



CRC for
Water Sensitive Cities

Vision and Transition Strategy for a Water Sensitive Greater Perth

Implementation Plan 2019–2021



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Vision and Transition Strategy for a Water Sensitive Greater Perth – Implementation Plan 2019–2021

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Water Sensitive Transition Network

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Table of Contents

Foreword from the Water Sensitive Transition Network Chair	4
1. Introduction	6
2. Vision and Perth's Progress	7
2.1 Benchmarking with the Water Sensitive Cities Index	8
2.2 Advancing Perth's water sensitive transition	11
3. Achieving the vision through strategy and actions	13
3.1 Achievements to date.....	13
3.2 Actions for 2019-2021	13
3.3 Vision theme 1: Fostering stewardship of the system	14
3.4 Vision theme 2: Protecting and enhancing the wellbeing of people and the environment	15
3.5 Vision theme 3: Integrating and engaging with the built and natural landscape.....	16
3.6 Vision theme 4: Sustaining the long-term use of Perth's resources	17
4. Implementation.....	18
4.1 Water Sensitive Transition Network.....	18
4.2 Monitoring progress	19
4.2.1. Macro-level progress	19
4.2.2. Actions	20
5. References	21
Attachment 1 – Perth Water Sensitive Transition Network Participants April 2019	22
Attachment 2 – Transition Dynamics Framework matrices for Perth.....	24



Foreword from the Water Sensitive Transition Network Chair

Perth stakeholders have formed a shared vision of Perth as a leading water sensitive city. The people of Perth expect that those responsible for managing our water make the most of all opportunities across the urban water cycle to deliver greater community benefit and protect our water environments.

We are facing complex challenges that traditional thinking and a siloed approach cannot solve. A water sensitive city requires many stakeholders, including an empowered community, working together towards this common goal.

Leaders from 26 stakeholder organisations spanning state and local government, research, private industry and community sectors have formed a strategic network aimed at guiding the transition of Perth towards a water sensitive city. This network – the Water Sensitive Transition Network – was formed in 2016 and has gained momentum and grown as a cross-sector community of practice. Partners are united through their commitment, goodwill and shared vision for a sustainable, highly liveable city.

The Water Sensitive Transition Network has worked with the Cooperative Research Centre for Water Sensitive Cities to develop our *Vision and Transition Strategy for a Water Sensitive Greater Perth: Implementation Plan 2019–2021*. This plan outlines strategic, coordinated actions by key stakeholders to progress Perth's transition to a leading water sensitive city.

Perth is one of the world's cities most impacted by climate induced water scarcity. We have seen average streamflow into our dams reduce by around 80% since the mid-1970s. Our climate is continuing to become hotter and drier. At the same time, urban development and the demand for water are continuing to grow. Planning is under way to accommodate an anticipated 3.5 million people by 2050, requiring urban expansion and intensification. A key challenge for Perth is how to create and maintain highly liveable communities when natural water sources continue to decline.

Of the 800,000 new homes expected to be needed in Perth by 2050, State Government planners aim for 47% to be located within the existing urban footprint, requiring urban intensification and infill development. This poses significant challenges and opportunities for how water services and other infrastructure are provided into the future to create a more sustainable city. Clever planning and design can create higher density living while enhancing green spaces and urban forests.

Other key challenges include rebalancing our precious groundwater aquifers through sustainable use and replenishment, and improving the health of our iconic Swan Canning river system and wetlands. Innovative approaches to urban form and water servicing are required because urban development has moved into constrained areas, including areas with shallow, nutrient-rich groundwater and areas without available groundwater to irrigate parks and ovals. New approaches to urban development are required that prevent pollutants from entering our waterways, wetlands, ocean and groundwater.

We need to create public spaces that are appropriate to our climate and develop affordable, sustainable water supplies to maintain the parks and green spaces that make Perth highly liveable. Approaches to integrate water and vegetation throughout the urban landscape are required to reduce urban heat, provide human health and wellbeing benefits, and protect our receiving waterbodies.



By continuing to work with our diverse stakeholders, the Transition Network will find clever solutions to our water challenges. A multi-disciplinary approach to city planning will enable our city to evolve as being resilient to climate change, highly liveable, economically productive and sustainable over the long term.

It is the Transition Network's aim to create a city that manages water in the urban landscape in ways that create healthy environments and great places to live, now and in the future.

John Savell

Chair, Water Sensitive Transition Network



1. Introduction

Water makes Perth a great place to live. We understand and value our beautiful, healthy water environments, treat them with care and use water wisely.

This Implementation Plan has been developed by the Perth Water Sensitive Transition Network with assistance from the Cooperative Research Centre for Water Sensitive Cities (CRCWSC). It outlines the actions and ideas the Water Sensitive Transition Network believe are important to implement the strategies in the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018) to achieve Perth's water sensitive vision. It provides a framework for delivery, monitoring and review of Perth's transition progress.

This report is a companion to the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018), which built on *Shaping Perth as a Water Sensitive City: Outcomes and perspectives from a participatory process to develop a vision and strategic transition framework* (Rogers et al., 2015).

This Implementation Plan is intended to provide guidance for future policy and planning, to be used by many different stakeholders as a sector-wide strategic framework to inform the development of intra- and cross-organisational policies, strategies and programs that facilitate the delivery of a water sensitive Greater Perth (the Perth metropolitan area defined in *Perth and Peel @3.5 million* land use planning and infrastructure frameworks).

