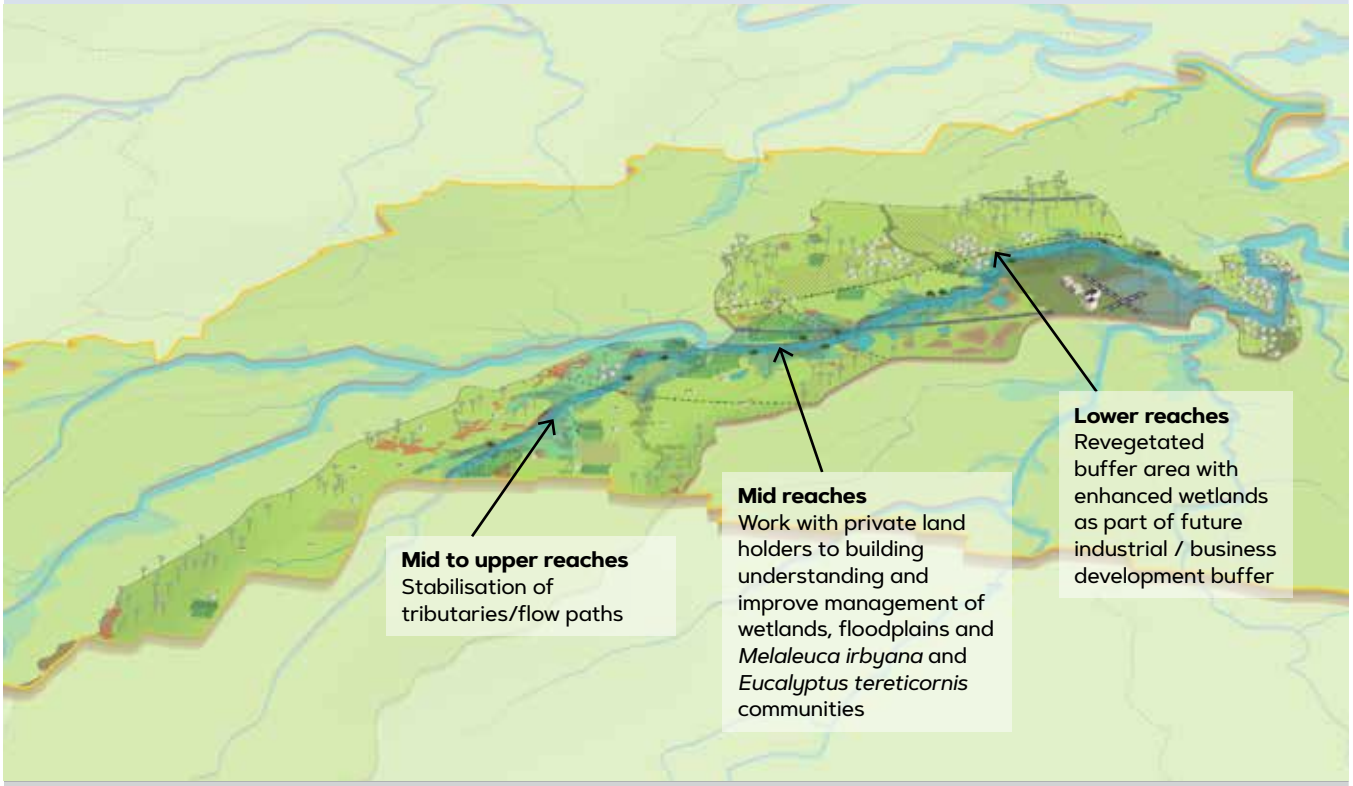
PRIORITY MANAGEMENT THEMES	TARGETED ACTIONS
Channel	1. Investigate stabilisation requirements for the Bremer River CBD reach to improve waterway health and protect public infrastructure.
Riparian	1. Revegetate and control weeds to improve riparian corridor condition and deliver multiple benefits 2. Consider 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 2. Provide community access to and views of the river public open spaces for a range of recreational experiences 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 2. Identify wetlands for acquisition through local and state government funding mechanisms 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 2. Target and support landholders to protect and manage existing wetlands and waterways through the Landholder Partnerships Program 3. Identify properties for protection of Swamp Tea-tree and Queensland Blue Gum community through conservation partnerships 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 114km^2 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.

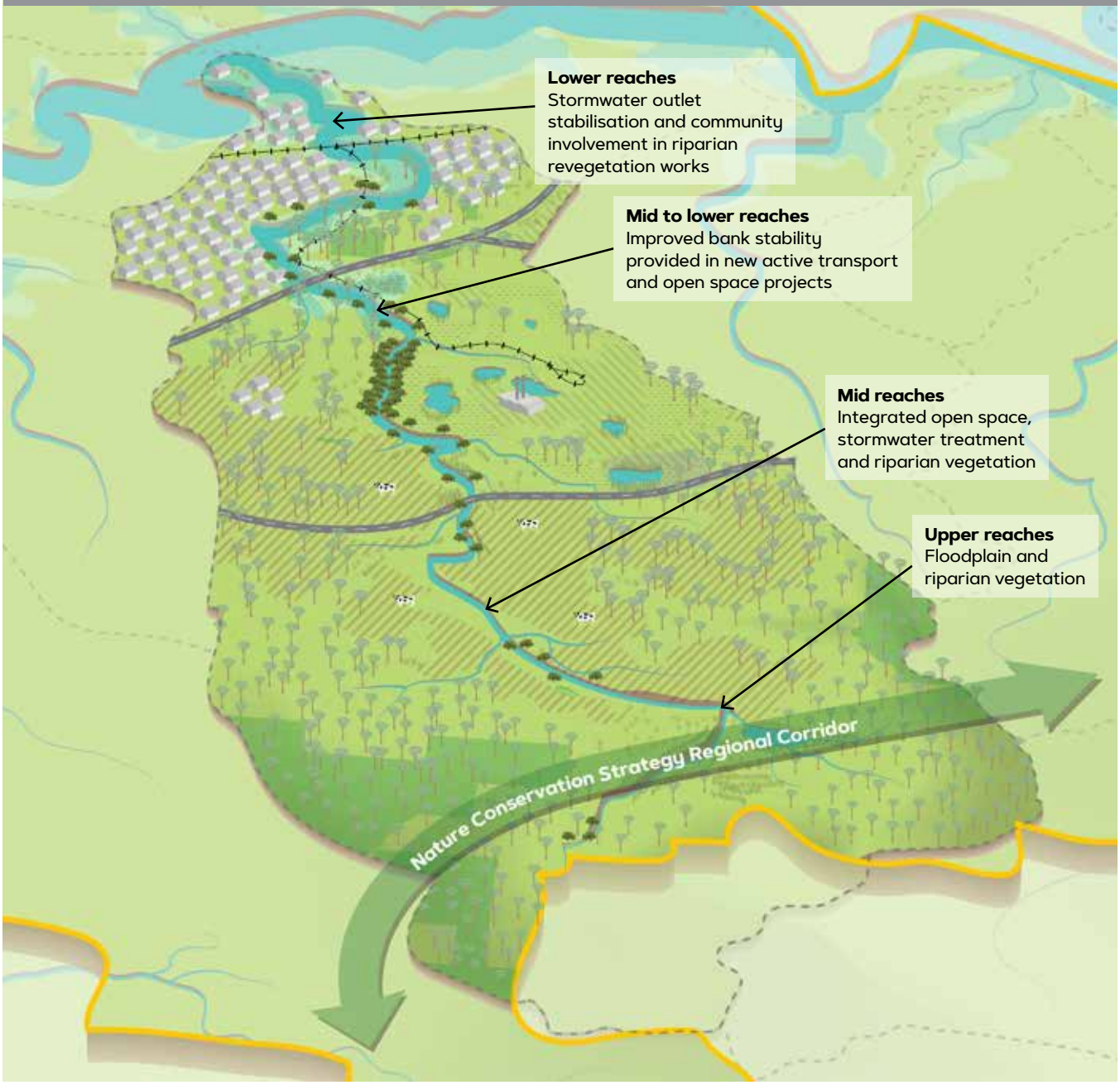
The creek flows through rural, industrial and urban landscapes before entering the Bremer River estuarine. The upper sub-catchment is dominated by agricultural land uses and the lower sub-catchment is predominately urban. The middle reaches have agricultural and extractive industries and host the Swanbank 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 2. Retain lower order streams where possible, or design stormwater management systems to replicate this function 3. Undertake waterway stabilisation projects in priority reaches 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 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



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.

