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GUIDING INTEGRATED URBAN AND WATER PLANNING

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ABSTRACT

The CRC for Water Sensitive Cities (CRCWSC) research project, *Guiding Integrated Urban and Water Planning (IRP3)* recognises that achieving innovative water sensitive outcomes requires greater integration between urban and water planning. The new project aims to explore how urban development can be deliberately guided through planning to achieve water sensitive outcomes at a range of scales. Researchers from Monash University are working with government and industry stakeholders in different case study contexts across Australia to develop and apply a new framework to support integrated approaches to planning. This paper outlines the preliminary conceptual framework developed by the project, along with some initial insights from its application to recent planning in Fishermans Bend in Melbourne.

INTRODUCTION

Water plays a central role in shaping the design, form and function of a city. In Australia, the concept of a 'water sensitive city' emphasises the importance of water in delivering high quality environments for urban populations. A water sensitive city aspires to provide "water system services in a way that reflects an integrated approach to infrastructure, the built form, the environment, governance and community, in order to deliver outcomes that support the enduring sustainability, liveability, resilience and productivity for a place's community and ecosystems" (Hammer et al. 2018, p.4).

As the definition suggests, achieving a water sensitive city requires integrated urban water systems that deliver multiple benefits beyond the scope of conventional water servicing approaches. These include better urban developments, quality public spaces, enhanced natural environments and hybrid infrastructures. The research project, *Guiding Integrated Urban and Water Planning (IRP3)* seeks to facilitate the achievement of these broader outcomes by establishing a practical framework that

could enable urban planning professionals and water providers to work together towards integrated water systems. The project will facilitate a collaborative planning process with key government, industry, and community stakeholders to:

- identify and resolve current constraints to the delivery of water sensitive outcomes for urban development
- collectively negotiate, refine, assess and approve innovative approaches for the delivery of water sensitive urban development
- identify pathways for the implementation of innovative solutions through the planning and regulatory system.

An initial 'integrated urban and water planning' framework has been developed that will be tested and validated through case studies of varying scales and development contexts across Australia. This paper describes this framework and then briefly applies it to recent planning in Fishermans Bend, an urban renewal project in Melbourne.

CONTEXT AND BACKGROUND

The traditional approach to urban water management in Australia has resulted in large-scale, centrally managed infrastructure systems that have provided urban populations with access to safe, reliable and low-cost water supply, drainage and sanitation services. These systems are typically planned and managed separately from other urban systems such as transport and energy. While traditional approaches have provided many benefits to local communities such as clean drinking water, flood control and public health protection; the complexity and uncertainty associated with current and future sustainability challenges (such as climate change, population growth and the associated increase in demands on water and other urban services) requires a transition away from centralised, institutionally siloed approaches to the planning and provision of water services (e.g. Mitchell, 2006; Brown & Keath, 2008; Farrelly & Brown 2014).

Green, resilient cities that promote the health and prosperity of its citizens, without compromising the natural environment require integrated approaches to urban planning (e.g. Petit-Boix et al., 2017). An integrated urban planning process recognises that all natural and human water systems are interconnected, with each other, as well as with other urban systems (e.g. open space, road and energy networks) so that efficiencies and synergies arise from a coordinated approach (International Water Association, 2016).

Integrated planning is widely considered a feature of good practice planning principles and protocols in Australia (e.g. Infrastructure Australia, 2011, Planning Institute of Australia, 2013). Accordingly aspirations for sustainable, liveable, resilient and productive communities are set out in key policy and policy documents in various states, including *Water for Victoria Plan* (Department of Environment, Land, Water and Planning (DELWP), 2016), *Plan Melbourne 2017-2050* (DELWP, 2017), *2017 Metropolitan Water Plan* for Greater Sydney (Metropolitan Water, 2017) and the *South East Queensland Regional Plan* (Department of Infrastructure, Local Government and Planning, 2017). In Western Australia and Victoria, for example, this is further supported by the incorporation of water planning considerations within planning guidelines for growth areas. *Better Urban Water Management* (Western Australian Planning Commission, 2008) was created to support an integrated approach to land use planning and water management, and the *Precinct Structure Planning Guidelines* (Victorian Planning Authority, 2011) require and provide guidance on developing an Integrated Water Management Plan.

