An unconventional stormwater approach for an industrial precinct

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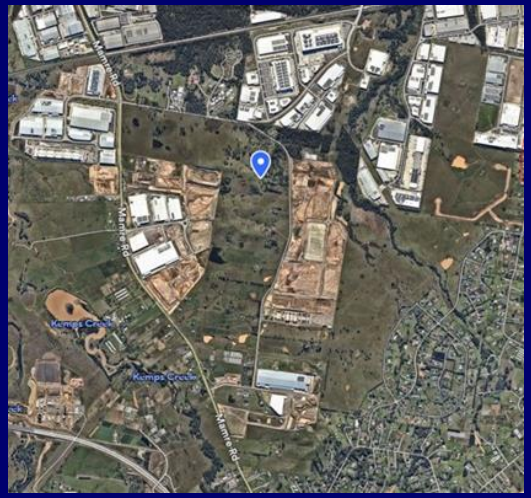
Acknowledgement of Country

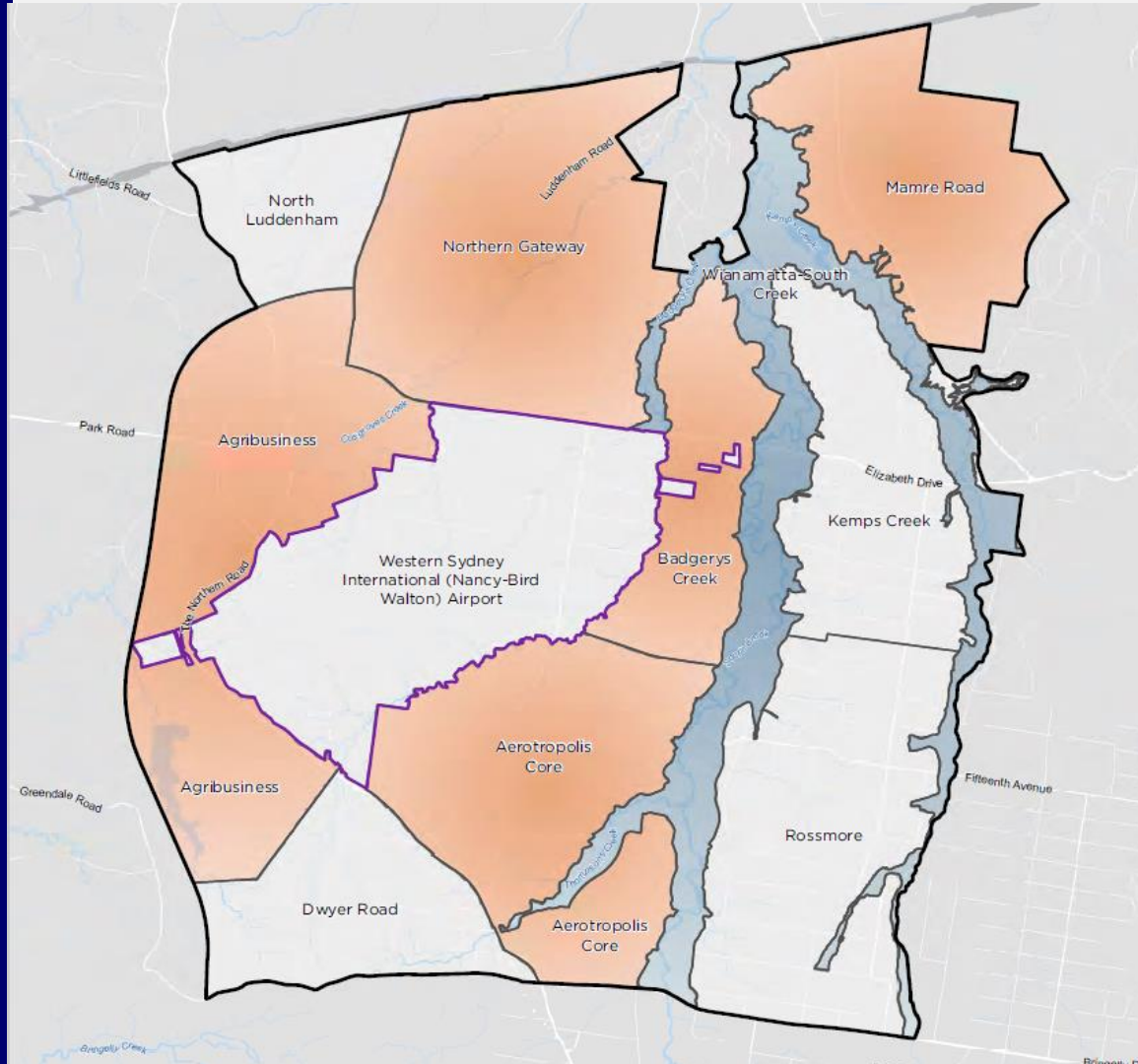
Sydney Water respectfully acknowledges the Traditional Custodians of the land and waters on which we work, live and learn. We pay respect to Elders past and present.

