

BRISBANE'S FLOODSMART FUTURE STRATEGY 2012-2031



Dedicated to a better Brisbane

OUR VISION:

Living with flooding in our city – we are safe, confident, ready.



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A MESSAGE FROM THE LORD MAYOR

Brisbane is a thriving, world-class city, enjoyed for its subtropical climate. Like many cities in the world, it is built on a river. It is also close to Moreton Bay and has many creeks and tributaries running through our suburbs.

During the summer months severe storms with heavy rainfall are common. These storms can result in flooding from the Brisbane River, local creeks, storm surges along coastal areas and overland flow flooding. While this is a natural part of our environment, I know that the effect can be devastating for those that have experienced it.

Managing and minimising the impacts of flooding and responsive disaster management have always been a priority for Brisbane City Council and our city.

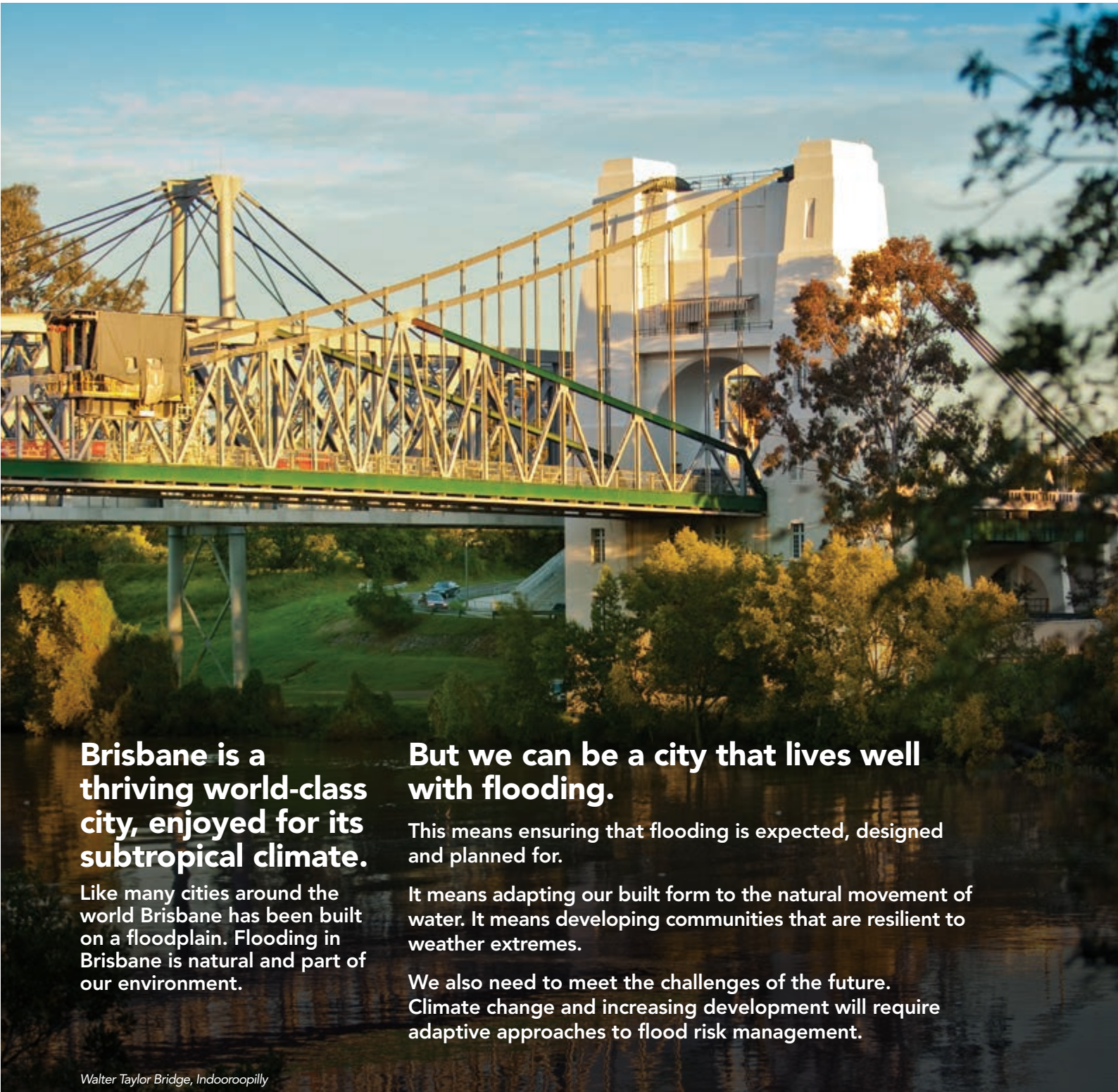
Continued investment in stormwater maintenance and new infrastructure, the completion of flood studies and creek models, early warning alert systems, improved availability and access to flood information and a program to install backflow prevention devices across a number of stormwater systems all assist with managing water on the ground.

