

A Floodsmart Future
Strategic Flood Risk Management in Brisbane

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Abstract

Brisbane City Council has many challenges associated with flood risk management. In a city of over one million people, there are two rivers, 32 creeks and thousands of overland flowpaths, as well as storm surge in the bayside suburbs. In 2012, Council commissioned SKM to develop an overarching strategy called Brisbane's FloodSmart Future Strategy 2012-2031. The strategy will direct flood risk management in the city over the next 20 years.

The strategy was based on four guiding principles and a shared vision for flood risk management in the city. The vision "Living with flooding in our city – we are safe, confident and ready" reflects the many themes and concurrent directions of council's approach to flood risk management.

The strategy is based on an integrated mix of measures, including structural flood mitigation, a hazard-based approach to land use planning, providing good quality flood information and world class emergency management, to help manage the full range of possible flood events in Brisbane.

The strategy was developed in a collaborative manner with inputs from many parts of council. Workshops were used as a tool to shape elements of the strategy document. These workshops were outcome focussed and used 'visioning' techniques to enable participants to provide insights into strategic direction and purpose.

One of the other challenges in developing the strategy was to maintain a sufficiently high level to achieve a strategy life of 20 years, yet still remain focussed on real outcomes. The process of strategy development highlighted the need to be inclusive and outcome focussed.

Introduction

The FloodSmart Future Strategy 2012-2031 is part of Brisbane City Council's long standing commitment and plan to manage the risks of flooding. The strategy focusses on Brisbane as a city that is safe, confident and ready for flooding. Managing and reducing the impacts of flooding has always been a priority for Council.

Like many cities around the world, Brisbane has been built on a floodplain, which means flooding is natural and part of our environment. The strategy recognises and ensures that flooding is expected, designed and planned for.

Brisbane's FloodSmart Future 2012-2031 Strategy will strengthen Council's ability to plan and prepare for potential flooding as well as to respond and recover quickly when flooding occurs. The strategy is based on an integrated mix of measures, including structural flood mitigation, a hazard-based approach to land use planning, providing good quality flood information and world class emergency management, to help manage the full range of possible flood events in Brisbane.

This includes planning for more frequent events that occur during the annual summer storm season that tend to cause less damage, as well as rarer events like the January 2011 Brisbane River flood that cause extensive damage across the city.

Council's recent directions in flood risk management

Over the last four years Council has invested \$500 million towards flood management, including extensive pipes and drainage works, backflow devices, flood information online for residents and businesses and the Lord Mayor's Taskforce on Suburban Flooding.

In addition to flood infrastructure investment Council will respond to flooding risk by applying smart land use planning and building design to make the most use out of land in our city by having the right development in the right place, enabling sustainable and responsible development to grow the city's economy. Council will also continue to provide residents and businesses with fit for purpose flood information to help them know their flood risk and understand what actions they can take to minimise the impact of flooding on their family, property or business.

More than one million [FloodWise Property Reports](#) have been downloaded from Council's website and in 2009 Council launched [Flood Flag Maps](#) to help the community understand its flood risk. It is vital flood information and education so the community remains a focus so the community can become even more flood resilient.

The 2011 Brisbane River flood showed us how well Council and the community respond when the city is faced with a disaster. This strategy will help further develop Brisbane's capacity to respond and recover quickly from flood events when they occur.

The need for a strategic approach

While Brisbane City Council has always invested in flood management, a risk-based and integrated approach was needed to manage the city's flood risk over the coming 20 or more years.

Key drivers to develop a more integrated flood risk management strategy include;

1. **Providing a simple and easily understood vision for the future.** Flooding is complex and highly technical. Council needed a simple and easy way to describe flood risk, where we have come from, where we are now, where we are heading and how we are going to get there. Brisbane's *FloodSmart Future Strategy 2012-2031* synthesises the complex business of flood risk management into a simple and easy to understand story.
2. **Supporting sustainable economic development and growth.** Flood risk management supports and enables economic development and growth, ensuring Brisbane is a city that is safe, confident and ready. This is achieved by:
 - a. Having a risk based approach to managing flooding. We know what the risks are and how best to manage them.
 - b. Having an integrated approach to managing flood risk. We work with others and contribute to whole of catchment planning and investment.
 - c. The built environment is shaped to be more resilient to flooding.
 - d. Having world-class disaster management.
 - e. Building infrastructure to reduce the risk of flooding.

