Ku-ring-gai Council

Water Sensitive City Policy

Version Number 2

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Water Sensitive City Policy

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Related Document Information, Standards & References

Related Legislation:	**Commonwealth** • *Ecological Protection and Biodiversity Conservation Act 1999* **New South Wales** • *Administration Amendment (Water and Energy savings) Act 2005* • *Biodiversity Conservation Act 2016* • *Coastal Management Act 2016* • *Environmental Planning and Assessment Act 1979* • *Fisheries Management Act 1994* • *Local Government Act 1993* • *Local Land Services Act 2013* • *Protection of the Environment Operations Act 1997* • *Sydney Water Act 1994* • *Water Management Act 2000* • *Water Industry Competition Act 2006*
Related Policies (Council & Internal)	• Biodiversity Policy • Climate Change Policy • Easement Management Policy • Fauna Management Policy • Flood Risk Management Policy • Urban Forest Policy • Ku-ring-gai Local Environmental Plan • Ku-ring-gai Development Control Plan

Related Documents - Procedures, Guidelines, Forms, WHS Modules/PCD's, Risk Assessments, Work Method Statements, etc	• Community Strategic Plan 2038 • Corporate Sustainability Action Plan • Drainage works and maintenance policy and procedures • Ku-ring-gai Council Drainage Asset Management Plan • Ku-ring-gai Water Sensitive City Strategy (2022)
Other References	• *Australian Guidelines for Water Recycling Stormwater Harvesting and Reuse*, National Water Quality Management Strategy. Document No 23 (2009) Natural Resource Management Ministerial Council; Environment Protection and Heritage Council; National Health and Medical Research Council. • *Australia's National Strategy for Ecologically Sustainable Development* (1992). • *Intergovernmental agreement on a national water initiative* (2004). • *Institutional and Regulatory Models for Integrated Urban Water Cycle Management – Issues and Scoping paper* (2007) National Water Initiative. • *Managing Urban Stormwater: An Integrated Approach* (2007) Sydney Metropolitan Catchment Management Authority and Department of Environment and Climate change (consultation draft, October 2007). • *Managing Urban Stormwater: Harvesting and Reuse* (2006) Department of Environment and Conservation and Stormwater Trust. • *NSW Department of Planning, Industry and Environment (Water) Controlled Activities on Waterfront Land* • *The Australian CRC for Water Sensitive Cities* (2016) https://watersensitivecities.org.au/ • *Water Sensitive Cities Benchmarking and Assessment: Ku-ring-gai Local Government Area, New South Wales* (2018) Chandler, F., McManus, R., McMillan, A., Nicholson, L. Cooperative Research Centre for Water Sensitive Cities,. Melbourne, Australia

Version History

Version Number	Version Start Date	Version End Date	Author	Details and Comments
1	10/08/2016	15/03/2022	Marnie Kikken Sophia Findlay Suzy Lykos	First version
2	16/03/2022	TBC	Jacob Sife Sophia Findlay Russell Cadman	Second version, revisions include: • Updates to related Legislation and Policy details; • Updates to Council teams; • Incorporation and re-structure of strategy Implementation to reflect the Water Sensitive Cities Index Benchmarking workshops and Ku-ring-gai Water Sensitive City Strategy.

Policy

Purpose

To adopt and implement the management principles of a Water Sensitive City by responding to the issues of water conservation and water security, flooding risks, degradation of urban waterways and rising temperatures in a way that enhances the liveability of Ku-ring-gai.

This Policy replaces Council's Water Sensitive City Policy (2016).

Objectives

The objectives of this Policy are to:

1. Protect, conserve and improve the condition of our waterways and riparian corridors, including native biodiversity
2. Manage the quantity, frequency and quality of stormwater runoff to improve ecological stream health
3. Reduce Council and the community's potable water use by diversifying water sources at different scales in fit-for-purpose applications and increasing water efficiency
4. Deliver programs that support and enable a continued shift in the community to more water sensitive practices
5. Integrate water infrastructure within the urban landscape to enhance the liveability of Ku-ring-gai, including stormwater treatment, flood risk management, heat mitigation, ecological health, microclimate and landscape amenity.

Scope

This Policy covers those activities over which Ku-ring-gai Council has direct control and/or for which it has approval and regulatory responsibilities. Council will advocate for policies and reforms that affect Council's urban water management program.