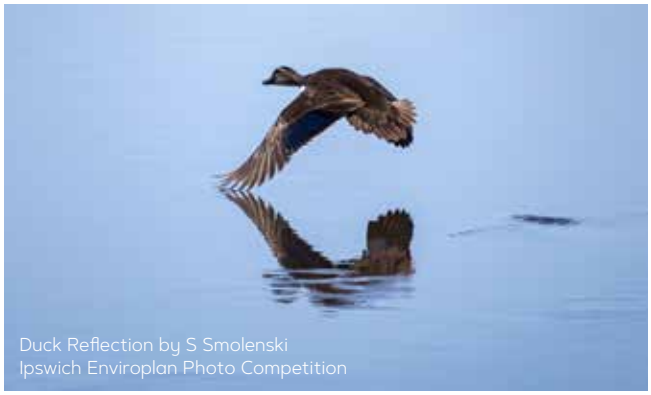
The creek channel is predominately natural, although there are some concrete sections in the urban area. The upper sections of the creek have experienced significant erosion. A major sand slug (in stream sedimentation) is present and completely infilling the channel with sand, approximately two kilometres 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.

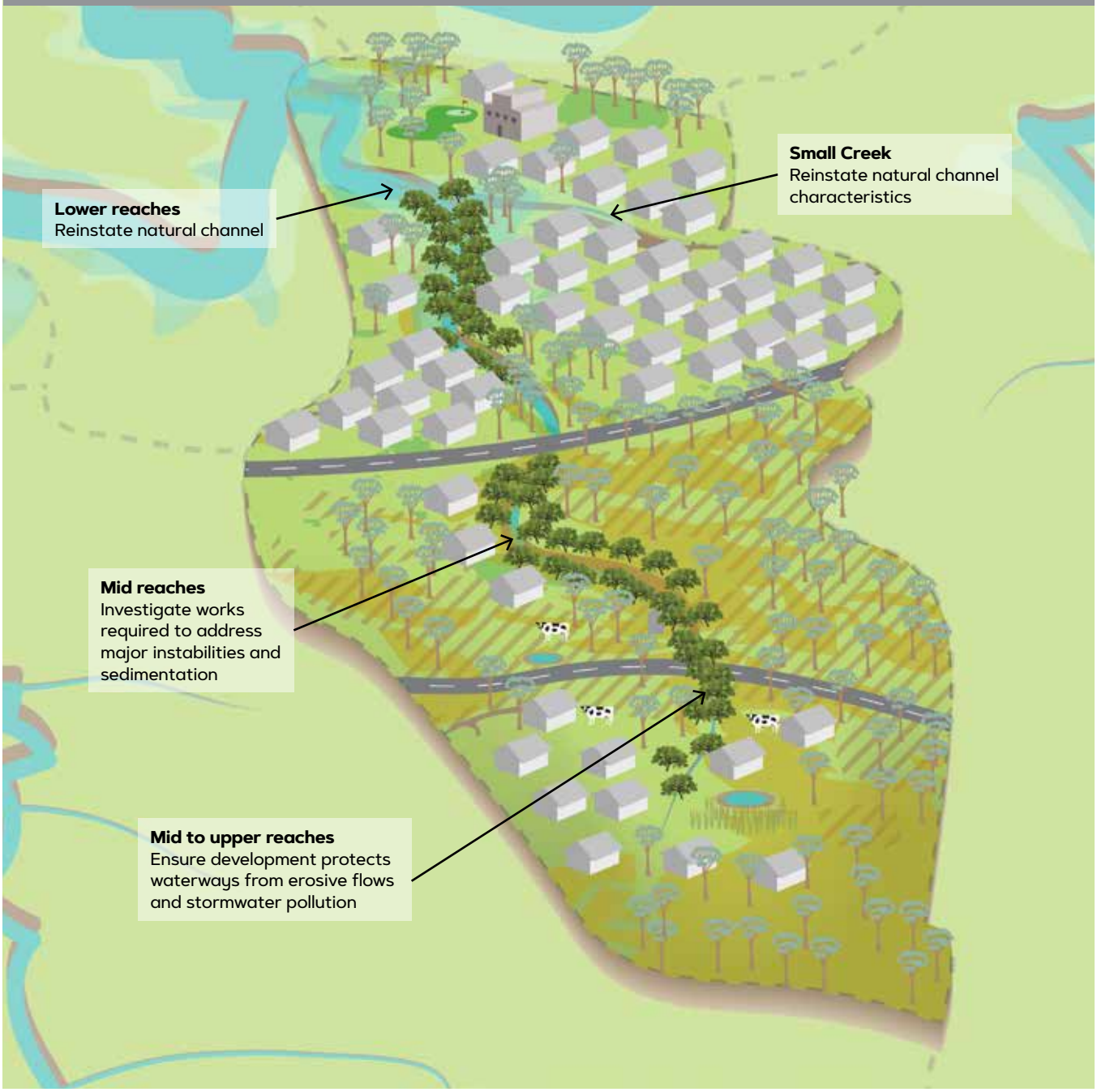
PRIORITY MANAGEMENT THEMES	TARGETED ACTIONS
Channel	1. Investigate the extent of works required to address extensive erosion by stabilising banks and reducing volumes of sediment contributing to the established sand slug in the upper sub-catchment 2. Stabilise channels, provide construction phase erosion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

DEEBING CREEK



Morning Breakfast by L List
Ipswich Enviroplan Photo Competition

Native Wildlife
by S Reberger
Ipswich Enviroplan
Photo Competition

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.

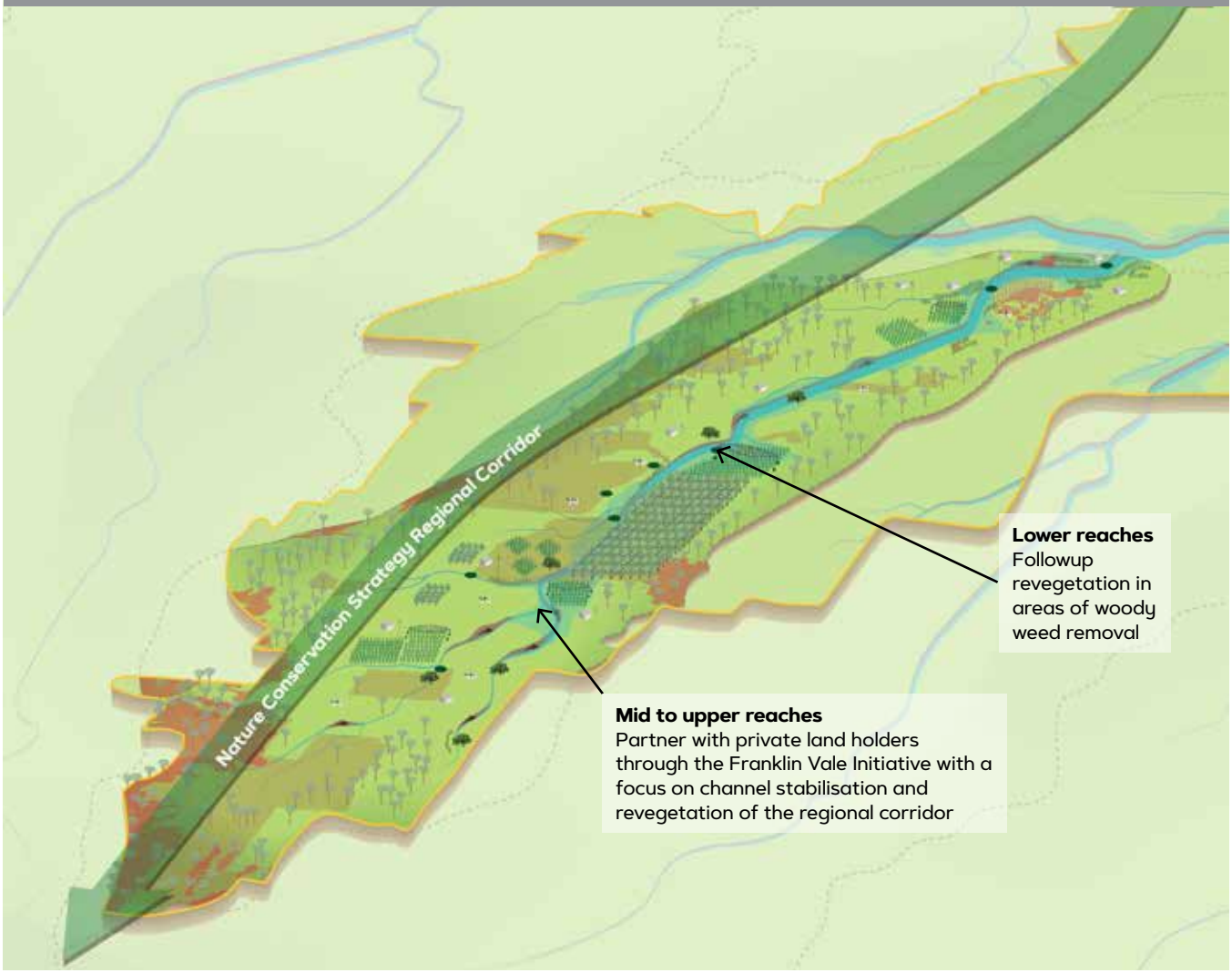
Franklin Vale Creek is characterised as a single continuous channel with anabranching sections. The creek has experienced instabilities due to the removal of vegetation and stock access, especially in the upper tributaries, which have experienced major erosion.