The content in this document reflects the priorities identified collaboratively by the Water Sensitive Transition Network on the basis of their collective knowledge, supported by research led by the CRCWSC, particularly Integrated Research Project 1: Water Sensitive City Visions and Transition Strategies¹ and Project A4.2 Mapping Water Sensitive City Scenarios². This document and the actions it describes have no formal organisational commitment or status in government policy. It is not intended to be a substitute for a state-led water or water wise strategy.

The Water Sensitive Transition Network would sincerely like to thank Dr Briony Rogers, Chris Chesterfield and Katie Hammer from the CRCWSC for sharing their knowledge and insights and their unwavering commitment to helping us understand the importance of our Vision and Transition Strategy.

¹ <https://watersensitivecities.org.au/content/project-irp1/>

² <https://watersensitivecities.org.au/content/project-a4-2/>



2. Vision and Perth's Progress

The CRCWSC notes that 'Developing a shared perspective of water today, a compelling vision for the future and a framework to guide coherent strategic action is critical for establishing the understanding, motivation and capacity amongst stakeholders to drive their WSC transition' (Hammer et al., 2018).

In Australia, the vision of a water sensitive city (WSC) is now widely used to represent an aspiration in which water has a central role in shaping a city. In a WSC, ecosystems are healthy, people are not disrupted by flooding and can enjoy reliable water supplies, effective sanitation, cool green landscapes, efficient use of resources, and beautiful urban spaces that bring the community together. In Western Australia, the term 'Waterwise city' is being used to describe the same concept. This concept represents the highest level of performance and achievement in urban water management.

The *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018) describes how WSC concepts are to apply specifically to the Perth and the Peel metropolitan region. The report presents the 2065 vision of Greater Perth as a water sensitive city that was developed by project participants. Their aspirations are expressed as a suite of outcome statements with accompanying rich descriptions, organised into four interconnected themes to orient and align the actions of stakeholders over the long term (Figure 1).