Responsibilities

Specific responsibility for the implementation of this Policy lies with the following sections of Council:

- Environment & Sustainability
- Development & Regulation
- Technical Services
- Information Management (including Land Information)
- Community & Recreation Services
- Procurement & Contracts
- Finance
- Infrastructure Services
- Waste and Cleansing Services
- People & Culture
- Urban Planning & Heritage
- Corporate Communications

Council's Manager Environment and Sustainability has overall responsibility for compliance with this Policy.

Policy Statement

Background

The management of water in Sydney is separated by various legislative and administrative arrangements. Having traditionally focused on the management of stormwater to alleviate flooding, Council's water management program has evolved over time into the coordinated management of all components of the water cycle, including water consumption, rainwater, stormwater, wastewater and groundwater, to secure a range of benefits for the wider community and our catchments.

Climate change, coupled with Ku-ring-gai's increasing population and the associated intensification of development, has increased the demand for potable water and highlighted the value of all forms of water as a resource.

Ku-ring-gai has been at the forefront of urban water management in a local government context. Ku-ring-gai was one of the first councils to incorporate controls for On Site Detention (OSD) into a water management Development Control Plan, to manage flash flooding from increased development and connectivity to the drainage system.

In the late 1990s Ku-ring-gai also commenced installing Gross Pollutant Traps (GPTs) to reduce the amount of pollutants entering our waterways. Following this, Ku-ring-gai adopted a Riparian Policy in 2004, which provided guidance for the management of waterways and riparian areas, including provision of development controls for riparian setbacks.

However, another key issue affecting urban streams is altered flow regimes caused by increased hard impervious surfaces and piped systems from development. Waterways and riparian systems in Ku-ring-gai experience increased physical, chemical and biological disturbances. In recent years, the Integrated Water Cycle Management Policy has incorporated water re-use and biofiltration technologies to mitigate the impacts of urbanisation on our natural waterways and to provide fit-for-purpose water applications for sporting field irrigation and toilet flushing.

These developments have seen Ku-ring-gai progress along the urban water management transition framework, from a Drained City towards a Water Cycle City, as depicted in the Figure 1 below.

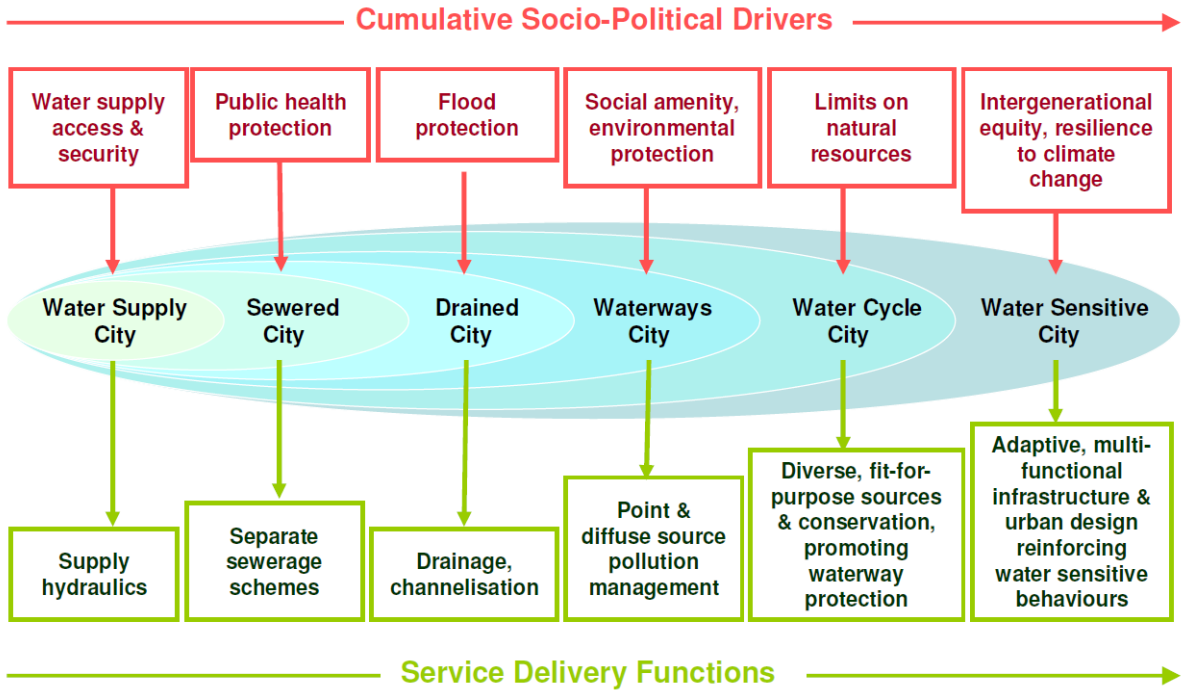

Figure 1: Urban Water Management Transitions Framework (Brown et al. 2009)

Adoption of the first version of this policy in 2016 represented the next step to improve water management in Ku-ring-gai, progressing Council's management model further towards that of a Water Sensitive City (WSC).