Following on from our commitments in Council's *January 2011 Flood Action Plan* we have now developed Brisbane's FloodSmart Future Strategy. This strategy will provide residents, industry and future business with the confidence that Brisbane has an integrated plan to respond to its flood risk and that it is OK to invest in Brisbane. The strategy is leading the way in ensuring sustainable planning, economic development and growth.

Council also plays a major role in managing the impacts of disasters within its boundaries. This strategy will assist us all to be better prepared for and recover more quickly from flooding.

While much work has already been done, together we can do more. Our city is able and ready to move forward. We have a window of opportunity to improve our prosperity and wellbeing and we want to do this in a way that takes into account our subtropical environment. The FloodSmart Future Strategy is a key document in assisting us to do this well.

Together we can build a more resilient city; a city that is safe, confident and ready.



Brisbane is a thriving world-class city, enjoyed for its subtropical climate.

Like many cities around the world Brisbane has been built on a floodplain. Flooding in Brisbane is natural and part of our environment.

But we can be a city that lives well with flooding.

This means ensuring that flooding is expected, designed and planned for.

It means adapting our built form to the natural movement of water. It means developing communities that are resilient to weather extremes.

We also need to meet the challenges of the future. Climate change and increasing development will require adaptive approaches to flood risk management.

Walter Taylor Bridge, Indooroopilly

Our vision is for communities on floodplains that are

safe

because they understand their level of flood risk and are taking action to manage it.

Our vision is for growing our city and economy responsibly,

confident

in how we adapt to flooding.

Our vision is for connected and engaged communities that are

ready

for flooding.



OUR FLOOD STORY

Brisbane was settled in the 1800s and the core of the city was developed around the river and the original port at South Brisbane. As Brisbane grew, other parts of the Brisbane River and creek floodplains were developed.

The Brisbane River is the major river passing through the city. The city includes the floodplains of 32 creeks as well as the southern floodplain of the South Pine River. There are also thousands of overland flow paths in the hilly areas of the city.

Brisbane's bayside suburbs are exposed to flood risks from storm tides like the one experienced in 1974. This type of flooding can occur during cyclones which create large waves and high winds driving water from Moreton Bay into properties.

There have been many river floods, most notably the large floods in 1893, 1974 and 2011. There has also been flooding in the various creeks, waterways and overland flowpaths due to intense shorter duration rainfall. It is certain that there will be major floods again in the future.

As a result of previous planning the majority of Brisbane's dwellings are not located on floodplains. Furthermore, much of the flood-prone land in Brisbane is not developed. However, as we saw in January 2011, flooding can affect all of us.



Wynnum 1974



University of Queensland 1974



Brisbane 1893

Council has been actively managing Brisbane's flood risks for many years. There has been significant investment in flood and drainage infrastructure along with planning controls.

Over recent years there has been a change in the way we manage flood risks. We are now striving for a more coordinated approach between planners, emergency services, state and federal governments and, most importantly, the community.

Since the January 2011 floods there have been a number of activities related to the flood and future flood management. These include:

- Council's *Flood Response Review*
- Queensland Floods Commission of Inquiry
- Council's *Flood Action Plan*

The FloodSmart Future Strategy 2012-2031 works with these documents and together will act as an over-arching strategy to meet the challenge of managing floods in Brisbane.

As Brisbane grows, we will need to meet the challenges of increased development and changes to our climate.

This strategy will assist business and industry to invest with confidence knowing the right development is in the right place. The strategy will also enable business and industry to better understand their flood risk and develop strategies to reduce the impact of flooding when it occurs. Brisbane's residents will be equally informed of their flood risk so they can build or buy with confidence.