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 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



IRON POT CREEK

Iron Pot Creek is a tributary of the Bremer River and is a small 16.7km^2 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.

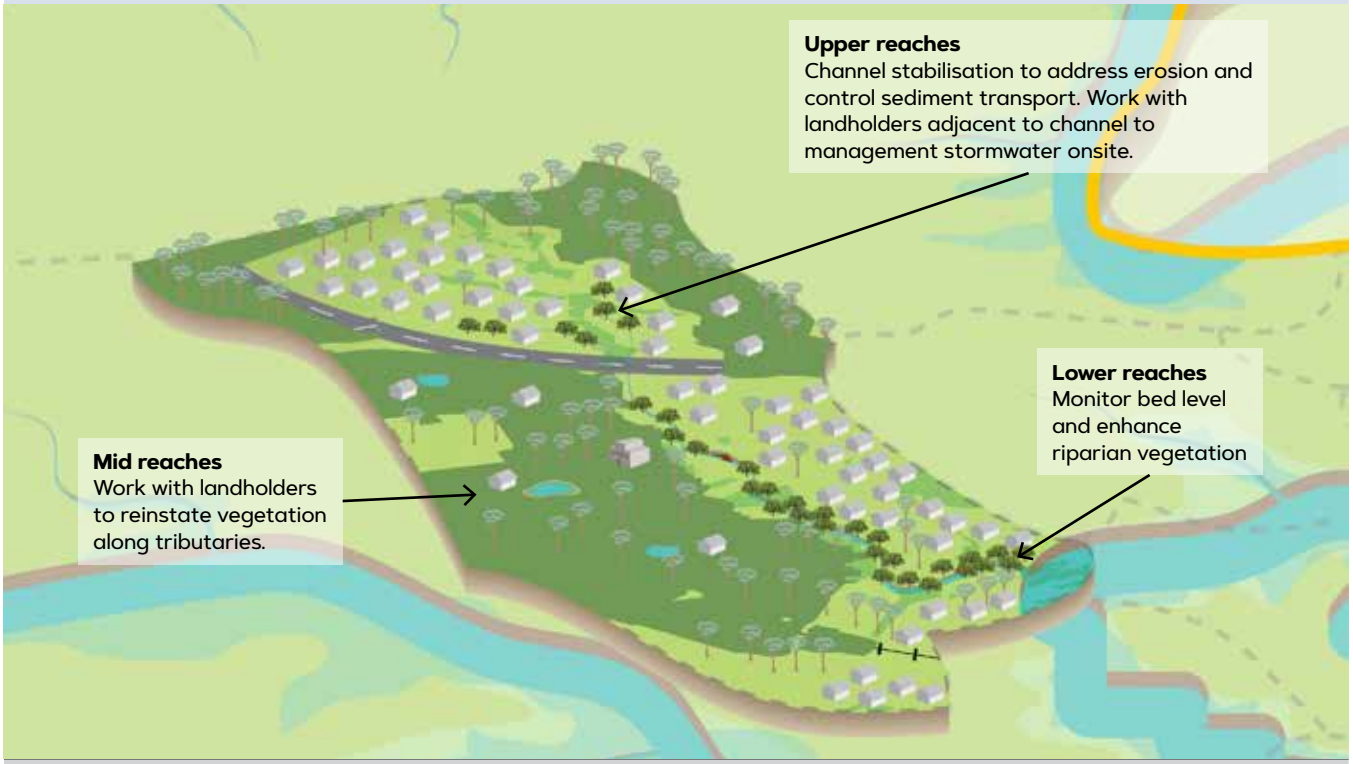
The sub-catchment contains mixed land uses, including urban, large lot residential and rural residential. Despite the level of urbanisation, the floodplain and riparian corridor is predominantly vegetated, creating a continuous riparian corridor. There are a large number of public parks and reserves 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 2. Address grade difference between Iron Pot Creek and Bremer River to protect waterway values upstream 3. Incorporate floodplain engagement, where suitable, into planned works in the middle corridor area.

MIHI CREEK

The Mihi sub-catchment is 5.9km^2 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 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.

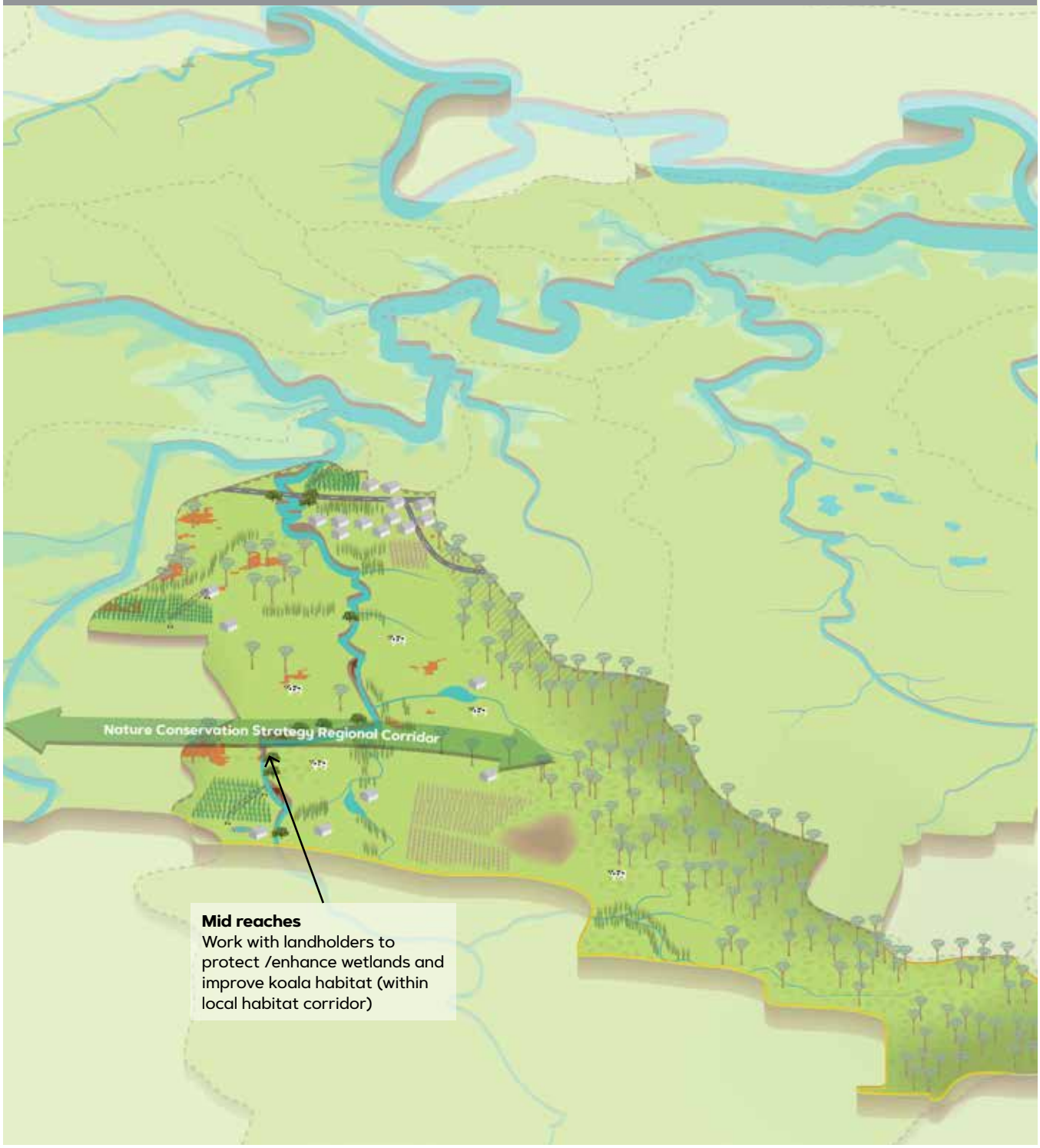
The sub-catchment contains the Flinders-Goolman Conservation Estate which forms part of the largest remaining tract of lowland eucalyptus forest in South-East Queensland. The sub-catchment also contains mapped endangered ecological communities. There are a number of private properties with conservation 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 2. Preserve movement of the waterway within a broad floodplain 3. Improve connectivity between the channel, floodplain and wetland 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 2. Target and support landholders to protect and manage existing wetlands, through partnership programs 3. Identify properties to target for protection of Swamp Tea-tree through conservation partnerships 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)

SANDY CREEK (TIVOLI)

The Sandy Creek (Tivoli) sub-catchment covers an area of 8.7km^2 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.