In 2018 the CRC for WSC Index Benchmarking workshops were undertaken to provide a snapshot of where Ku-ring-gai sits in the Water Sensitive City framework, identifying key strengths and the areas where work needs to be focussed in order to progress further along the Water Sensitive Cities framework.

Rationale for the transition to a Water Sensitive City

First introduced into the Australian urban water sector through the Council of Australian Government's National Water Initiative agreement, the concept of a Water Sensitive City represents a new water management paradigm, providing a tangible vision from which new design principles, management frameworks and technological innovations can be developed as a direction for a sustainable water future.

> *"Water sensitive cities are resilient, liveable, productive and sustainable. They interact with the urban hydrological cycle in ways that: provide the water security essential for economic prosperity through efficient use of the diversity of water resources available; enhance and protect the health of watercourses and wetlands; mitigate flood risk and damage; and create public spaces that harvest, clean and recycle water. Its strategies and systems for water management contribute to biodiversity, carbon sequestration and reduction of urban heat island effects"* (CRC for Water Sensitive Cities, 2016).

A WSC combines physical infrastructure (water sensitive urban design and integrated water cycle management) with social systems (governance and engagement), to create a city in which the connections that people have with their water infrastructure and services enhances their value and quality of life.

A Water Sensitive City is structured around three principles (or pillars) (Wong *et al.* 2013), that collectively enhance urban liveability, sustainability, productivity and resilience:

Pillar 1: Cities as Water Supply Catchments: in which all the available water resources are considered valuable supply sources, including wastewater, rainwater, stormwater and ground water. Infrastructure systems integrate both centralised and decentralised technologies to utilise these resources at different scales in fit-for-purpose applications.

Pillar 2: Cities Providing Ecosystem Services: in which water infrastructure and the urban landscape are designed both functionally and aesthetically. These integrated systems provide multiple benefits, including stormwater treatment, flood protection, heat mitigation, ecological health and landscape amenity.

Pillar 3: Cities Comprising Water Sensitive Communities: in which people appreciate the many values of water, feel connected to their local water environments and engage in water-conscious behaviours. Organisations and professionals that influence water management exhibit policies and practices that lead to water sensitive outcomes.

The attributes of a Water Sensitive City include:

- Multiple sources of water considered over long time frames;
- Adaptive, integrated, sustainable management of the total water cycle designed to secure a higher level of resilience to future uncertainties in climate;
- Interdisciplinary, multi-stakeholder learning across social, technical, economic, design, ecological spheres;
- Diverse, flexible solutions at multiple scales;
- Co-management of water between government, business and communities; and
- Risk shared and diversified via private and public instruments. (Wong *et al.* 2013)

Application is highly context specific, depending on local characteristics, conditions and perspectives.

Benefits of a Water Sensitive City

Many benefits arise from transitioning to a Water Sensitive City. Not only does a Water Sensitive City provide the water supply diversity, waterway protection and conservation provisions of a Water Cycle City, but also goes further to more deeply embed the benefits of strategic water use into society.

Engaging the community to increase understanding of the complexities of water management provides benefits beyond alternative water supplies and protection of the natural environment and addresses human health and well-being as part of the water cycle. Incorporating these aspects into urban design enables the community to receive multiple physical and emotional benefits.

> *"Stormwater provides an additional and abundant source of water to support the greening of cities, which in turn proves benefits in creating more liveable cities and resilient urban environments, including:*
>
> – *Improved human thermal comfort to reduce heat related stress and mortality;*
> – *Decreased total stormwater runoff and improved flow regimes (more natural high-flows and low-flows) for urban waterways;*
> – *Sustaining a healthy waterway through maintaining ecological complexity and channel stability;*
> – *Productive vegetation and increased carbon sequestration;*
> – *Improved air quality through deposition; and*
> – *Improved amenity of the landscape."* (Wong *et al.* 2013, p13)

This policy seeks to ensure that Ku-ring-gai Council continues to progress along the continuum of urban water management towards a Water Sensitive City and that Council contributes to Greater Sydney's transition to a Water Sensitive City.