Brisbane City 1974

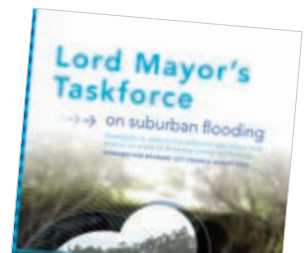


Coronation Drive, Milton 2011

OUR ACHIEVEMENTS: WHAT WE HAVE ALREADY DONE

Lord Mayors Taskforce on Suburban Flooding

In February 2005, the Lord Mayor and Civic Cabinet established the Lord Mayor's Taskforce on Suburban Flooding to look at all possible ways of reducing the impacts of creek flooding. The taskforce provided professional recommendations on how to minimise the impact that significant rain can cause in flood-prone areas. Council has been implementing the taskforce report recommendations with a massive funding commitment of \$292 million over six years.



Flood Flag Map

The Flood Flag Map, incorporating overland flow, was introduced to Council's website in 2009. The map indicates Brisbane areas that are at risk of flooding from river, creek, storm tide or overland flow paths. Over 150,000 flood flag maps were downloaded in 2011. The maps are free and available on Council's website or by contacting Council directly.

Early Warning Alert Service

Council provides Brisbane residents with a free severe weather alert that includes notice of severe thunderstorms, destructive winds and potential flooding. The alerts are location-based, so residents only receive warnings if their registered residential address may be impacted. Alerts are sent by email and can also be sent by SMS and a recorded message to a nominated landline.

Visit www.brisbane.qld.gov.au/earlywarning to register for email, home phone or SMS updates in case of an emergency.



Brisbane community response to the January 2011 flood

Brisbane's volunteer response to support those affected by the January 2011 floods was a truly amazing example of the city's spirit. The 'Mud Army', as these volunteers became known, was remarkable not only for the assistance given to flood victims but also for the civic spirit it inspired.

Council developed a volunteer management strategy and established a capability for registering, equipping and deploying volunteers to where support was most needed. The volunteers assisted households and business owners with debris removal and cleanup. Council's call for assistance was also answered by many volunteers who did not register. It is thought that, in all, there were between 50,000 and 60,000 volunteers who assisted over the first weekend after the flood.



Victoria Bridge, Brisbane City

Voluntary Home Purchase Scheme

The first key action of the Lord Mayor's taskforce report was to acquire, through voluntary purchase, homes affected by creek or local flooding that have a 50% chance of occurring each year. The scheme commenced in 2006, offering an opportunity for those affected to remove their families from flood risks, while also contributing to the restoration of natural waterways. As of June 2012, 73 properties have been purchased under the scheme.



Backflow prevention devices

During the January 2011 flood, some parts of Brisbane were affected by water which came up from the river through the drainage networks and into our streets. This is known as backflow flooding. A backflow prevention device is designed so that water flows in one direction only through piped stormwater systems and minimises water flowing back up stormwater pipes.

Based on extensive investigations carried out by engineers, 11 stormwater systems have been identified where these devices will reduce the risk of flooding. These have been progressed to detailed design and planning stages and will cost \$10 million over the coming four years.

FloodWise Property Report

Brisbane City Council's free FloodWise Property Report lists the risk and type of flooding at a specific property, and indicates how high the water may reach. The flood information provided in the FloodWise Property Report is sourced from Council flood studies and models undertaken for the river and our major creeks and waterways. FloodWise property reports have been available to download from Council's website since 2008; to date, over one million reports have been generated.



Brisbane – Ready for Summer campaign

During the summer months severe storms with hail, damaging winds and heavy rainfall are common in Brisbane. These storms can result in flooding from the Brisbane River, local creeks, storm surges along coastal areas and overland flow flooding.

At the start of summer, Council launches a campaign to raise the awareness of the effect of summer storms. Residents are provided with advice on how to minimise the risks to people and property.

OUR SHARED PRINCIPLES: WHAT WE BELIEVE IN



Brisbane's FloodSmart Future Strategy is based on four principles stating our key beliefs. These shared principles will help us achieve our vision by shaping our approach to delivering the strategic outcomes. Council will direct and prioritise efforts with these principles in mind.

1974 flood marker, City Botanic Gardens

i

Protecting people's lives, property and wellbeing is a key priority.

Community safety and wellbeing will always be the number one priority.

ii

Balancing social, economic and environmental objectives promotes the responsible development of the city appropriate to the risk of flooding.

