Integrated water cycle planning processes and systems:
A local government case study

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Integrated Water Cycle Planning is the process of planning for all water services and functions, acknowledging the interconnected nature of the water cycle and the value of each of its components to current and future generations. The urban water cycle comprises water supply, wastewater treatment, stormwater management, waterways and the community. IWC planning recognises that the urban water cycle is influenced by economic growth, population growth and development, land use, climate change, community awareness and values and regional, State and Federal programs, decisions and regulations.

Brisbane City Council has undertaken a comprehensive process of reviewing the way the urban water cycle is planned for and managed. The following paper highlights Councils key achievements in taking an integrated approach both within the organisation, and in planning for the urban water cycle.

Early in the process, it was recognised that in order to plan for and manage the urban water cycle in an integrated manner, Council had to undergo a process of organisational integration. Achievements within the organisation include the breaking down of communication and information transfer barriers and the realignment of teams to support integrated planning. These organisational changes allowed the development of the first Local Integrated Water Cycle (IWC) Plan. Key achievements within this planning process include the execution of a decision making process based on Councils overarching strategies, the use of up-to-date spatial information throughout the planning process, and the development of delivery plans covering each aspect of the water cycle, eliminating conflicts and maximising synergies between programs.

1. Organisational Integration

Breaking down Barriers

In order to develop an Integrated Water Cycle Plan (IWCP), analysis of a significant amount of information from all parts of Council was required. This initial step of area characterisation highlighted weaknesses in communication and information transfer, which had resulted in differing projections, information and datasets being used across Council. In order to improve communication to allow Integrated Water Cycle Planning to progress, a comprehensive process of consultation was undertaken. A key indicator that progress has been made was the involvement of external Council departments throughout the development of the first Local IWC Plan.

Team Restructure

Prior to the introduction of Integrated Water Cycle Planning, the 'Water Resources' branch consisted of teams based on technical areas e.g. flood management, waterway health etc (Figure 1). While, this traditional approach placed Council officers in their areas of technical expertise; it did not facilitate the water cycle components being addressed in an integrated fashion. To better plan for and manage the water cycle, as an integrated system, the teams were restructured to align with steps within the planning process.

Figure 1. Previous Branch Structure – Technically based Teams

While this approach allowed Council officers to focus on a particular topic, it did not recognise that many issues, and often their most effective solution, spanned a number of

technical areas. Process based groupings were formed to allow efficient planning and the integration of all technical areas (Figure 2). The fundamental process of planning for and budgeting water resources programs was identified as follows:

- **Strategy and Policy**
- **Planning:** Translation of high level strategies into detailed plans
- **Implementation:** Development of schedules and budgets
- **Business Services and Systems:** Administration, Financial and Information Technology services.
- **Stakeholder Engagement and Communication:** Stakeholder consultation, and communication, client liaison, media and publications.