Implementation program

This policy responds to the long term objectives of Our Ku-ring-gai 2038 Community Strategic Plan, particularly:

- An aware community able to prepare and respond to the risk to life and property from emergency events;
- A community empowered with knowledge, learning and information that benefits the environment;
- Our natural waterways and riparian areas are enhanced and protected;
- A community addressing and responding to the impacts of climate change and extreme weather events;
- A community progressively reducing its consumption of resources and leading in recycling and reuse; and
- The built environment delivers attractive, interactive and sustainable living and working environments.

Management principles

Council will adopt the following management principles in implementing this Policy:

1. Council moves towards creating a liveable and sustainable city;
2. The water cycle is well managed, using fit for purpose water applications to meet the needs of the community and the environment;
3. Infrastructure planning and development are coordinated and consider the value of water and the multiple benefits that can be delivered;
4. There is development of the necessary knowledge, skills and capacity across Council staff and the community;
5. The community is engaged and involved with decision making relating to council's water management activities; and

6. Council provides leadership in water sensitive policy, planning and implementation.

Implementation activities

Activities will be implemented across a number of sections of Council, categorised under the seven goals identified in the Water Sensitive Cities Index Benchmarking workshops.

Council's Ku-ring-gai Water Sensitive City Strategy (2022) will support this policy, by providing water management targets and an action plan containing further details on timeframes, identification of funding requirements and recommending key monitoring and evaluation programs.

The multidisciplinary nature of water management means that responsibility for implementation of these goals sits with multiple teams across council with key teams identified in the Ku-ring-gai Water Sensitive City Strategy (2022).

The seven goals outlined in the Ku-ring-gai Water Sensitive City Strategy (2022) and the primary activities to achieve these are:

Goal 1 - ENSURE GOOD WATER SENSITIVE GOVERNANCE

- Proactively engage with other levels of government and relevant agencies to deliver water management programs and influence policy reform relating to water management;
- Participate in, support and develop partnerships with other organisations and research programs to help improve water management;
- Provide capacity building opportunities for Council staff;
- Ensure all Council projects address Development Control Plan Water Management, Riparian Land and Biodiversity requirements; and
- Develop and implement a joint planning process for new Council stormwater projects/assets

Goal 2 - INCREASE COMMUNITY CAPITAL

- Deliver programs and educational resources to facilitate a continued shift in the community to more water sensitive practices including the facilitation of community water tanks; WSUD features and sensitive waterway management; and
- Ensure catchment health reporting, waterway management, sustainable water use and flood risk management information is readily available on Council's website.

Goal 3 – ENSURE EQUITY OF ESSENTIAL SERVICES

- Continue to implement flood risk management program activities including studies, risk management plans and implementation of priority actions.
- Recognise access to water and waterways as environmental and social resources

Goal 4 – IMPROVE PRODUCTIVITY AND RESOURCE EFFICIENCY

- Identify and implement projects that shift to sustainable alternative water supplies that reduce reliance on potable water; and
- Retrofit infrastructure to increase efficient use of resources where possible.

Goal 5 – IMPROVE ECOLOGICAL HEALTH

- Update and review council's Riparian Lands Map to:
    - prevent further piping and artificial channelling of watercourses:
    - identify remediation opportunities for existing piped and channelized systems;
    - protect existing areas of high ecological value
- Investigate ground-water related eco-systems to inform and guide planning and management as resources permit;
- Restore stream health ecological values and functions through catchment wide stormwater retention and harvesting to reduce the quantity of stormwater runoff;
- Implement WSUD on public and private land to improve the quality of stormwater runoff and reduce the amount of impervious surfaces directly connected to our waterways; and

- Improve erosion and sediment control practices and ensure minimum regulatory standards or better are met for all activities and developments within the LGA, using methods appropriate for the soils and environmental conditions within Ku-ring-gai.

Goal 6 – ENSURE QUALITY URBAN SPACE

- Develop and implement water sensitive design standards for use in all levels and types of development and Council upgrade works; and
- Investigate the use of water and green infrastructure to mitigate against urban heat island effects and adapt to the impacts of climate change.