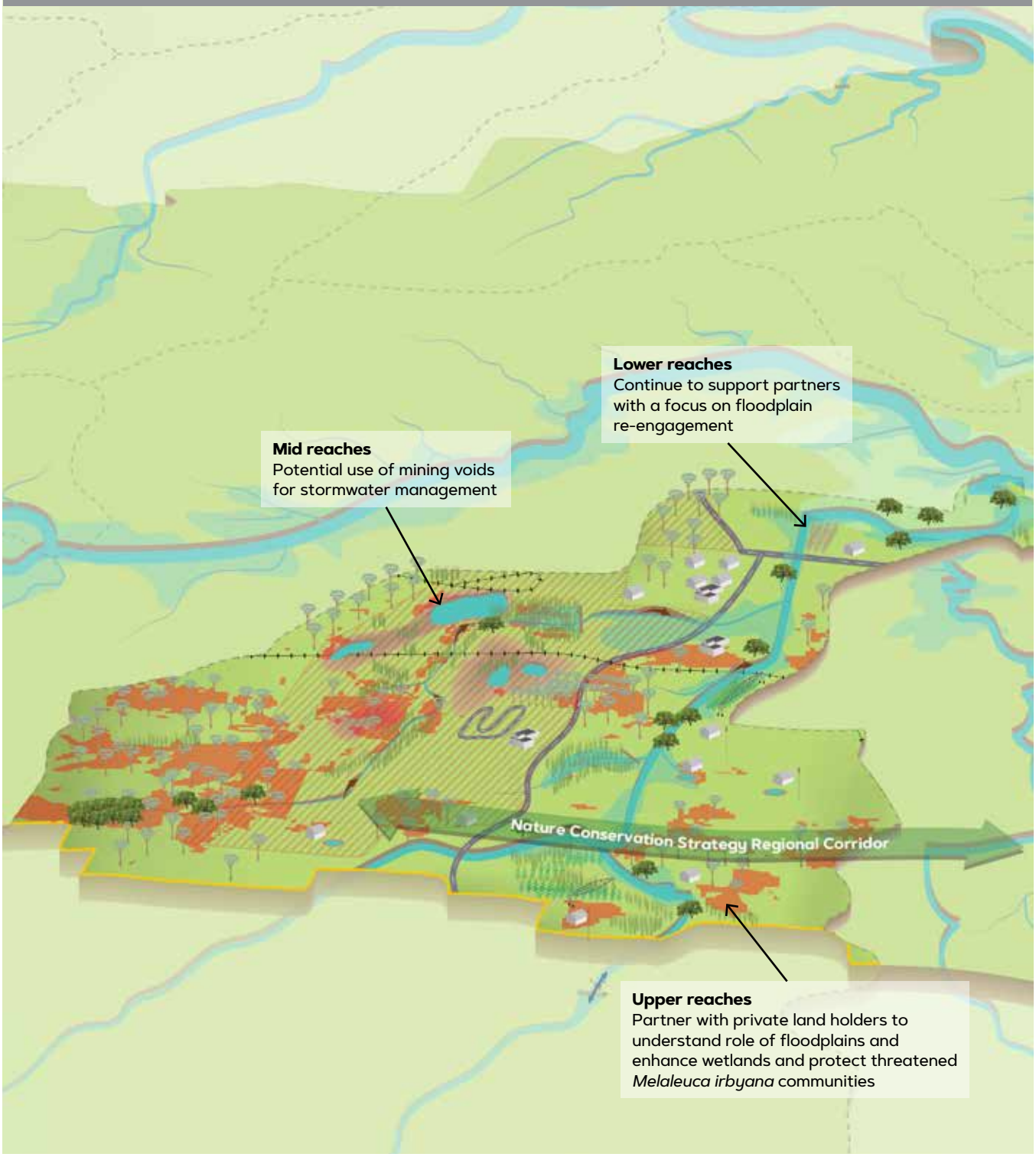
Agriculture is the predominant land use within the sub-catchment, with mostly irrigated horticulture on the floodplains and grazing on the hill slopes. A large area of the sub-catchment is planned for the Ebenezer Regional Industrial Area, which is one of the larger industrial areas in South-East Queensland 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 2. Protect and enhance existing wetlands, and improve connectivity to the main channel 3. Protect pockets of Swamp Tea-tree community within the floodplain areas 4. Develop innovative stormwater management measures with developers in the Ebenezer Regional Industrial Area 5. Retention and rehabilitation of streams of order 1 and 2.
Community	1. Increase community understanding of the benefits of wetlands and floodplains 2. Target and support landholders to protect and manage existing wetlands using partnerships programs 3. Identify properties to target for protection of Swamp Tea-tree communities through conservation programs 4. Deliver floodplain improvements works through offsets and partnerships.

WARRILL CREEK



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.

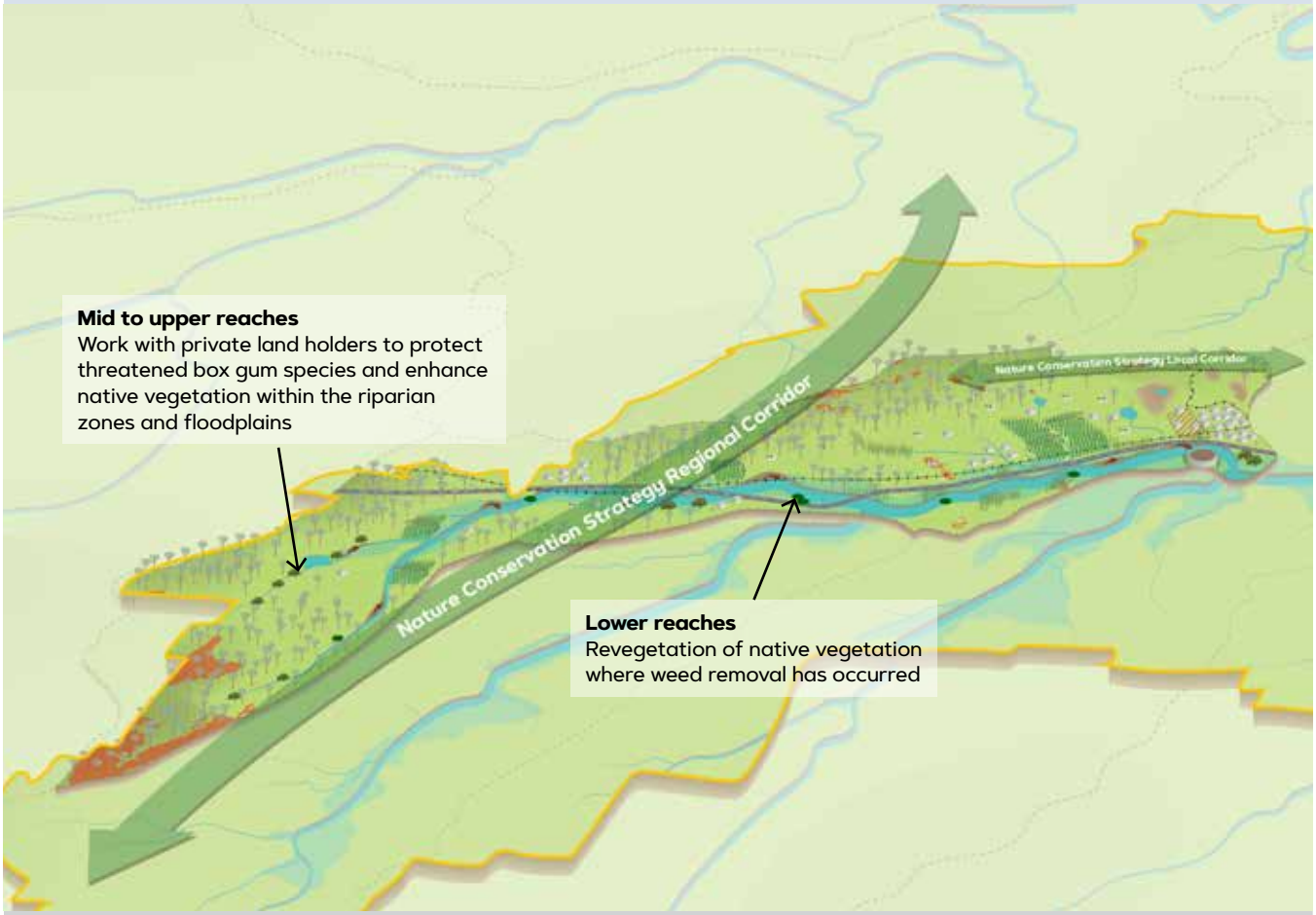
The predominant land use is grazing, with minor instances of cropping and mining. Urban expansion is possible in the lower sub-catchment area.

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 35km^2 within the Ipswich LGA. The remaining 64 per cent of the lower sub-catchment area is in the Somerset LGA.