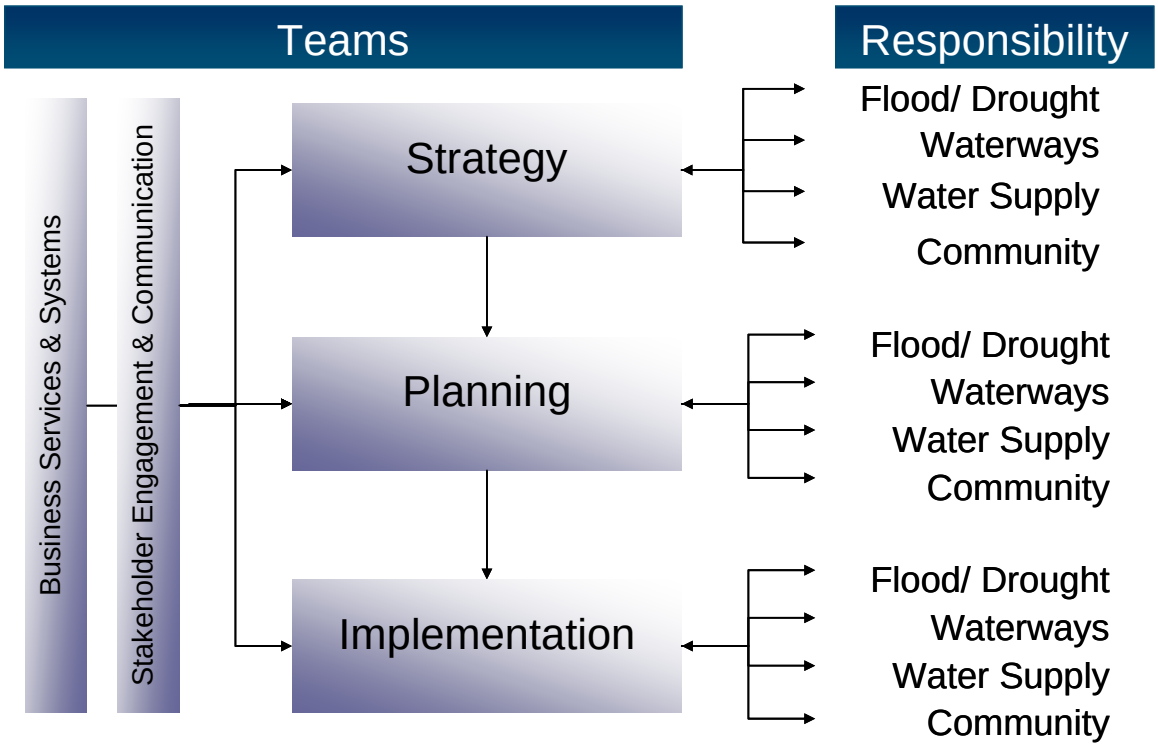

Figure 2. Revised Branch Structure – Process based

2. Urban Water Cycle Integration

Links to the overarching Integrated Water Cycle Management Strategy

Water Smart City – an integrated water management strategy for Brisbane (WSC) is Council's plan to provide a sustainable water future for Brisbane. The strategy considers both the short term (to 2010) and a longer-term (to 2026) future. WSC has three overarching goals:

- Water is a key part of Brisbane's culture: a water literate community;
- Water is at the core of Brisbane's healthy environment; and
- Water contributes to Brisbane's economic prosperity.

The three WSC goals are supported by eight individual, yet integrated WSC Strategies, which provide further guidance through objectives, strategic actions, and performance measures and targets.

The Integrated Water Cycle Process has been established to deliver WSC on the ground and ensure that the whole water cycle is considered when decisions are made. Figure 3 outlines the key steps undertaken in the development of the first Local IWC Plan, and the points at which the process was guided by WSC.