Goal 7 – PROMOTE ADAPTIVE INFRASTRUCTURE

- Develop and implement management plans for each water recycling and reuse site and ensure the latest water re-use regulations and guidelines are applied with audits undertaken as resources permit;
- Investigate, and where possible implement, real-time water use monitoring system across Council's highest water using facilities;
- Conduct regular monitoring, maintenance and upgrades of water using facilities, water recycling and reuse systems, including audits as resources permit:
- Conduct regular monitoring, maintenance and upgrades of stormwater quality improvement assets and activities, such as WSUD features, GPTs, street sweeping and stormwater system maintenance; and
- Ensure regulation of water and catchment management requirements (e.g. sediment erosion control, OSD, stormwater treatment measures, etc.) as resources permit.

Monitoring and evaluation

Council will monitor and report against this policy as follows:

Objective	Measure	Timeframe
Protect, conserve and improve the condition of our waterways and riparian corridors to increase native biodiversity.	Number of waterway stability and riparian works delivered.	Annually
	Aquatic macroinvertebrate monitoring and water quality sampling (Water Quality Report Card).	Spring and Autumn
	Review and update of riparian land and waterways mapping.	Undertaken during Major LEP and DCP revisions.
Manage the quantity, frequency and quality of stormwater runoff to improve ecological stream health.	Number of stormwater harvesting, and water quality improvement projects delivered.	Annually
	Rubbish diverted from our waterways.	
	Stormwater Harvesting and re-use water quality monitoring.	
Decrease Council and the community's potable water use by diversifying water sources at different scales in fit-for-purpose applications.	Number of stormwater and rainwater harvesting projects delivered.	Annually
	Number of water efficiency improvement projects delivered.	
Deliver programs that support and enable a continued shift in the community to more water sensitive practices	Number Water Smart rebates issued.	Annually
	Number of and participation in community educational events	
	Distribution of educational materials to residents and businesses	
	Participation in research projects and studies.	
Integrate water infrastructure within the urban landscape to enhance the liveability of Ku-ring-gai, including stormwater treatment, flood protection, heat mitigation, ecological health, microclimate and landscape amenity	Number of capital works program infrastructure projects incorporating Water Sensitive features to provide stormwater treatment, flood protection, heat mitigation, ecological health, microclimate and landscape amenity within the urban landscape.	Annually
	Completion of flood risk management studies and investigation of priority management actions.	

Definitions

Term / Abbreviation	Definition
Ecologically sustainable development:	Using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased.
Gross Pollutant Trap (GPT)	A structure used to trap litter and large pieces of debris (equal to or greater than 5 millimetres in diameter) transported through the stormwater system. Note: many GPTs can also catch material smaller then 5mm.
Integrated water cycle management	Management of all sources of water to ensure that optimal use is obtained within the catchment resource context. This includes consideration of traditionally compartmentalised sectors (potable water, sewerage, stormwater) in an integrated manner by recognising the inherent connections and the opportunities to optimise the resource.
Potable water	Water supplied for drinking purposes.
Rainwater harvesting	Where a water tank used to collect and store rainwater runoff from a property's rooftop via pipes, used for non-drinking water purposes in metropolitan areas. Using rainwater can provide multiple benefits, including reduced demand on drinking water and environmental benefits.
Stormwater	Runoff from rainfall events that is conveyed separately from sewerage.
Stormwater Treatment Measures	A stormwater treatment measure is a hard or soft engineering device or feature installed to trap pollution and improve stormwater quality. These treatment measures include GPTs and WSUD assets like raingardens and wetlands.
Water Sensitive Urban Design (WSUD)	The integration of urban planning with the management, protection and conservation of the urban water cycle, that ensures urban water management is sensitive to natural hydrological and ecological processes.
Water recycling and reuse	Water recycling and reuse can refer to recycled water for non-drinking and/or stormwater harvesting and reuse: *Recycled Water for non-drinking* refers to water that is sourced from wastewater and treated to provide water for non-drinking purposes including irrigation, industrial and household uses such as toilets and washing machines. Using recycled water reduces demand on drinking water systems and limits discharge of wastewater to the environment. *Stormwater Harvesting and reuse* refers to collecting, storing and treating stormwater from urban areas for reuse, typically for non-drinking purposes. Stormwater harvesting schemes provide multiple benefits to communities, including improving environmental and social benefits through the provision of green open space and healthier waterways.

References

Brown RR1, Keath N, Wong TH. 2009; *Urban water management in cities: historical, current and future regimes*. Water Science and Technology. 59(5):847-55

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