We need floodplains for a whole range of reasons, so we need to achieve a balance in managing these areas. Economic growth is key to Brisbane's future and that growth needs to be based on innovative planning and sound flood risk management to protect the investment in future development.

We are confident that smart growth can contribute to good outcomes.

iii

A long-term perspective of flooding provides both a consistent direction and flexibility to adapt to emerging hazards and opportunities.

We need to keep a long-term view, learning from our experiences of flooding and preparing for the challenges and opportunities of the future.

iv

Integrated use of the flood risk management tools and working together with the community and agencies will achieve optimal outcomes.

Using the right flood management tools in the right place produces the best outcomes. Living with floods is everyone's responsibility; we will achieve the best outcomes when we are all involved – Council, all other levels of government, residents, businesses, community groups and non-government organisations – all working together to build our understanding and resilience.

WHAT IS FLOOD RISK MANAGEMENT?

Indooroopilly 2011

Everyone accepts that for land that experiences frequent and fast-flowing flooding, a golf course would be a more appropriate use than a nursing home. This involves an assessment of flood risk. Flood risk is understood as the combination of the *likelihood* and the *consequences* of flooding. In the example above, the likelihood is the same but the consequences are very different.

Flood risk needs to be considered for the *full range of floods* that are possible at a particular location. If decisions about land use and building design are based only on consequences in the one per cent annual chance flood event, the flood risk is not fully understood and poor outcomes may result.

Flood risk management involves assessing and managing flood risks to reduce the impacts on people and property. Up to the 1970s, flood mitigation infrastructure (e.g. dams, levees, channel modifications) was the main way of managing flood risks in Australia.

How flood management tools relate to disaster management phases

		Phase			
		Prevent	Prepare	Respond	Recover
Tool	Flood mitigation infrastructure	Strong interaction	Little or no interaction	Little or no interaction	Little or no interaction
	Land use planning & development control	Strong interaction	Little or no interaction	Little or no interaction	Some interaction
	Flood awareness & information	Some interaction	Strong interaction	Moderate interaction	Some interaction
	Flood emergency management	Little or no interaction	Some interaction	Strong interaction	Strong interaction

KEY ■ Strong interaction ■ Moderate interaction ■ Some interaction ■ Little or no interaction

A series of large floods in the 1970s resulted in a change to *land use planning* as a means of controlling developments on floodplains. The 1990s saw a focus on *flood emergency management* and more recently there has been a focus on providing *flood information*.

Now it is recognised that best practice flood risk management requires the coordinated *integration* of *all* these management tools.

This is consistent with best practice disaster management which takes a comprehensive approach across four phases: prevention, preparedness, response and recovery. The linkages between the four flood management tools and the four disaster management phases are shown above.

STRATEGIC OUTCOMES: HOW WE WILL ACHIEVE OUR VISION

1

STRATEGIC OUTCOME 1: A RISK-BASED APPROACH TO FLOOD MANAGEMENT

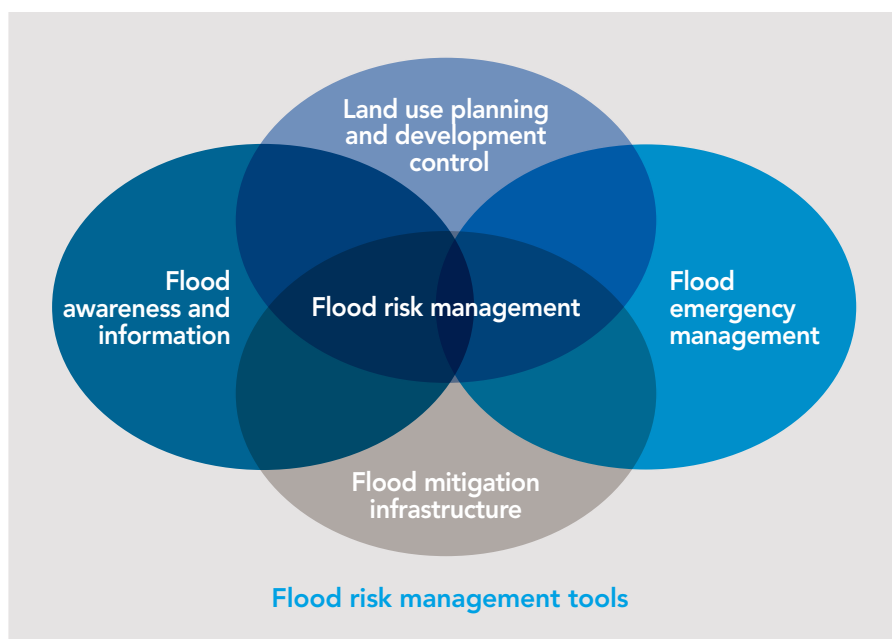
Adopting a risk-based approach to managing flooding, by understanding the behaviour and consequences of flooding across the full range of probabilities.