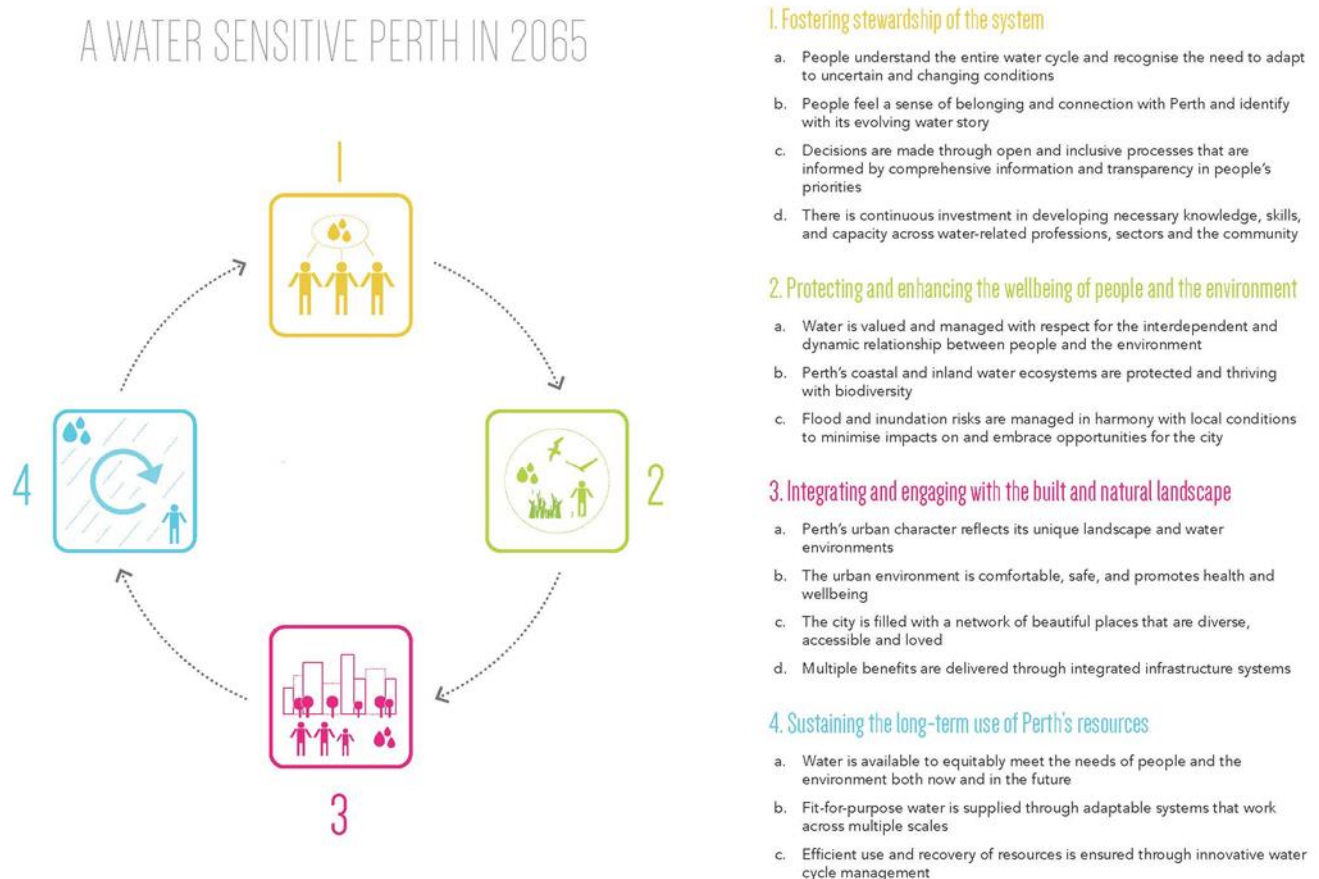


Figure 1: The vision for a water sensitive Perth in 2065



2.1 Benchmarking with the Water Sensitive Cities Index

To assist Perth to transition to its water sensitive city vision, a group of key water champions worked with the CRCWSC to apply the Water Sensitive Cities (WSC) Index benchmarking tool in 2016. The WSC Index articulates seven WSC goals, which organise 34 indicators representing the major attributes of a WSC. The results for each of the seven goals are shown in Figure 2 and Table 1. The CRCWSC has mapped the indicators to the idealised city-states in the Urban Water Transitions Framework (Hammer et al., 2018) and these are also shown in Figure 2.

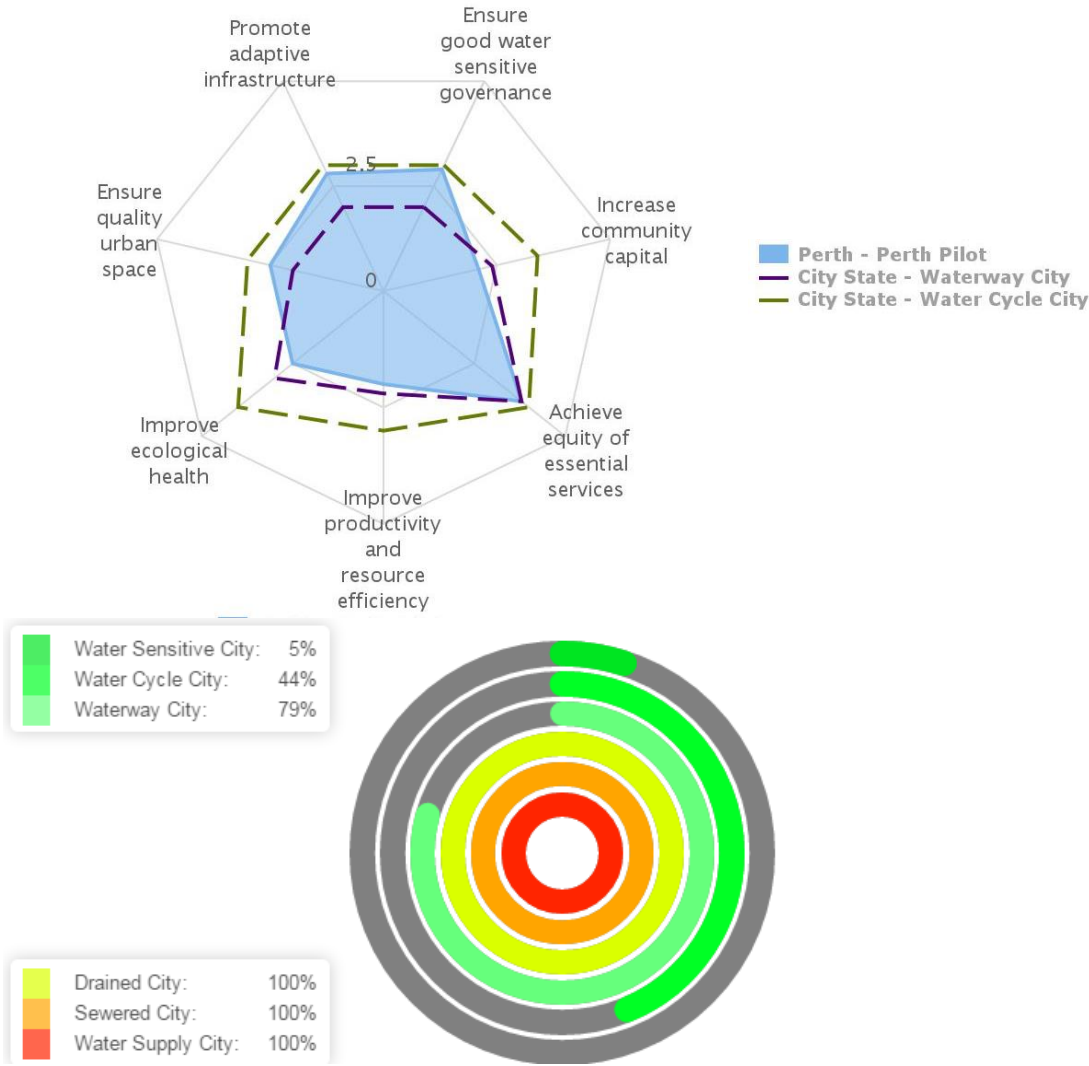


Figure 2: Results of Perth’s benchmarking using the WSC Index in 2016

Perth is well-advanced at moving beyond the essential services of water supply, wastewater and drainage services, which are provided to a very high standard (100% achievement of a ‘Water Supply’, ‘Sewered’ and ‘Drained’ city in Figure 2). We are a city that has made good progress in managing water to achieve social,



amenity and environmental health outcomes (a 'Waterway City'), as well as developing diverse, fit-for-purpose supplies (a 'Water Cycle City'). The results suggest a need to focus on the goal areas of increasing community capital, improving ecological health and improving productivity and resource efficiency to progress Perth towards a water sensitive city.