Yet despite supportive policy settings and available guidance, urban planning in Australia's major cities has struggled to deliver alternative approaches.. Notably, the business as usual approach to urban development continues to lead to urban sprawl, loss of green open space and poor environmental outcomes (Coleman, 2017). This reveals a disconnect between current policy aspirations for water sensitive cities and on-ground outcomes, suggesting that a new approach to planning is required. To achieve water sensitive outcomes, planning processes need to promote cross-sectoral collaboration and recognise the interlinkages between water and urban systems.

INTEGRATED URBAN AND WATER PLANNING FRAMEWORK

The CRCWSC's integrated research project, 'Guiding integrated urban and water planning' is currently exploring how different types of urban development can be deliberately guided, at a range of planning scales, to achieve water sensitive

outcomes. Taking an action research approach, the project team is working with government and industry stakeholders on real-world projects across Australia to develop and apply a new framework for integrated urban and water planning. The preliminary framework is made up of 5 distinct planning phases (Figure 1):

Phase 1 – Collaborative governance

Activity: Establish a collaborative planning forum to purposefully integrate urban and water planning processes and influence decision-making. The nature of the forum will vary in each case, ranging from an informal, ad hoc collection of champions to a mandated governance structure. This variation is dependent on scale and complexity, with larger and more complex developments likely to require formal collaborative governance structures with clearly defined roles and responsibilities. The forum will play an ongoing role in the application of the framework, overseeing the activities undertaken in the following phases. Accordingly, this phase is the foundation of the framework and will play an influential role in the achievement of water sensitive planning outcomes.

Phase 2 – Development scenarios

Activity: Explore a broad range of possible development scenarios that explicitly recognise water sensitivity in the physical form and layout of urban development, leading to a collective vision for development that incorporates water sensitive outcomes. The collaborative planning forum will undertake a set of activities to strengthen linkages between urban development scenario planning processes and water planning processes, with consideration of potential synergies with other sectors.

Phase 3 – Servicing options

Activity: Explore a broad range of possible servicing options for water sensitive services (water supply, sewerage, drainage, urban greening, thermal comfort, community connection etc.). Ideas and issues are collectively considered to determine a preferred servicing approach. This decision-making process, as defined and supported by stakeholders, feeds into the broader urban planning process at key decision-making points.

Phase 4 – Evaluation

Activity: Prepare a business case that includes a comprehensive analysis of the costs and benefits (including non-monetary) of preferred development and servicing options for endorsement by key stakeholder organisations. A broad range of costs and benefits are discussed, debated and quantified, leading to the development of a collectively defined fit-for-purpose evaluation framework that becomes embedded into practice.