A risk-based approach considers the likelihood and impacts of the full range of floods at a location. In the past too

much attention was placed on a singular flood event such as the one per cent annual chance flood event. A risk-based approach ensures that we consider people's safety and develop our city responsibly, for every potential flood scenario. It also offers more flexibility and helps to weigh up the merits of various flood risk reduction options.

Our approach:

- Incorporate risk-based considerations into any **new planning policies, schemes and plans**, including the implications of rare but very damaging floods.
- Ensure **flood emergency plans** consider the appropriate responses for all magnitudes of flooding.
- Develop guidelines to facilitate **consistent approaches** to flood risk assessment to allow better comparison of various flood risk reduction options across our catchments.
- Incorporate risk-based considerations (including the implications of flooding higher than the designed flow) into the design of all infrastructure located in the floodplain, including **urban drainage design**.
- Gather, collate and provide comprehensive **flood information**, including flood behaviour, for the full range of flood events.





Bowies Flat Wetland, Coorparoo

2 STRATEGIC OUTCOME 2: AN INTEGRATED AND ADAPTIVE APPROACH

Implementing integrated and adaptive approaches to total water cycle management, including flooding.



Water sensitive urban design at Hellawell Road, Sunnybank

The future holds a number of opportunities for Brisbane to integrate flood management within a wider approach to water cycle management that ensures that water availability, waterway health, our environment and the liveability of our city are improved.

There are opportunities for improved cooperation and collaboration between all involved in flood risk management, including all levels of government, non-governmental organisations and Brisbane's businesses and residents.

There are also emerging opportunities including new technologies and modes of communication which will enhance our ability to prepare and respond to flooding.

Our approach:

- Develop **floodplain management plans for creek catchments** that are consistent with citywide initiatives. These will form the foundation for local application and encourage planning and use of the floodplain as a valuable and sustainable resource capable of multiple uses of benefit to the community.
- **Contribute to flood studies** and the development of floodplain management plans for the Brisbane River catchment.
- Consult with a wide range of stakeholders when developing any **new flood planning policy**.
- Consider the **full suite of flood risk management tools** in developing all flood risk assessments and plans.
- Assess flood mitigation infrastructure on a **whole-of-catchment basis** and as part of the suite of flood risk management tools.
- **Partner with communities** to build a sense of place and flood readiness in our homes, neighbourhoods, catchments and city.
- Foster **networks** between engineers, planners, emergency services and state and federal governments to ensure a coordinated and consistent approach to flood risk management.
- Consider the implications of a changing climate in all **forward planning activities**.
- Take advantage of **new technologies and communication modes** to help communities prepare for and respond to flooding.



3 STRATEGIC OUTCOME 3: SMART PLANNING AND BUILDING

Shaping the city's built form to increase our resilience to flooding.

There is a lot of potential to shape our city in a way that adapts to the movement of floodwater and increases our capacity to live with flooding. This involves smart land use planning and smart building design. Applying these approaches is easiest for new development. But we can also achieve significant gains through innovative redevelopment of existing areas.

Our approach:

- Locate the **right land use in the right place** by considering how development can be designed and sited to tolerate natural hazards for the full range of flood events.
- Locate **new growth areas** where there are few flood constraints or where the effects of flooding can be managed.
- Ensure new development is designed and constructed to be **more resilient** to flooding.
- **Plan now** for rising sea levels, bigger storm tides and heavier rainfalls associated with our changing climate.
- Maximise the efficiency of the city's **disaster response capability** by planning for the movement of emergency workers, evacuees and supplies around the city during floods through improvements to major road networks and the location of key land uses.