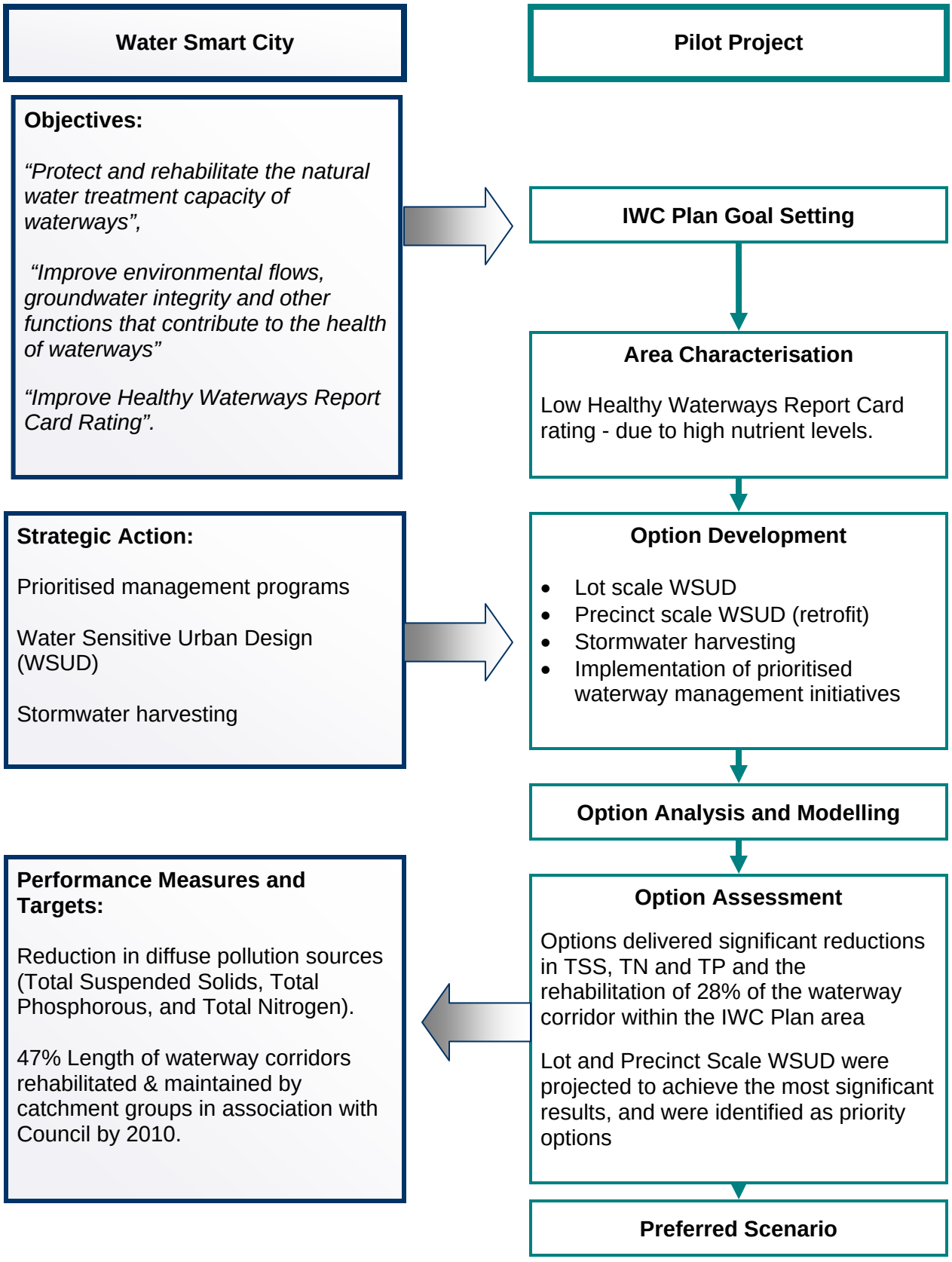

Figure 3. Links between Water Smart City and IWC Planning

Geographic information and Mapping

The Integrated Water Cycle Planning process relies heavily on the use of up-to-date spatial information to allow linkages between the programs being planned and the trends, changes and problems being faced on the ground.

Spatial information is used initially in the area characterisation phase, where available information is used to characterise the area in terms of bio-physical attributes, community behaviour and existing Council programs. Following this, the process of opportunity and constraint mapping is undertaken. Spatial information is used to assess where opportunities for new approaches lie, where constraints exist and identify any priority issues within the area. Examples of this may be severely degraded waterways and areas of disproportionately high water consumption etc.

During the development of the first Local IWC Plan, spatial information on waterway health, current and planned Council rehabilitation and maintenance programs and community involvement was combined to provide a snapshot of waterway health and its management within the catchment. This process highlighted not only areas that needed to be remediated, but also areas that could lend to the implementation of stormwater harvesting and community scale rainwater harvesting Figure 4 .