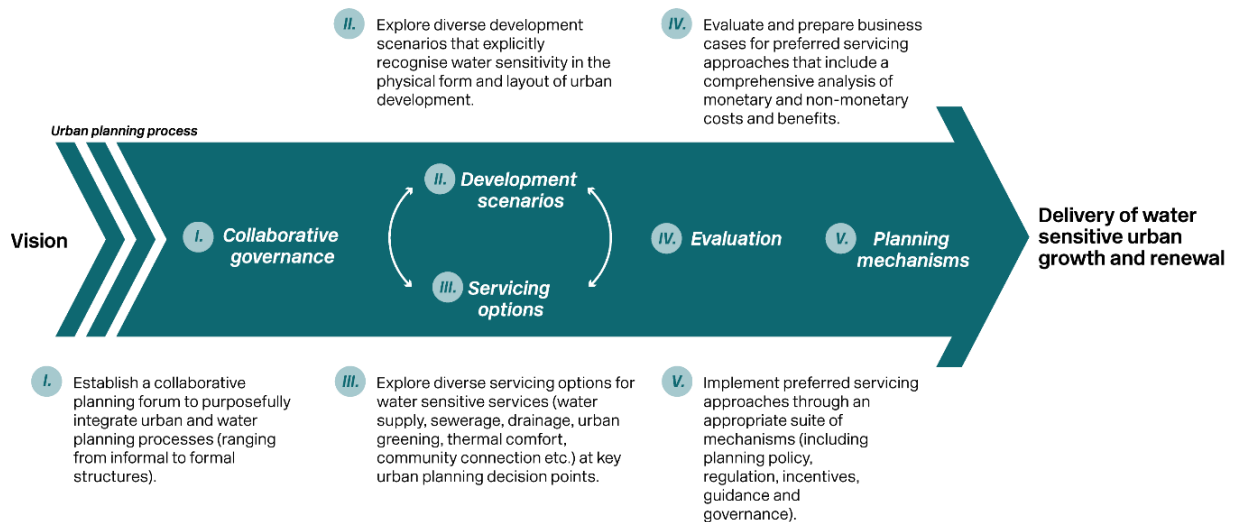


Figure 1: Integrated Urban and Water Planning Framework

Phase 5 – Planning mechanisms

Activity: Establish financing, planning and governance mechanisms to enable the delivery of preferred development and servicing options.

Regulatory and planning controls and instruments that advance the integration between the urban and water planning processes are developed and refined through an iterative and collaborative process, culminating in the provision of comprehensive statutory and non-statutory guidance, with clear and specific water objectives and performance indicators. Where appropriate, a longer-term governance structure that extends or replaces the collaborative planning forum is established to oversee the delivery of the development. Stakeholders collectively define and commit to a clear set of roles and responsibilities. Stakeholders consider a mix of funding sources and instruments to deliver the development, leading to a widely endorsed investment funding plan for the development. Strategies to influence broader policy and governance change are considered.

Although phases are represented as sequential stages, it is recognised that the planning process may not occur in a strictly linear fashion. Phases may overlap and can be highly iterative. A detailed matrix sits behind the framework, outlining a continuum of approaches for each phase, ranging from conventional to more advanced practices. This progression is also accompanied by increases in

integration (across actors, sectors and disciplines), complexity, formality and scale.

In any application, the sequence of activities will be unique. This may include phases overlapping or occurring concurrently, as well as activities occurring more than once due to feedback loops, increasing specificity and/or external factors. Similarly, the level of practice that is present in any application will be unique and include variation among phases (e.g. some phases maybe more advanced than others). While the level of practice that is appropriate for a given application will be unique to that context, in general terms, the greater the number of phases that feature an increased 'level of practice', the more likely it is that water sensitive planning has been effectively integrated into the broader urban planning process.

Once fully developed, it is anticipated that the framework and supporting matrix can be used for multiple functions, including as a diagnostic tool to understand current level of practices in a particular planning context, as well as to envision preferred levels of practice and potential pathways moving forward. The final product from this research will include detailed processes and guidance that define each level of practice, illustrated through different case study examples. The framework will identify key areas to target within the urban planning process at each stage. Given the non-linearity of this

framework, the supporting guidance tool will be designed to enable users to 'enter' the framework at different stages (depending on the timing of the particular planning process that the user wishes to influence) in order to achieve better water sensitive outcomes.

DISCUSSION

Early engagement with government and industry stakeholders has validated the relevance of the framework and highlighted the potential scope of application. Notably, the preliminary framework was tested and refined through an examination of Fishermans Bend. Interviews with practitioners and a review of relevant documentation (evidence-based research reports, strategies and plans) revealed the historical evolution of planning for Fishermans Bend. This was then mapped against the matrix to demonstrate the progressive integration, formality and complexity of planning processes over time. The results highlighted variation in the level of practice across each phase, with higher levels of practice evident for the collaborative governance and planning mechanisms phases. The investigation has also provided a series of lessons for undertaking integrated urban water planning in relation to large-scale brownfield inner city redevelopments.