Bowies Flat Wetland, Coorparoo



Brisbane River CBD

4

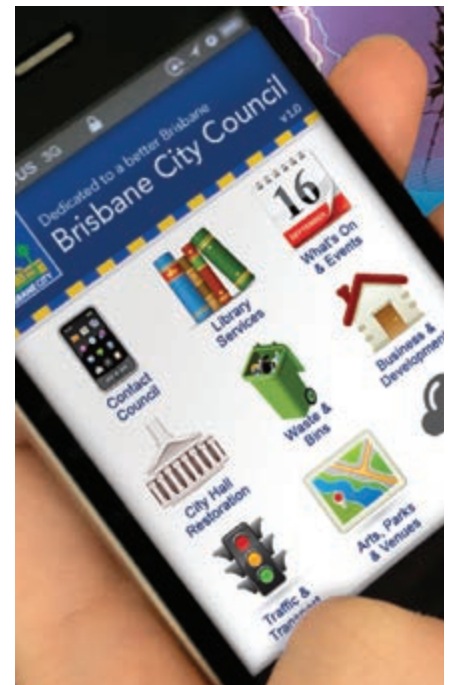
STRATEGIC OUTCOME 4: AN EDUCATED AND RESILIENT COMMUNITY

Promoting community understanding of flooding to promote readiness.

An educated and involved floodplain community is a prepared and resilient community. This is why promoting community interest and understanding of flooding is so important. As people living and working on floodplains, we need to know how we could be affected by flooding and what we can do to minimise a flood's impacts on our homes and businesses. We need to remember that despite sometimes long spells of drought, we need to be well prepared for floods.

Our approach:

- Help residents and businesses to be resilient and prepare for flooding by providing simple, accessible and fit-for-purpose **flood information** that builds awareness of flood risk and links risk to action.
- Promote awareness of the extremes of weather we can expect **living in a subtropical city**. From year to year we may experience severe weather, floods, droughts and storms.
- Encourage households in flood affected areas to better prepare for and respond to flood events by developing **household emergency plans**.
- Encourage businesses in flood affected areas to better prepare for and respond to flood events by preparing **business continuity plans**.





5

STRATEGIC OUTCOME 5: WORLD-CLASS RESPONSE AND RECOVERY



Further develop our capacity to respond to and recover from flood events.

An efficient and effective response to flood events and a swift recovery requires pre-planning, robust processes and procedures to be in place. It requires a workforce that has the capability and training to be resourceful and proficient in responding to community needs. Council working together with a flood aware and resilient community will achieve improved flood risk management outcomes for the city.

Our approach:

- Development of an **All Hazards Disaster Management Strategy** (including flooding) to provide Council with a strategic direction and intent to managing disaster events.
- Comply with legislative requirements by annually reviewing, maintaining and amending Council's *Disaster Management Plan* and related sub-plans and standard operating procedures, using a comprehensive approach and the principles of **prevention, preparedness, response and recovery (PPRR)**.
- Maintain **effective mechanisms, plans and processes** to efficiently respond to disaster events.
- Maintain and continuously enhance Council's **workforce capability** by providing training and routine exercises.
- Maintain and enhance Council's *Disaster Recovery Plan* using an 'all hazards' approach.
- Maintain and enhance solid and enduring relationships with **emergency management agencies** and not-for-profit organisations for consistent and open communication and collaboration.



Brisbane River, Indooroopilly

6

STRATEGIC OUTCOME 6: WELL-MAINTAINED AND IMPROVED STRUCTURAL ASSETS

Maintaining and investing in flood mitigation assets to support the city's economic growth.

Council has built and maintains infrastructure including more than 2700km of pipes under the city that play a very effective role in conveying flood flows that result from the intense, heavy subtropical rainstorms that Brisbane can experience during our summer storm season.

This infrastructure has a value of over \$2.5 billion and is maintained by Council to make sure we don't even see some small floods that pass under our roads and houses. As the city grows, new assets will be needed to keep pace with this growth and existing assets will need to be maintained.

Our approach:

- Inspect, assess and maintain existing **flood mitigation infrastructure** to ensure its continued, effective functioning.
- Recognise the **limited protection afforded by some flood mitigation infrastructure** (e.g. underground pipe drainage) to encourage preparedness for flooding.
- Prioritise **improvements to the capacity** of existing flood infrastructure in areas where it is identified as currently under-sized or not able to meet the capacity of future development within a catchment.
- Provide **new infrastructure** as necessary to support the growth and liveability of the city.



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