- f. Helping the community to understand and be ready for flooding.
3. **Reinforcing a move toward flood risk management.** Bringing us from a one-line mentality “in/out” attitude to flooding, to considering the full range of flood events and risk.
 4. **Helping Brisbane to adapt to living on a flood plain.** Ultimately, this strategy is a tool that helps us shift our thinking and actions so that we adapt to living on a floodplain.
 5. **Supporting integrated planning, decision making and investment.** Council is committed to a “One Council” approach, whereby we work together to achieve the best outcomes for the residents and businesses of Brisbane. Many divisions and branches within Council have a role to play in managing flood risk. This strategy provides the direction for the organisation in the way we work together to understand, plan for, make decisions about and invest in flood risk management.
 6. **Meeting our responsibilities in Queensland’s developing flood management approach.** The Queensland Floods Commission of Inquiry (QFCI Final Report, March 2012) called for an approach to FRM based on best-practice floodplain management planning. Council views the Brisbane’s FloodSmart Future Strategy 2012-2031 as an important foundation stone in addressing this challenge.

The approach adopted to develop the strategy

Critical to the success of the development of Brisbane’s FloodSmart Future Strategy 2012-2031 was the consortium approach adopted. The consortium, led by SKM, brought together experts from a range of disciplines (including flood engineers, planners, asset managers, disaster operations, engagement, communication and behavioural change) both within and external to Council to develop a Brisbane’s FloodSmart Future Strategy 2012-2031 in approximately six weeks.

Brisbane City Council engaged SKM (with Bewshers as a sub-consultant) to assist in the development of Brisbane FloodSmart Future Strategy 2012-2031. The approach adopted to develop the strategy was one used by SKM on similar high-level strategies. It involved the following major steps:

- 1) Workshop A on “Visions and Principles”
 - a) Design and preparation of Workshop A
 - b) Literature reviews
 - c) Pre-workshop interviews with key participants
 - d) Distribution of Workshop A Briefing Paper to participants
 - e) Workshop A: “Vision and Strategic Principles”
 - f) Draft “Vision and Strategic Principles” document distributed for comment
- 2) Sub-Strategy Workshops B1 to B4 (*one workshop each for land-use planning and development control, flood information and awareness, flood mitigation infrastructure, flood emergency management*)
 - a) Design and preparation of each of the four workshops
 - b) Distribution of Workshop B Briefing Papers to participants
 - c) Workshops B1 to B4 to develop principles and strategic actions for each sub-strategy area
- 3) Development of a draft Brisbane’s FloodSmart Future Strategy document

- a) Distillation of workshop outcomes into strategic content
- b) Discussion with Council on structure of document
- c) Discussion with Council on structure and story of strategy
- d) Draft strategy document developed and disseminated for comment / discussion
- e) Finalisation of Brisbane's FloodSmart Future Strategy 2012-2031

The success of the strategy development process

The success of the strategy development process was due to a number of factors. These included:

- *Input from a wide range of stakeholders within council.* It was important that input be sought from many parts of Council to develop 'buy-in' to the final outcomes. For example, the vision statement discussed below was derived at the end of an intense three-hour workshop (Workshop A discussed above). The participants were split into two groups to create key phrases to describe Council's preferred vision for flood risk management in the future. Emphasis and direction was placed on creating the flavour of the phrase rather than the exact words. Fortunately for this creative process, the room was not full of engineers. More importantly, the participants covered a very wide range of backgrounds, ages, professions and roles within Council.
- *The design and preparation of the workshops.* The preparation and design of the workshops was a key element to their success. Hours of effort were put into the flow of each workshop and the material to be presented prior to and at the workshops. Non-structured 'talk-fests' were avoided. There was a real 'design' to each workshop to gain the required outcomes in a preferred three hour period of time. It was recognised that workshops the benefit gained in having workshops last more than three hours is diminished and can be counter-productive.
- *The skills of the workshop facilitator.* SKM's facilitator for each workshop was very experienced at getting a group of people to contribute as a collective. The facilitator had very little understanding of flood risk management theory at the start of the project. However, the facilitator was chosen because she was highly skilled in the techniques used to develop useful outcomes from a workshop. Some of these techniques included 'hind-casting' where participants were asked to imagine themselves looking back from 2030 and reflecting on why this strategy was successful.
- *A clear target in sight.* The strategy was developed over a six week period. This is a short timeframe that enabled action and a focus on outcomes. The short timeframe provided real benefit to the outcomes. The process resulted in a concentration of effort and a dedication of resources from both SKM and council. SKM allocated senior people to work on the project full-time and away from the distractions of other projects. As well, the shortened timeframe provided a heightening of priority for the stakeholders. The strategy development process provided the stakeholders with a finite window for influence and input.

Presentation of the strategy

Flooding is complex, technical and often difficult to explain. Flooding also is a natural part of living in a sub-tropical climate and has touched the lives of many. Therefore, we wanted to communicate a **story** about flooding in Brisbane (see Figure 1).

We structured the document to tell a story about our vision, where we have come from, where we are now, where we are heading and how we are going to get there.

The strategy is visual and uses simple and plain English, focussing on pulling all the components of flood risk management together. It helps provide clear direction as to where we are heading – *we are a city that lives well with flooding, we are safe, confident and ready.*



Figure 1: Example page from the strategy showing the 'story'

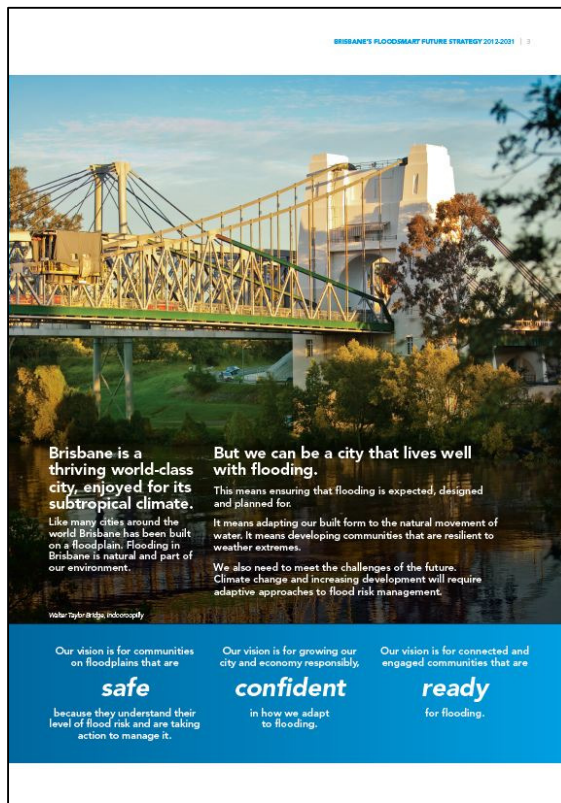


Figure 2: Example page from the strategy showing the key messages

The key messages (see Figure 2) were designed to be accessible so that anyone can remember and talk about them in the lift, at a barbeque or on radio.

One of the key challenges in describing flood risk management principles in a public document was to use common every-day language.

Examples of varying uses for land (golf courses versus hospitals) were employed to demonstrate the need for varying flood hazard management.