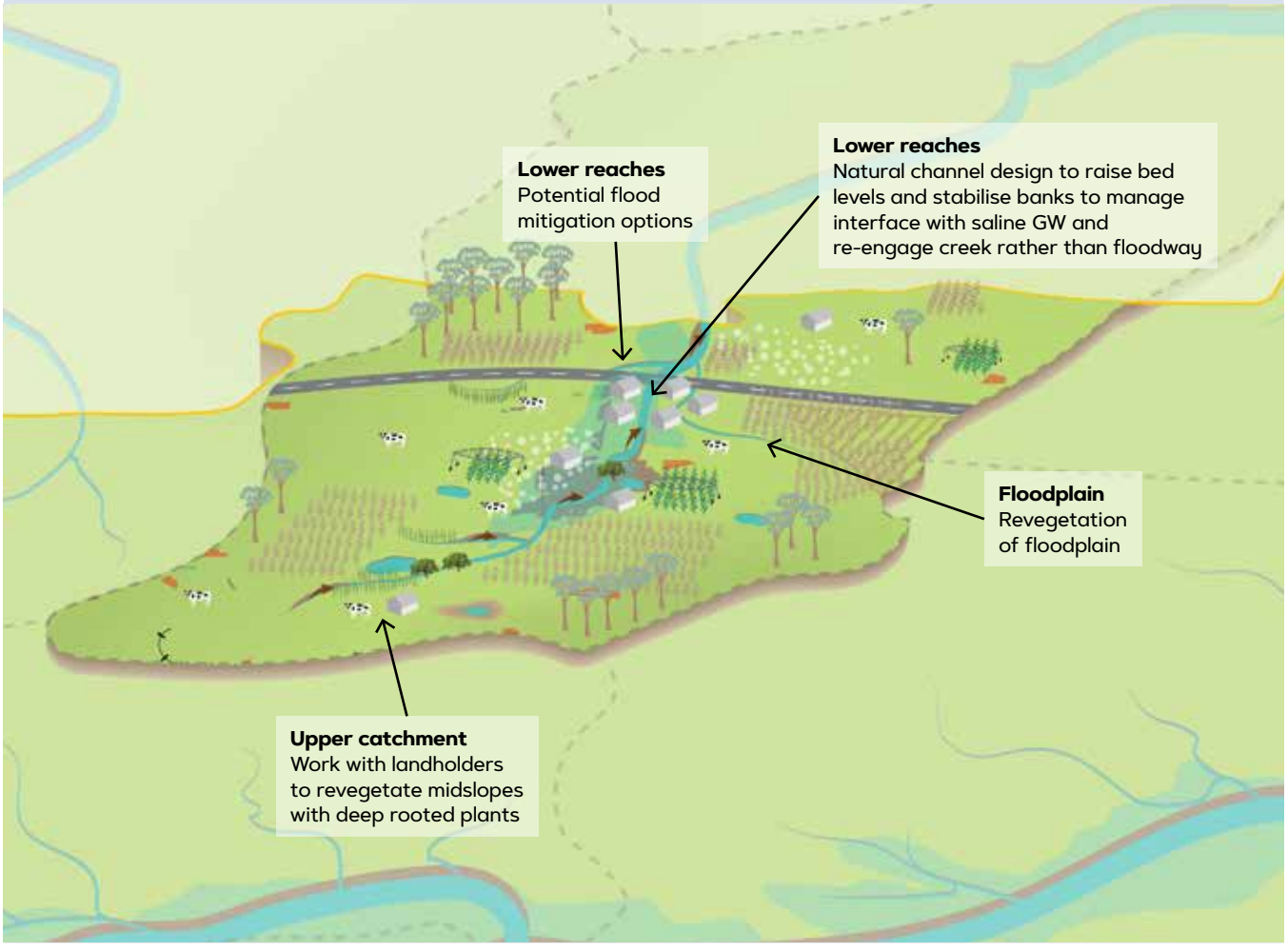
Black Snake Creek drains the northern slopes of the rolling hills which separate the Bremer and Brisbane River catchments. The creek flows north through the historical township of Marburg and enters the Brisbane River between Wivenhoe Dam and Mt Crosby Weir, which is the offtake point for two main water 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 2. Investigate weir levels in relation to the creek channel and floodway levels to allow for engagement of the flow path 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 2. Investigate and implement flood mitigation options 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 2. Investigate the feasibility of establishing a Black Snake Creek Initiative to support landholder management 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 63km^2 within Ipswich LGA out of a total sub-catchment area of 454km^2, and includes Sandy Creek (Pine Mountain) and Watercress Creek.

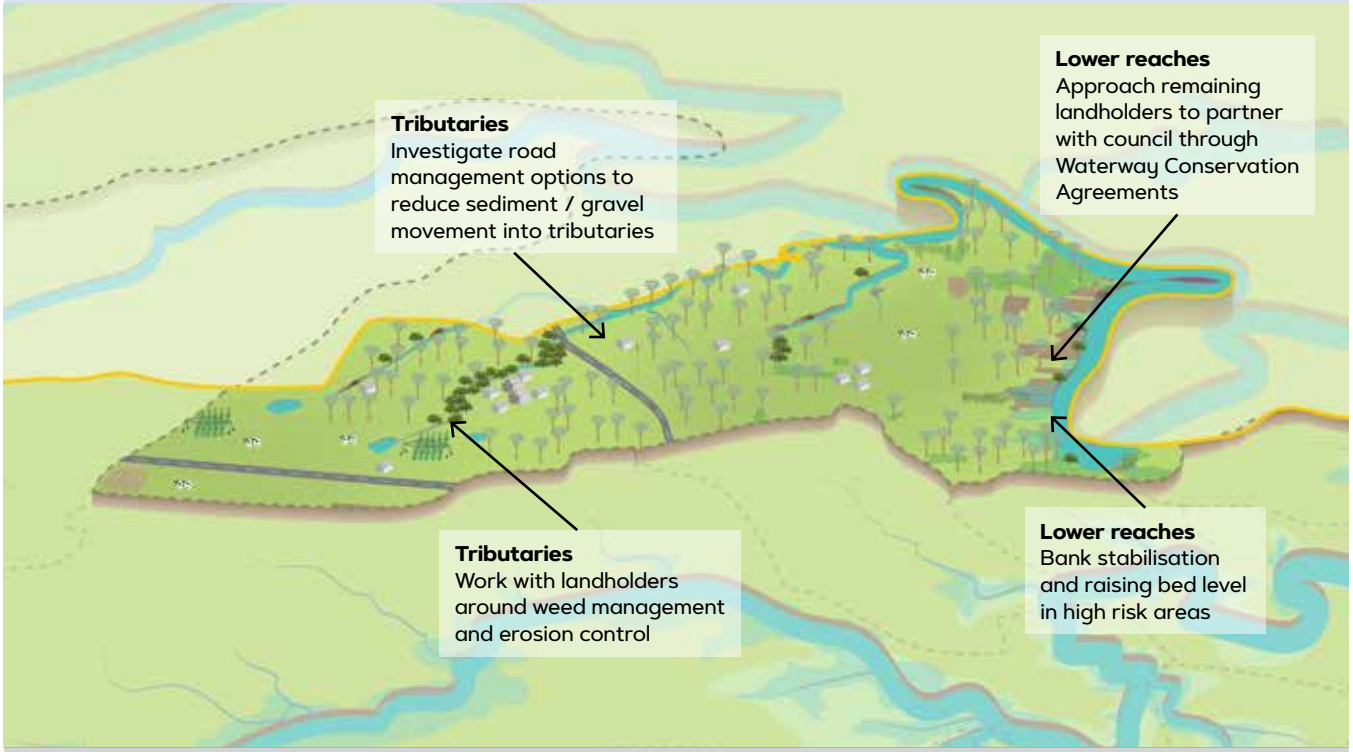
Dominant land uses include bushland, grazing, intensive agriculture, rural residential and industry.

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 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 2. Increase the number of landholders engaged in council conservation and landholder partnerships programs.

LOWER BRISBANE RIVER CATCHMENT

The Lower Brisbane River Catchment covers a total area of 1,195km^2 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

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.