While a score of '5' for each goal is considered to represent achievement of the water sensitive city state, the CRCWSC recognises that a city's local WSC vision may not emphasise all indicators of the WSC Index to the same degree. Perth's vision scores were mapped by the CRCWSC and are shown in brackets in each indicator box in Table 1. Mapping of the indicators against the vision themes is shown in Table 1, represented by the colour of each vision theme. Some indicators may be relevant to multiple vision themes, but the mapping in Table 1 shows where each indicator is most relevant.



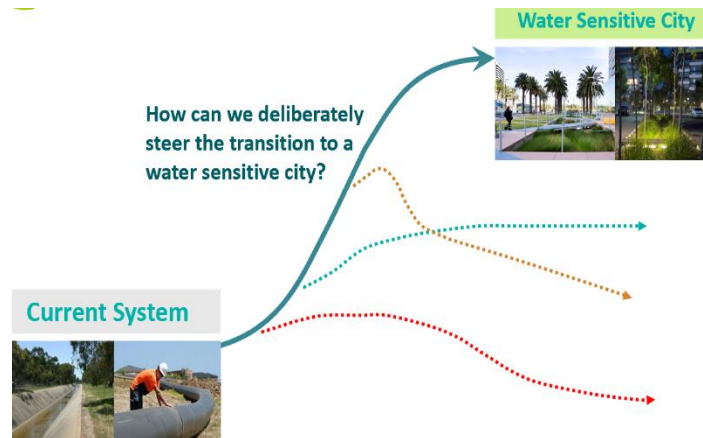
Table 1: WSC Index indicator scores for Perth benchmarked in 2016 and Perth's Vision in 2065 (vision scores in brackets)

Goal 1. Ensure good water sensitive governance 2.9 (4.1)	Goal 2. Increase community capital 2.1 (4.7)	Goal 3. Achieve equity of essential services 3.8 (4.8)	Goal 4. Improve productivity and resource efficiency 2.0 (4.0)	Goal 5. Improve ecological health 2.5 (4.5)	Goal 6. Ensure quality urban space 2.5 (4.3)	Goal 7. Promote adaptive infrastructure 2.8 (4.0)
1.1 Knowledge, skills and organisational capacity 3.0 (4.0)	2.1 Water literacy 2.0 (5.0)	3.1 Equitable access to safe and secure potable water supply 5.0 (5.0)	4.1 Benefits across other sectors because of water-related services 3.0 (5.0)	5.1 Healthy and biodiverse habitat 2.0 (5.0)	6.1 Activating connected pleasant urban green and blue space 3.0 (5.0)	7.1 Diverse fit-for-purpose water supply system 3.0 (4.0)
1.2 Water is key element in city planning and design 3.0 (5.0)	2.2 Connection with water 2.0 (5.0)	3.2 Equitable access to safe and reliable sanitation 4.0 (5.0)	4.2 Low GHG emission in water sector 1.0 (4.0)	5.2 Surface water quality and flows 3.0 (4.0)	6.2 Urban elements functioning as part of the urban water system 2.0 (4.0)	7.2 Multi-functional water system infrastructure 3.0 (4.0)
1.3 Cross-sector institutional arrangements and processes 3.0 (4.0)	2.3 Shared ownership, management and responsibility of water assets 2.0 (4.5)	3.3 Equitable access to flood protection 4.0 (4.0)	4.3 Low end-user potable water demand 2.0 (4.0)	5.3 Groundwater quality and replenishment 2.0 (4.0)	6.3 Vegetation coverage 2.5 (4.0)	7.3 Integration and intelligent control 3.0 (4.0)
1.4 Public engagement, participation and transparency 2.5 (4.0)	2.4 Community preparedness and response to extreme events 2.0 (5.0)	3.4 Equitable and affordable access to amenity values of water-related assets 2.0 (5.0)	4.4 Water-related economic and commercial opportunities 2.0 (3.0)	5.4 Protect existing areas of high ecological value 3.0 (5.0)		7.4 Robust infrastructures 3.0 (4.0)
1.5 Leadership, long-term vision and commitment 4.0 (4.0)	2.5 Indigenous involvement in water planning 2.5 (4.0)		4.5 Maximised resource recovery 2.0 (4.0)			7.5 Infrastructure and ownership at multiple scales 2.5 (4.0)
1.6 Water resourcing and funding to deliver broad societal value 3.0 (4.0)						7.6 Adequate maintenance 2.5 (4.0)
1.7 Equitable representation of perspectives 2.0 (4.0)						
<p>Fostering stewardship of the system</p> <p>Protecting and enhancing the wellbeing of people and the environment</p> <p>Integrating and engaging with the built and natural landscape</p> <p>Sustaining the long-term use of Perth's resources</p>						



2.2 Advancing Perth's water sensitive transition

Lasting change is difficult to achieve. The conventional way of achieving an outcome is to develop a series of strategies or actions which support a defined objective or goal. It is generally assumed that by implementing the strategies, the desired outcomes are achieved. However, CRCWSC research has suggested that the nature of water sensitive cities is so complex that this simple approach is unlikely to be effective, and changes made are likely to only be effective in the short term. The research has demonstrated the importance of understanding the social processes that link the multiple complex, interconnected systems that comprise a WSC, and the need to deliberately guide a transition process to achieve lasting change.