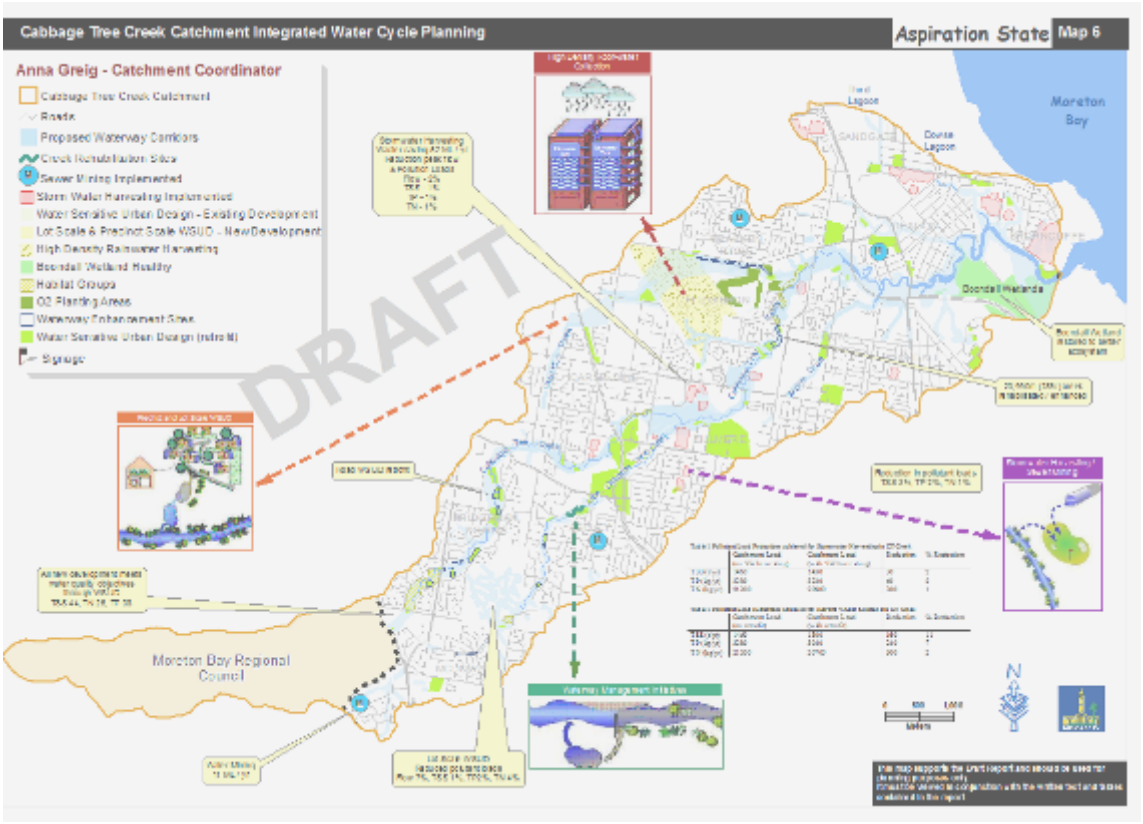

Figure 4. Waterway Health Map – Current Situation and Aspiration State

The development of these maps not only aids in the planning process, it also develops an effective visualisation tool for consultation processes both with other Council departments and with the community.

Delivery plans – for the whole of the water cycle

A key aspect of the Integrated Water Cycle Planning Process is the development of Delivery Plans that are complementary, and address the whole of the urban water cycle in a holistic manner. Previous planning exercises have resulted in the implementation of programs that do not support each other, or the separate implementation of programs that could be linked.

Integrated Water Cycle Plans are implemented through a number of 'Delivery and Enabling Plans'. 'Delivery Plans' outline the actions that will be undertaken, the parties responsible for these actions and the timeframes for their commencement and completion. Delivery plans ensure the achievement of the Water Smart City objectives on the ground. 'Enabling plans' outline the initiatives and programs required to support the actions outlined in the Delivery Plans. Enabling Plans contain initiatives such as reviews of Council policies, required planning exercises, stakeholder collaboration initiatives, and any research required to improve knowledge and understanding.

Delivery and Enabling plans are developed with regard to the actions and outcomes that are required across the water cycle. Recognising that the urban water cycle is influenced by the actions of a range of Council policy areas, Delivery and Enabling Plans are developed not only for Water Resources, but also for other Council departments.

A key outcome of this process is a greater understanding of the suite of programs being delivered by Council, and from this, the opportunities to combine complementary projects, and resolve conflicts between projects and programs. It was noted through this process that programs may be implemented that are in direct conflict with each other. A creek rehabilitation program to achieve waterway health outcomes planned on the same reach as a vegetation removal program for flood management, for example, would inhibit the success of both programs. The success of this process is heavily reliant on significant consultation and cooperation between Water Resources and the other Council departments to achieve agreement and genuine commitment to the implementation of the required actions.

Steps from here

The establishment of Integrated Water Cycle Planning in Brisbane City Council has taken significant investments of time and energy from those involved. The process has, however, proven more effective and critical for the organisation than had been expected. The Integrated Water Cycle Planning Process, and the systems that support it, is expected to continue to progress and mature into the future. The vision is to have an overarching Citywide Integrated Water Cycle Plan, guiding the development of an array of Local Integrated Water Cycle Plans. Council also plans to transfer this process to a dynamic on-line planning tool, linked with spatial information databases and responsive to the annual cycle of program planning that describes specific operational actions and tasks.