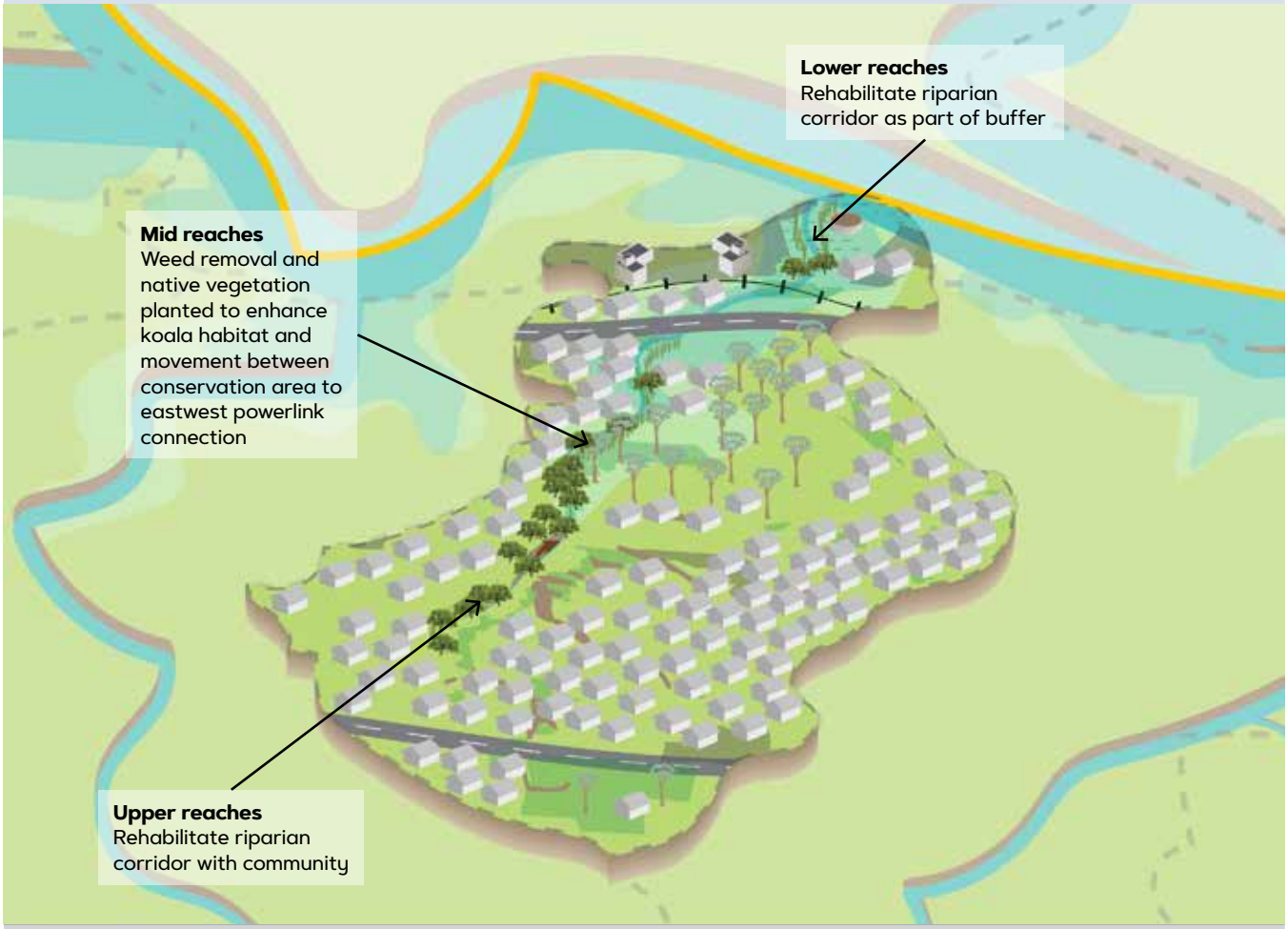
Land use within the sub-catchment is a mixture of urban, light industrial and bushland, with significant tracts of vegetation retained near the creek within the former Redbank Rifle Range south of the Ipswich Motorway.

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 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

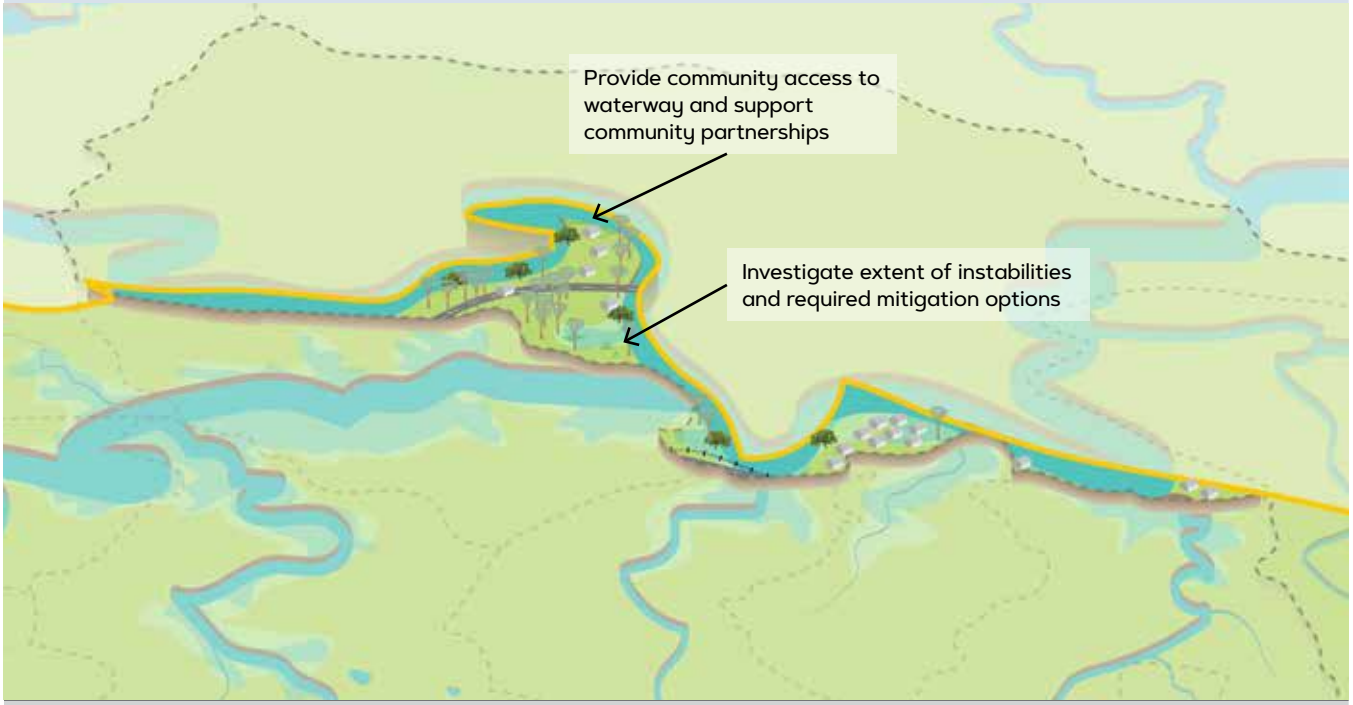
Sections of the Lower Brisbane River form part of the Ipswich City Council northern boundary. The Lower Brisbane River is estuarine and receives flows from the Goodna, Woogaroo, Six Mile and Sandy Creek (Camira) sub-catchments.

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 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 25km^2 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.

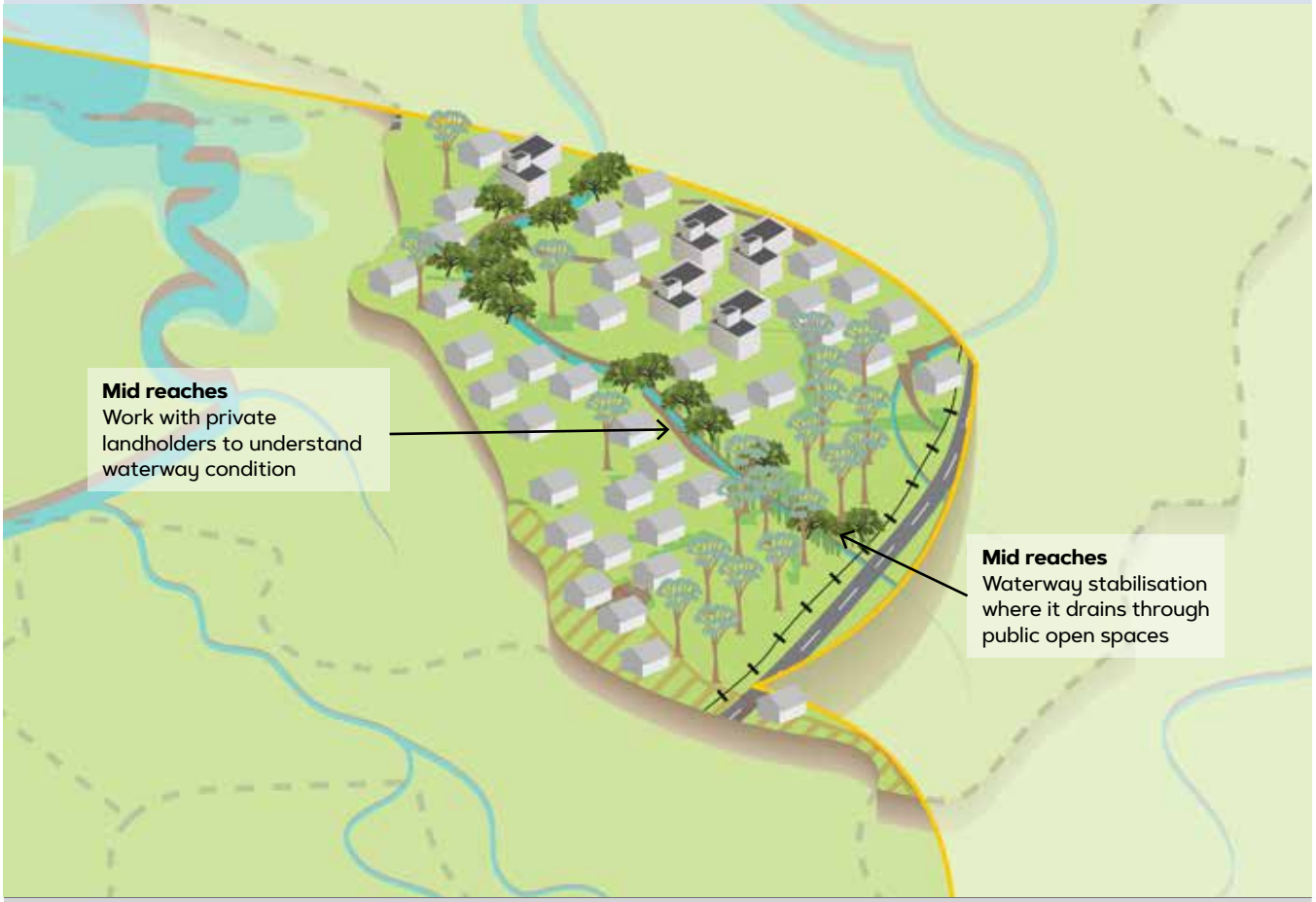
Land use within the sub-catchment is a mixture of urban, light industrial (Carole Park Industrial Estate) and bushland predominantly within the Greenbank Military Camp. There are also a number of council conservation and landholder partnerships across the sub-catchment.