Projects don't lead to transition – processes do

As described in the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018), WSC transitions unfold over six phases: (1) an issue with old practice emerges and (2) becomes more defined; (3) people develop a shared understanding and agreement about the issue; (4) knowledge about solutions is disseminated; and (5) new solutions are diffused through policy and practice, and eventually (6) embedded as new mainstream practice (**Error! Reference source not found.**).



Figure 3: Phases of change

The CRCWSC recognises the importance of the need to move through these phases to create lasting change.

The CRCWSC's Transition Dynamics Framework builds on this idea and proposes five types of enabling factors that are needed to help to drive progress through the six phases of change: **champions, platforms for connecting, science and knowledge, projects and applications, and practical and administrative tools and instruments**. These five types of enabling factors are considered critical to create an enabling environment for accelerating water sensitive transitions.



2.3 Where is Perth at in its water sensitive city transition?

The CRCWSC research team, with the assistance of some participants in Perth, applied the Transition Dynamics Framework to Perth in 2015 and then again in 2017 (**Error! Reference source not found.**). The CRCWSC noted:

The overall transition progress assessment for Perth suggests that significant advancements have been made towards its water sensitive vision. However, it is at risk of stagnation if critical enabling conditions are not established to shore up Phase 3 (shared understanding and issue agreement) and Phase 4 (knowledge dissemination) and continue pushing into Phase 5 (policy and practice diffusion).

Based on this analysis, the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018) recommended four high-level strategies to progress Perth's WSC transition:

- I. Develop a broad community mandate for pursuing the vision for a water sensitive Perth
- II. Embed Perth's water sensitive vision in organisational policies, plans and strategies
- III. Increase knowledge about potential solutions for aspects of Perth's WSC vision that are less progressed
- IV. Implement large-scale demonstrations and develop practical guidance for a broad range of water sensitive solutions.

These strategies have assisted development of the actions in this Plan.

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Aligned and influential champions	Building broad support	Solutions advanced	Significant solution demonstrations	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation

Notes: Green boxes indicate the enabling factor is fully present and regression into the previous phase is unlikely. Yellow boxes indicate some presence, however they are vulnerable to regressing to the previous phase. Red boxes indicate a complete absence of the enabling factor, and that progression is unlikely.

Figure 4: Results of the application of the Transition Dynamics Framework to Perth in 2017



3. Achieving the vision through strategy and actions

The following action plan has a short-term focus, based on the long-term goal of achieving Perth's vision for a water sensitive city. It is intended to be a 'live' document that is annually reviewed and updated by the Water Sensitive Transition Network.

3.1 Achievements to date

Since the establishment of the Water Sensitive Transition Network (WSTN) in 2016 and its supporting subcommittees in 2017, the network has achieved a number of outcomes. These include:

- meetings with the Minister for Water to scope priority actions for the delivery of a Water wise Perth
- market research that explored the community's knowledge and perceptions of what it means to be part of a water sensitive community in Western Australia. The objective of the research was to guide messaging and communications that can be used across the different partner agencies to ultimately facilitate attitude and behaviour change within the community.
- development of a common list of messages and phrases to be used by all agencies on the WSTN to educate the community on water sensitive cities
- application of the Transition Dynamics Framework to Perth to identify the enabling conditions required to achieve WSC Index goals
- finalisation of the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018) in partnership with the CRCWSC
- development of collective 'Policy Pitch' projects that were road tested by a panel of experts facilitated by Prof. John Thwaites
- input into the revision of *State Planning Policy 2.9: Water Resources and Modernising Western Australia's Planning System: Green paper for planning reform*
- an Open Space workshop to identify what research is needed to help deliver healthy, liveable cities that are resilient to a changing climate.

3.2 Actions for 2019–2021

The WSTN has identified a number of actions that its members will work on collectively to support and deliver between 2019 and 2021. The actions in the following sections were prioritised based on:

- the findings outlined in the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018) including the recommended strategies



- Perth's WSC Index score and areas where there is the greatest opportunity for improvement to achieve the vision score (largest gaps)
- enabling factors that are emerging and therefore need a concerted effort to embed the practice change
- the knowledge of WSTN members, particularly to identify local opportunities for delivering outcomes.

3.3 Vision theme 1: Fostering stewardship of the system

Action		Short-term target (by 2020)
1.1	Undertake social research to understand community values, benefits and people's connection to local water assets, and use this research in community engagement activities	Project plan prepared, funding for delivery obtained and research commenced Outcomes communicated to all parties on WSTN
1.2	Develop a number of simple messages targeting the public/community to increase water awareness; to be used by all organisations.	Messages developed, agreed and used by each agency on WSTN Marketing tool kit developed for use by developers and housing industry
1.3	Review existing community engagement programs (including those that do not have a water focus) and seek opportunities to include common messages	Messages are tested (and evaluated) e.g. in a METRONET community workshop or through a display at the Royal Show
1.4	Engage Whadjuk Noongar people to collect and use Noongar water knowledge and stories to inform water management planning and urban design, and to enhance community connection and cultural outcomes	Five water stories published Prepare project plan for Noongar involvement in water planning and decision making Seek comments and support from DPLH and SWALSC Seek funding for delivery
1.5	Provide a common WSTN portal to share information and facilitate collaboration between members	Portal established and being used by WSTN members
1.6	Develop partnerships around projects (on-ground projects and policies development) to connect a diverse range of stakeholders (including non-water sector)	Recognise Brabham and Knutsford as WSC exemplar projects which receive cross-agency support for delivery Share learnings of projects and collaboration processes on WSTN information portal and across state and local government agencies, including industry forums etc.
1.7	Build interest and support for water sensitive cities in local governments	Develop a coherent strategic engagement package targeting senior executives and elected officials in local government, which includes understanding linkages to local government roles and decisions