Summary of the FloodSmart Future Strategy

The Brisbane FloodSmart Future Strategy 2012-2031 developed with Council was based around a vision for the city for flood risk management. The vision is a simple message encapsulating the key message in a short and easily remembered phrase:

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

Breaking this vision statement down, the key message is one of accepting a certain level of flood risk (i.e. *‘Living with flooding...’*) and creating a shared sense of ownership of that risk (i.e. *‘...in our city - we are ...’*). Council is acutely aware that the implementation of the strategy involves the community acknowledging flood risks and making decisions on the basis of that risk rather than defaulting to Council for complete management and direction on all flood risk matters.

The three words and the end of the vision statement capture the intent of the strategy to focus on key elements:

- 1) **Safe**
Community safety in floods is based on an understanding of the flood risks and actions taken to manage that risk supported by world-class disaster management planning. Safety is also about the smart design of a city to minimise creation of hazardous conditions in built environments.
- 2) **Confident**
Fostering investment confidence for a growing city with floodplains, economically responsible and sustainable development, and adaptive approaches to emerging flood risks in the future. A hazard-based approach to land use planning will result in future development of the right building and infrastructure in the right place.
- 3) **Ready**
Flood awareness and preparedness, emergency management, flood education. Helping Brisbane’s communities and businesses be aware of their flood risks with simple, fit-for-purpose flood information that importantly allows them to link actions to the risks.

The vision was supported by four ‘shared principles’. These were developed again in a workshop format with a range of participants. They are the basis of the strategy – they are what we believe in and come back to for guidance. They are timeless and help prioritise efforts and resources.

Many versions of the wording of these principles were developed during the process. It was important to get the wording and emphasis correct and accepted by stakeholders as these words shape the strategy. The final four shared principles derived are listed below.

- i. Protecting people’s lives, property and well-being is a key priority.
- ii. Balancing social, economic and environmental objectives promotes the responsible development of the city appropriate to the risk of flooding.
- iii. A long-term perspective of flooding provides both a consistent direction and flexibility to adapt to emerging hazards and opportunities.

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

With the vision statement and shared principles developed, the attention was focussed on how to achieve the vision through strategic outcomes. It was initially envisaged that there would be just four strategic outcomes (one for each of the four tools of flood risk management). However, it became obvious that the strategic outcomes needed to go beyond these four tools to cover the breadth of the outcomes required. Hence, the first two strategic outcomes are over-arching and high level. These are followed by strategic outcomes for the four tools.

The six strategic outcomes are listed below.

- 1) *A Risk-Based Approach to Flood Management:* Adopting a risk-based approach to managing flooding, understanding the behaviour and consequences of flooding across the full range of probabilities.
- 2) *An Integrated and Adaptive Approach:* Implementing integrated and adaptive approaches to total water cycle management, including flooding.
- 3) *Smart Planning and Building:* Shaping the City's built form to increase our resilience to flooding.
- 4) *An Educated and Resilient Community:* Promoting community understanding of flooding to promote readiness.
- 5) *World Class Response and Recovery:* Further develop our capacity to respond to and recover from flood events.
- 6) *Maintaining and Improving Our Structural Assets:* Maintaining and investing in flood mitigation assets to support the city's economic growth.

Each of these strategic outcomes was supported by examples of approaches to be adopted in achieving the outcome (see Figure 3).

It was important to recognise the life of the strategy (about 20 years) in providing these examples.

The strategy will drive further approaches in coming decades. Hence, the focus was on providing sound examples and flexibility for future approaches to achieve these outcomes.

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.

Figure 3: Example page from the strategy showing strategic outcomes and examples

Integration with approach to disaster management

As there is a strong emphasis on a disaster management approach to managing flooding in Queensland, it was also important to provide a linkage between the tools of flood risk management and the phases of disaster management.

There are some that see flood risk management as a sub-set of disaster management and others that see disaster management as one element of flood risk management. These competing philosophies were recognised in a matrix (see Figure 4) that aimed to highlight the varying levels of interaction for the various elements.