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.

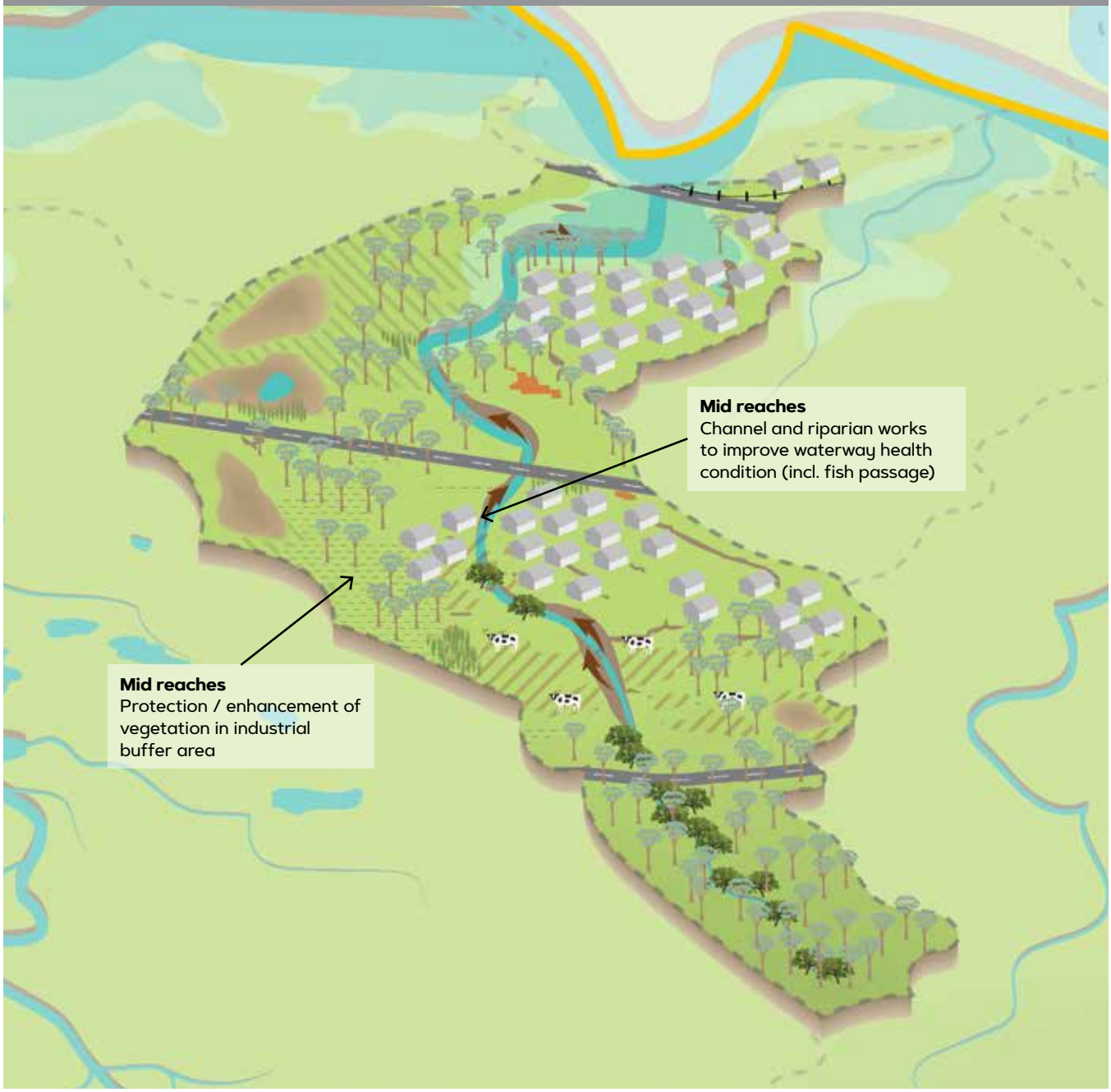
There are many council parks and reserves along the waterway which provide access for the community. There are also a number of council conservation and landholder partnerships in the sub-catchment.

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 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



WOOGAROO CREEK

The sub-catchment area of Woogaroo Creek and its tributaries, Mountain Creek and Opossum Creek, is 69km^2 (40km^2, 14km^2 and 15km^2 respectively), of which 65km^2 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.

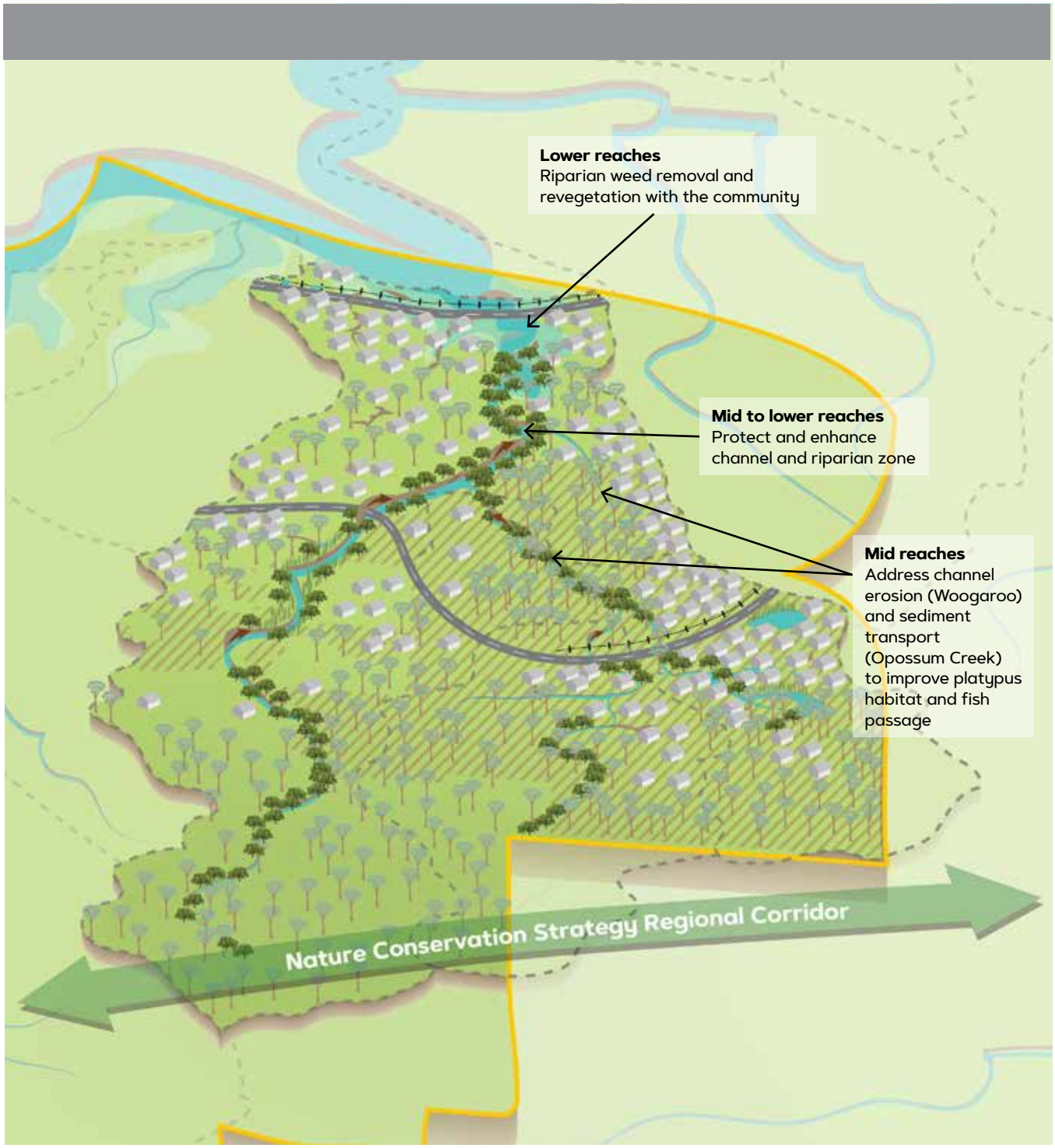
Land use within the sub-catchment is a mixture of urban and vegetated, with the upper catchment retaining significant tracts of bushland. The Springfield development area is within the Woogaroo Creek sub-catchment which includes a large town centre and urban residential land. Linear open space corridors 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.