3.4 Vision theme 2: Protecting and enhancing the wellbeing of people and the environment

Action	Short-term target (by 2020)
2.1 Partner with researchers to provide evidence which strengthens relationships between water system services and mental and physical health (e.g. urban heat, WSC business case)	<p>Prepare project plan and seek funding for delivery</p> <p>Use big data to identify where the priority community health issues are/will be located</p>
2.2 Undertake a coordinated education program to increase the community's understanding of how urban activities impact the health of wildlife and people	Education program scoped and funding for delivery secured
2.3 Reduce contaminants, including nutrients, organic material and sediment, entering the Swan and Canning rivers and maintain or improve environmental flows	Implement the River Protection Strategy
2.4 Implement trials and demonstrations of both technical and governance solutions that aim to improve environmental health, including an explicit learning agenda (link to actions 3.5 and 4.3)	<p>Recognise Brabham, Hamilton Hill and Knutsford as WSC exemplar projects which receive cross-agency support for delivery</p> <p>Clarify objectives (e.g. to address specific governance or regulatory barrier) and focus on priority issues in both greenfield and infill, e.g. minimise importation of sand fill; improve water quality; mitigate urban heat</p>
2.5 Continue the Drainage for Liveability program	Five (5) Drainage for Liveability projects completed
2.6 Translate policy goals for the wellbeing of people and the environment into system-wide standards and programs of implementation	<p>Clearly articulate the desired outcomes (what needs to be done where and when) and support with targets (e.g. potentially related to urban heat mitigation, tree canopy coverage, water quality and quantity management)</p> <p>Develop water quality targets for protection of receiving environments and for use in UNDO (Urban Nutrient Decision Outcomes) tool</p> <p>Government to adequately resource the preparation of strategic guidance and water management report assessment officers</p>



3.5 Vision theme 3: Integrating and engaging with the built and natural landscape

Action	Short-term target (by 2020)
3.1 Document and quantify benefits of public and private open space and green infrastructure, including maintenance costs, to support ongoing maintenance commitments by local governments (link to action 4.5)	Gather financial information on lifecycle benefits and costs of WSUD vs conventional drainage/POS, focusing on maintenance, and share comparison via a database of information
3.2 Continue to undertake and support applied research to deliver outcomes (including secure funding) Research findings to inform the development of policies and guidance	Measure performance of a range of WSUD assets in various site conditions and share learnings on performance, design and maintenance Develop guidance that emphasises the need to identify and address the critical water issues within a site and development (place) context
3.3 Strengthen and expand university curriculum for urban planning and design courses to give multi-disciplinary focus to water	WSUD principles are a component of first year planning degrees at UWA, Curtin and Edith Cowan universities
3.4 Support professional and individual development of water professionals and champions to deliver WSC solutions	New WATER Ways to collaborate with the International Water Centre to develop and deliver training session Work with industry peak bodies to develop training programs for urban professionals and provide mentors – at least one collaborative event with each agency each year
3.5 Lead and demonstrate best practice urban form through State government development agencies (LandCorp, MRA and the Department of Communities) Developments at Hamilton Hill, Knutsford, Brabham, Bentley and the METRONET infill precincts, to apply water sensitive design at different urban forms and scales (link with actions 2.4 and 4.3)	Recognise Brabham, Hamilton Hill and Knutsford as WSC exemplar projects, which receive cross-agency support for delivery
3.6 Participate in Government policy development initiatives, which include Water Resource Management Bill, State Planning Policies (SPP) review, Waterwise Perth Strategy, Environmental Protection Policies, Better Water Urban Management review, Design WA, Climate Change Adaptation	Revised Water Resources State Planning Policy and guidelines supported by every agency in the WSTN Updated IPWEA Subdivisional Guidelines adequately address WSC/total water cycle outcomes and are supported by WSTN agencies WSTN to assist in preparing Precinct Design Policy (Design WA)
3.7 Develop a policy or approach for allocation of groundwater and alternative non-potable sources of water that incorporates values/prioritisation (e.g. public benefit, POS) and considers scale, use and feasibility	Action supported by Government, program scoped and funding for delivery secured
3.8 Integrate relevant water issues into regional and district water planning to support implementation of <i>Perth & Peel @ 3.5million</i>	Priority areas identified and scopes prepared for integrated water plans that address key water issues, which may include identification of sources for irrigation of POS, strategies for management of stormwater and groundwater, protection of high value environments, and land/infrastructure required for flood protection



Action	Short-term target (by 2020)
3.9 Hold an annual symposium or conference that brings academics and professionals together to explore emerging knowledge and solutions	Demonstrate how WSC outcomes can be delivered through built form including building scale application of green infrastructure
3.10 Improve public access to water bodies within the Greater Perth area	Maintain and improve the level of public access to and along foreshore areas of the Swan and Canning rivers Implement Swan Canning Riverpark Trail, including walking, cycling and kayaking trails