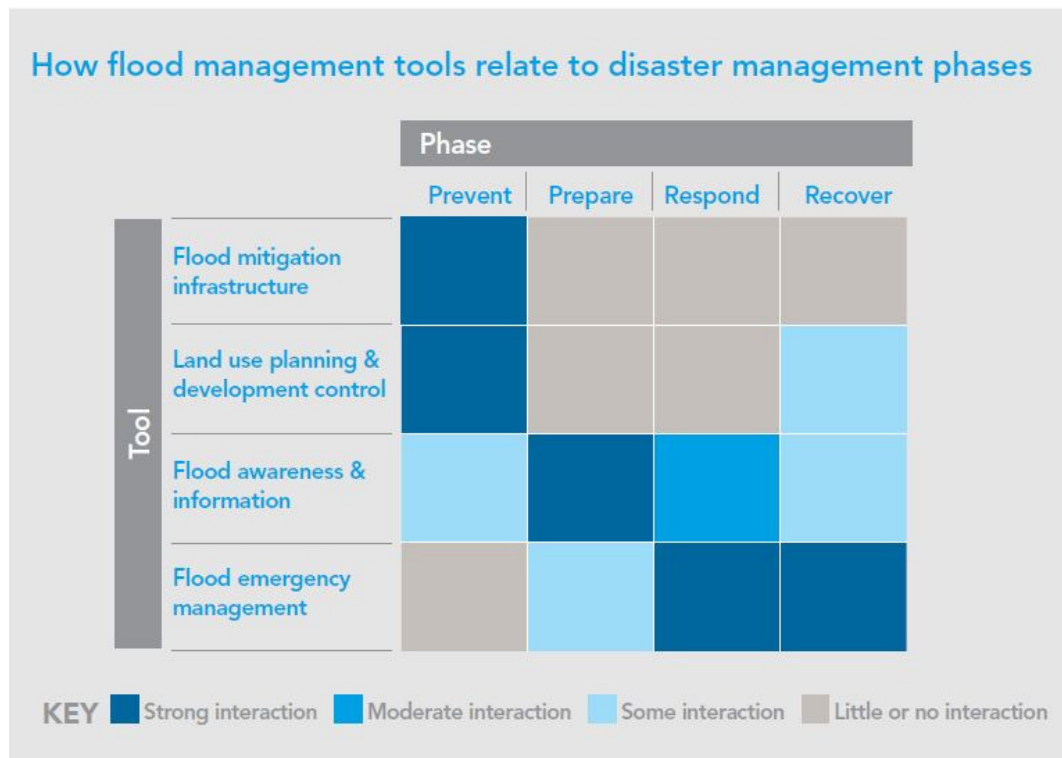


Figure 4: Interaction between flood risk management tools and disaster management phases

Stakeholder endorsement

The strategy was released as draft for consultation for six weeks between October and December 2012. A total of 17 responses were received and minor amendments incorporated into the final strategy.

The strategy was endorsed by Brisbane City Council on 12th March 2013 demonstrating organisational commitment. We also have a scheduled program of work over the coming four years to deliver on this strategy.

The strategy has been well received by internal partners with informal feedback received on the simplicity of the document and appreciation of a clear vision that provides direction and purpose for everyday activities. This feedback was received from diverse teams across the organisation including operational field services teams and disaster operations. The strategy has also been mentioned by planners in both internal meet-

ings and media releases as the driver and vision behind the proposed flood overlay code in Council's draft new City Plan.

Council has established FloodSmart integration groups to demonstrate a strong commitment to an integrated and collaborative approach to flood risk management.

Conclusions

The development of the strategy was the easy part. The real success of this strategy will be making it real - realising the vision.

Ultimately, the success and effectiveness of the strategy will be measured against how well, as a city, we are adapting to living with flooding. In 20 years' time, when we are thinking about the next phase of our life we will look back and see significant change. We will be safe, confident and ready.

For our city to be safe, confident and ready, we need to work together with our Council partners and our many partners across local, state and federal governments, residents, business and industry. Only by working together can we realise this vision.

References

Brisbane City Council (2005). *Lord Mayor's Taskforce on Suburban Flooding*.