Fishermans Bend is Australia's largest urban renewal project, covering approximately 480 hectares within five kilometres of Melbourne's CBD. It is a unique redevelopment and of such a scale as to provide considerable opportunities for the implementation of innovative, sustainable infrastructure solutions within an urban setting. The urban renewal area consists of five precincts across two municipalities – the City of Melbourne and the City of Port Phillip, and expected to house approximately 80,000 residents and provide employment for up to 80,000 people (DELWP, 2019). Development in the area is subject to a number of challenges. Former industrial land uses have impacted the quality of soils and led to groundwater contamination. The site also contains variable and unstable soils, and its topography (flat and low lying) and situation at the end of the floodplain of the Yarra River renders significant parts of the urban renewal area vulnerable to inundation during tidal events. Furthermore, the limited capacity of existing stormwater infrastructure often leads to stormwater induced flooding. Future climate change impacts in the form of extreme storm surges and heat waves also require careful consideration as the area is renewed. Additionally, as a predominantly privately owned area, public spaces are limited, which may have implications for urban greening and open space initiatives.

The development of Fishermans Bend is guided by the Fishermans Bend Framework, a long-term

strategic plan that supports the transition of the area into "connected, liveable, prosperous, inclusive, healthy and environmentally sustainable place" (DELWP 2018, p.6). State and local government agencies have established a collaborative mechanism to oversee the planning and development of the area. The Fishermans Bend Development Board was established in 2018 to ensure the vision for the urban renewal area is realised, and supported by the Fishermans Bend Taskforce, which is made up of members from the Department of Environment, Land, Water and Planning, the City of Melbourne, the City of Port Phillip and the Victorian Planning Authority.

Early analysis has shown that the planning process for the urban renewal area was initially characterised by two separate, but interlinked planning processes (urban planning and water planning) running in parallel. Dual membership in collaborative forums established by each planning process fostered strong linkages between the water and urban planning processes. This in turn highlights how particular individuals can have a strong influence on the relevance and effectiveness of the collaborative arrangement. Notably, the ability to identify and exploit opportunities to influence the urban planning process can be attributed to the presence of champions, particularly individuals in leadership or otherwise influential positions, that were able to push for innovative solutions and proactively steer the water planning process to ensure that key evidence-based inputs were prepared and available to feed into the urban planning process at critical decision-making junctures.

Embedding innovative water servicing solutions within a planning instrument is critical to transforming planning instruments into important enablers. This requires the timely availability of supporting evidence. For example, the water utility commissioned a number of studies early on in the planning process to evaluate a range of conventional and water sensitive servicing options. The studies were strategically timed to obtain relevant Board approvals, as well as inform the development of the Fishermans Bend Framework Plan at each iteration. The adoption of a proactive water planning approach, which was often a step ahead of the concurrent urban planning process, ensured that relevant and evidence-based studies, plans and assessments were available at critical decision-making junctures (e.g. as draft Framework Plans were developed) to successfully influence outcomes at these stages.

Application of the integrated urban and water planning framework to Fishermans Bend has revealed a number of process lessons for integrated planning. In general terms, the integrated planning process needs to be sufficiently flexible and

adaptable to withstand unforeseen or disruptive changes in the external operating or political environment (e.g. a change in government) and allow for additional time. As this process can be “messy” and dependent upon the capabilities of the practitioners involved, it needs to be sufficiently resilient to prevent reversion to ‘business as usual’ processes and ensure that the outcomes and decisions developed through the collaborative planning process will be able to survive the departure of particular advocates or champions such that implementation proceeds in line with the agreed upon vision and objectives.

CONCLUSION

Early framework development and stakeholder engagement suggests that the framework can be used for multiple functions, including as a diagnostic tool to understand current level of practices in a particular planning context, and potentially as a transition planning tool to envision preferred levels of practice and identify pathways moving forward. The project will continue to develop and refine the framework through application to real-world case studies across Australia. These learnings will be consolidated into a guidance manual that will be supported by a user-friendly, web-based package of tools to promote industry capacity building and adoption.

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