3.6 Vision theme 4: Sustaining the long-term use of Perth's resources

Action	Short-term target (by 2020)
4.1 Support local governments to undertake visioning / benchmarking workshops and progress towards achievement of Waterwise Gold status and eligibility for Platinum status	50% of metropolitan local governments have achieved Waterwise Gold status and 30% of local governments are eligible for Platinum status
4.2 Integrate WSC principles into WA's climate change policy to address the water energy nexus	WSC principles and water-energy nexus explicitly recognised in State Climate Change Policy
4.3 Continue to build organisational and industry capacity through adequately resourced capacity building programs (e.g. New WAtEr Ways)	Ongoing funding secured for New WAtEr Ways (at least \$100k pa).
4.4 Implement trials and demonstrations of innovative adaptive, multi-functional and resource recovery solutions, including an explicit learning agenda	Support the Water Corporation's Water Research and Innovation Precinct to pilot new wastewater treatment and water resource recovery technologies based on sustainability principles
4.5 Share knowledge and data through strengthened collaboration platforms focused on delivering adaptive infrastructure and resource efficiency solutions across organisations and sectors (link to action 3.1)	Develop data sharing platform for water monitoring data (similar to the Index of Biodiversity Surveys for Assessments)
4.6 Strengthen policy and regulation to encourage and enable adaptive infrastructure and resource recovery solutions to be adopted	Incentivise reuse and recycling schemes that are appropriate at scale and fit for purpose
4.7 Share economic valuation methods to support business cases for different scales and beneficiaries (including maintenance of water sensitive systems)	Life cycle cost/benefit information for a range of treatments at various scales is readily accessible Develop a business case for maintenance that is used by local governments to obtain support for appropriate levels of resourcing
4.8 Quantify non-market values (benefits/risks) and share effective tools, supported by industry training	CRCWSC benefit cost analysis tool and benefit transfer tool used by WSTN agencies and the broader industry One training course held



4. Implementation

One of the most significant learnings from the CRCWSC research is that creating a liveable, productive, sustainable and resilient city cannot be achieved through the actions of one agency, one industry or one project – it requires the collaborative effort of government at all levels, working with industry and the community to bring about lasting change.

This Plan is intended to provide guidance for future policy and planning, to be used by many different stakeholders as a sector-wide strategic framework to inform the development of intra- and cross-organisational policies, strategies and programs.

As stated previously, this document and the actions it describes have no status in government policy. The key driver for implementation of this Plan is the WSTN.

4.1 Water Sensitive Transition Network

The WSTN is a community of practice – a group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.

The WSTN is informal and self-organising, with a mutual desire to work collaboratively in partnership towards beneficial outcomes, but with no formal obligations imposed on individuals or organisations with respect to funding/resourcing.

The WSTN members respect the Charter which outlines the following attributes and behaviours of the network and its members:

- We are a leadership group of champions in the urban water sector.
- Individually and collectively we have the ability (be it knowledge, networks, authority, legitimacy) to influence decision making in relation to urban water management to progress a water sensitive Perth.
- We are supported by our respective organisations' mandates, and can represent our agencies, to contribute towards a water sensitive Perth.
- We strive to work individually and collectively towards our common aim of a water sensitive Perth.
- We proactively focus on strategic activities to progress Perth's transition to a water sensitive city.
- We provide a forum for new information, learning and projects to be shared.
- As a group, we are informal and flexible in nature.
- Our collective role will evolve over time, responding to opportunities and adapting to challenges.



We will:

- act as water sensitive city champions and advocate for a WSC approach within our professional networks and within our organisations
- represent our respective organisations as we provide advice and support as appropriate on the WSC approach within and external to the group
- provide eyes and ears into the Perth community on opportunities to advance a WSC
- share information on successes and 'not so good' outcomes
- promote coordinated, common messages (both verbally and written) around water sensitive cities
- act in good faith and in the spirit of collaboration.

Due to the scope, scale and complex nature of work required to transition Perth to a water sensitive city, the WSTN established four subcommittees to enhance opportunities for collaboration and delivery:

- Community Engagement and Communication
- Policy and Governance
- Technical Capacity and Partnerships
- Research.

These subcommittees meet regularly and have developed their own work programs to support new ideas, seek opportunities, work constructively through challenges, share lessons and influence others.

4.2 Monitoring progress

Perth's transition towards its WSC vision will require significant changes across the structures, cultures and practices of urban and water system planning, design, management, engagement and decision making. These changes are likely to occur over a long timeframe, which makes monitoring and review of progress difficult. It will be possible to monitor implementation of actions identified in this Plan at an individual level; however, it is critical that monitoring of progress is also undertaken at a higher, macro level.

4.2.1. Macro-level progress

The WSTN will review progress towards achieving the vision by applying the WSC Index benchmarking tool and Transition Dynamics Framework every three years. This will assist in identifying new areas of focus (new strategies and actions), on the basis of progress measured by these tools.

Consideration will then be given to the relationships between the vision themes, Index goals (and indicators), enabling conditions and strategies in the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer, et al., 2018) that will optimise outcomes.



4.2.2. Actions

Due to the short-term focus of this action plan, it will be reviewed annually, with completed actions recognised in the next version.

The WSTN will prioritise new actions for inclusion by applying the criteria described in section 3.



5. References

Hammer, K., Rogers, B.C., Chesterfield, C., (2018). *Vision and Transition Strategy for a Water Sensitive Greater Perth*. Melbourne, Australia: Cooperative Research Centre for Water Sensitive Cities.