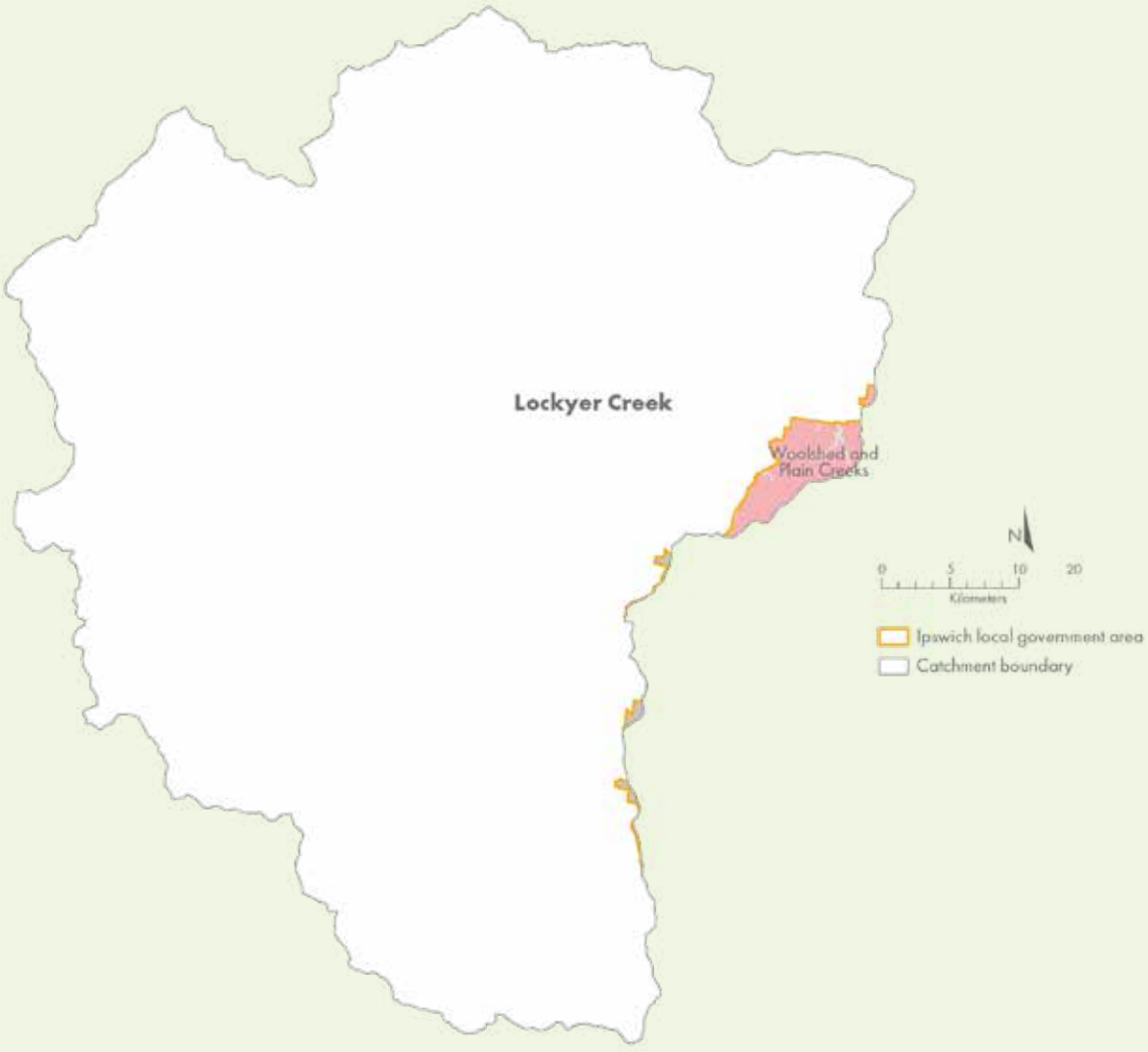
PRIORITY MANAGEMENT THEMES	TARGETED ACTIONS
Channel	1. Waterway stabilisation works downstream of Augusta Parkway to build resilience to upstream development and improve Platypus habitat 2. Works undertaken to address sedimentation and transportation in constructed channels along Opossum Creek and improve habitat condition for Platypus 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 2. Rehabilitate the waterway as required to remove weeds and provide a fully vegetated corridor outcome 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

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



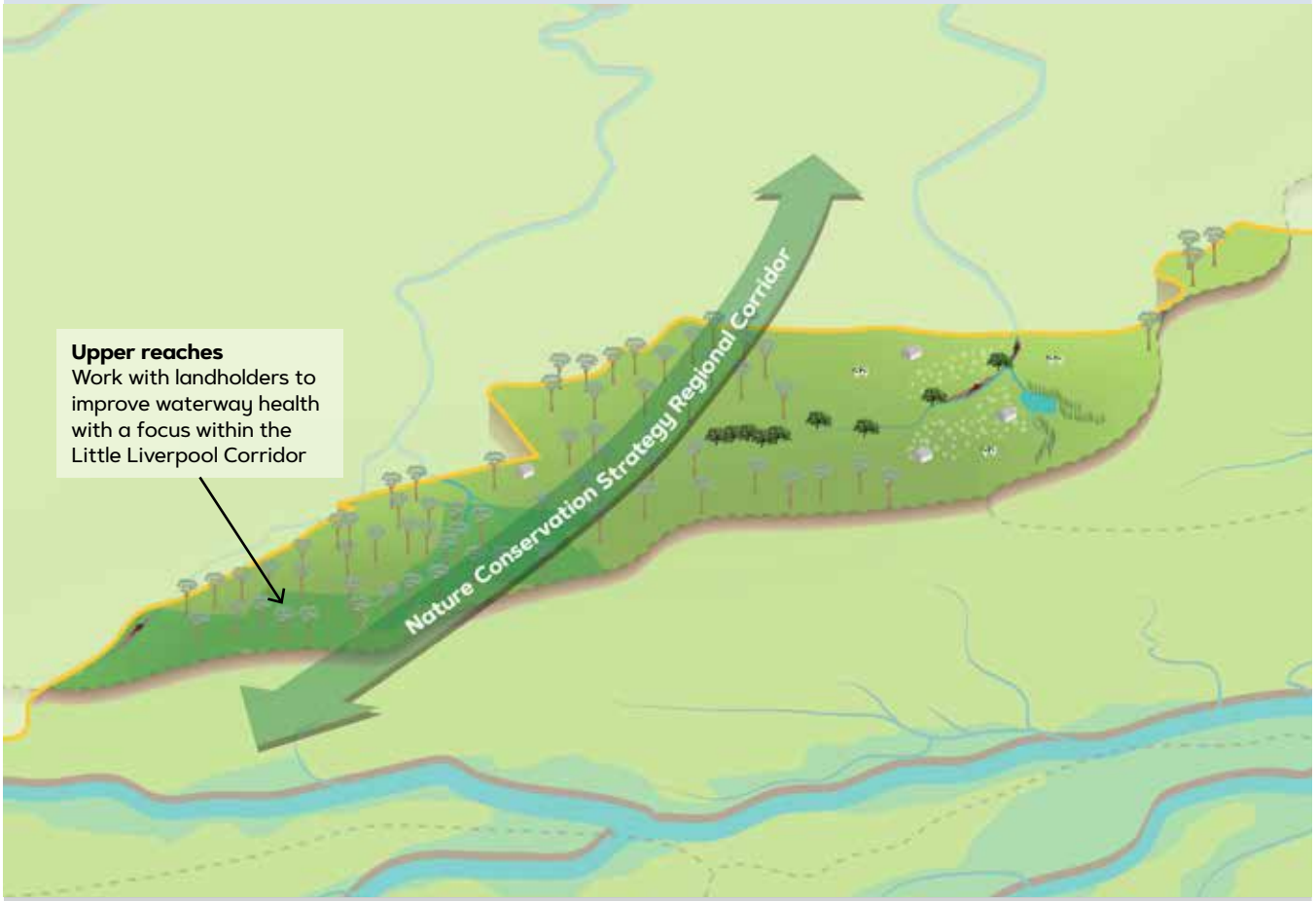
LOCKYER CREEK

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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