Rogers, B.C., Hammer, K., Werbeloff, L., Chesterfield, C., (2015). *Shaping Perth as a Water Sensitive city: Outcomes of a participatory process to develop a vision and strategic transition framework*. Melbourne, Australia: Cooperative Research Centre for Water Sensitive Cities.



Attachment 1 – Perth Water Sensitive Transition Network Participants 2019

Name	Organisation
Giles Pickard (WSTN Deputy Chair)	City of Canning and Australian Institute of Landscape Architects
Rachel Williams	City of Canning
Claire Braithwaite	City of Cockburn
Natalie Lees	City of Mandurah
Max Hipkins	City of Nedlands
Shelley Smith	City of Perth
Anita Marriott	City of Vincent
Sara Orsi	City of Vincent
Mike Mouritz (Chair, Research Subcommittee)	CRCWSC Board Director
Katie Hammer	CRC for Water Sensitive Cities
Emma Yuen	CRC for Water Sensitive Cities
John Savell (WSTN Chair)	Department of Communities (Housing)
Sue Martins	Department of Communities (Housing)
Emma Monk (Chair, Technical Capacity & Partnerships Subcommittee)	Department of Biodiversity, Conservation and Attractions
Richard Theobald	Department of Health
May Carter	Department of Local Government, Sport and Cultural Industries
Rob Thomson	Department of Local Government, Sport and Cultural Industries
Loretta Van Gasselt	Department of Planning, Lands and Heritage



Name	Organisation
Winsome MacLaurin (Chair, Community Engagement & Communication Subcommittee) (WSTN Executive Support)	Department of Water and Environmental Regulation
Susan Worley	Department of Water and Environmental Regulation
David Horn	GHD
Josh Byrne	Josh Byrne and Associates
Greg Ryan	LandCorp
Nadja Kampfenkel	Lendlease
Jason Pitman	Perth NRM
Tanya Steinbeck	UDIA
Samantha Thompson	UDIA
Shelley Shepherd	Urbaqua
Carolyn Oldham	UWA
Mark Batty	WALGA
Natasha Ogonowski	Water Corporation
Nadine Riethmuller	Water Corporation
Mel Roosendaal	Water Corporation
Antonietta Torre	Water Corporation
Sergey Volotovskiy (Chair, Policy & Governance Subcommittee)	Water Corporation
Giles Pickard (WSTN Deputy Chair)	City of Canning and Australian Institute of Landscape Architects



Attachment 2 – Transition Dynamics Framework matrices for Perth

Transition Dynamics Framework was applied to Perth in 2015 and 2017. The framework is provided below.

Enabling factors						
Phases of change	Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
	1. Issue emergence	Issue activists		Issue highlighted	Issue examined	
	2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	
	3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
	4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
	5. Policy and practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
	6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation

When applying the Transition Dynamics Framework, it is important to have a clear understanding of the practice change you are applying it to. Participants noted that it was sometimes necessary to 'split' or redefine an outcome if there was a wide range of possible enabling factors, because it was difficult to define the appropriate phase of change. Accordingly, 12 separate assessments were undertaken to obtain a comprehensive picture of where Perth was in relation to the WSC Index goals and indicators.

The process usually commences with the consideration of champions, and works left to right across the enabling factors, determining whether:

- the enabling factor is fully present and regression into the previous phase is unlikely – coloured green
- some presence of the enabling factor, however they are vulnerable to regressing to the previous phase – coloured yellow
- a complete absence of the enabling factor, and that progression is unlikely – coloured red.



Although there are no points on the process which are considered to have more impact than others, it has been suggested that a transition is more likely to be effective where more progress is made on the left-hand side of the matrix, because this drives progress towards the right.

The outcomes of the assessments in 2015 and 2017 are provided below to assist in the ongoing review of Perth's progress.

Perth 2015

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Perth 2017

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation

The detailed assessments undertaken in 2017 are provided below. Evidence and justification for the assessments can be found in the *Vision and Transition Strategy for a Water Sensitive Greater Perth* (Hammer et al., 2018).



Goal 1: Ensure good water sensitive governance

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Goal 2: Increase community capital

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicator 2.5 Indigenous involvement in water planning

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicator 3.4 Equitable access to amenity values of water-related assets

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicators 4.1 Benefits across other sectors and 4.4 Water-related economic & commercial opportunities

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicators 4.2 Low GHG emissions and 4.5 Maximised resource recovery

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicator 4.3 Low end-user potable water demand

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Goal 5: Ecological health

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicator 5.2: Surface water quality and flows

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicators 6.1 Activating connected pleasant urban green and blue space and 6.3 Vegetation coverage

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Indicator 6.2 Urban elements functioning as part of the urban water system

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation



Goal 7. Promote adaptive infrastructure

Transition phase	Champions	Platforms for connecting	Knowledge	Projects and applications	Tools and instruments
1. Issue emergence	Issue activists	N/A	Issue highlighted	Issue examined	N/A
2. Issue definition	Individual champions	Sharing concerns and ideas	Causes and impacts examined	Solutions explored	N/A
3. Shared understanding & issue agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
4. Knowledge dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Refined guidance and early policy
5. Policy & practice diffusion	Government agency champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Early regulation and targets
6. Embedding new practice	Multi-stakeholder networks	Guiding consistent application	Monitoring and evaluation	Standardisation and refinement	Comprehensive policy and regulation





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