A central part of Country in this area is Wianamatta meaning ‘Mother’s Place’. Wianamatta, otherwise known as South Creek, is a complex water system that travels from Dharawal Country in the south, through Dharug Country in the Aerotropolis to the north. It is made of an interconnected network of ephemeral creeks and resource rich, swampy Country, also known as wetlands. Through impacts of colonisation and agricultural land use, these water systems have been fragmented and damaged. As the future of Aerotropolis changes, it is vital we commit to healing and revitalising water on Country

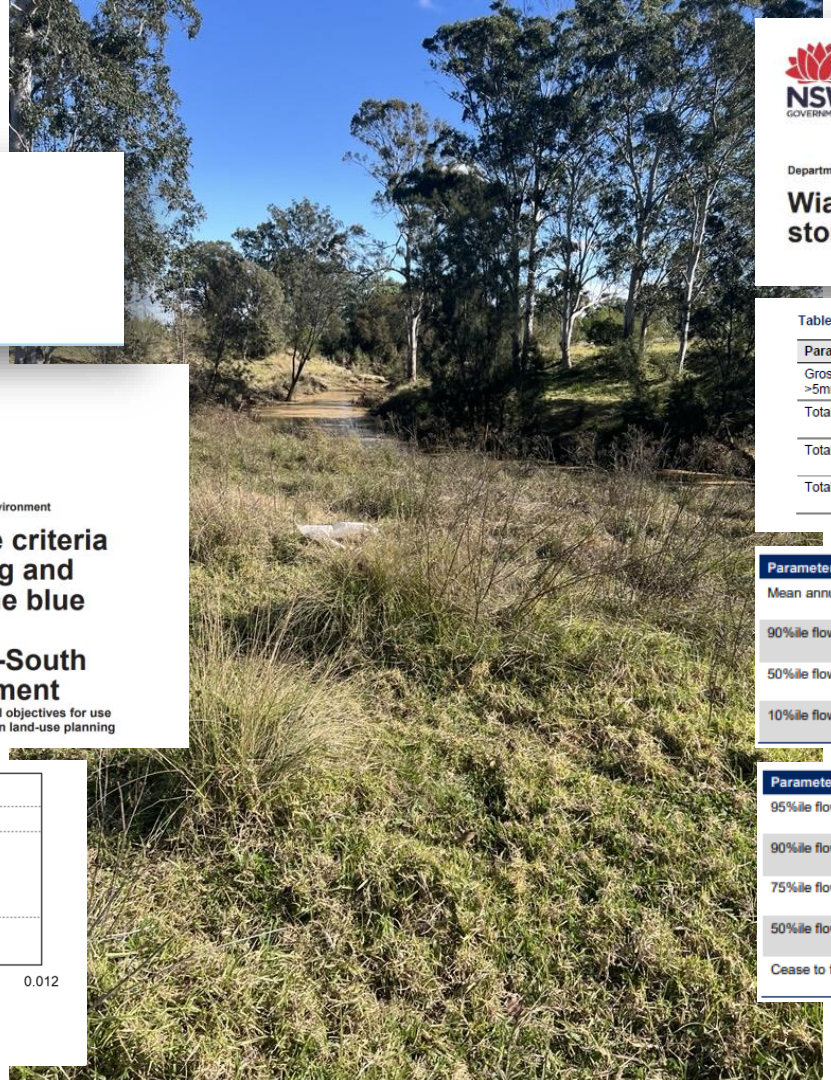
Mamre Road Precinct

- Western Sydney Employment Area
- Industrial precinct rezoned in 2020
  - Industrial – 850ha
  - Environmental – 95ha
- Large-format industrial warehouses
- Wianamatta-South Creek catchment





Background

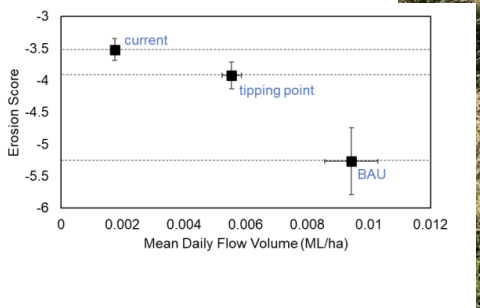


Risk-based Framework for Considering Waterway Health Outcomes in Strategic Land-use Planning Decisions

Department of Planning and Environment

Performance criteria for protecting and improving the blue grid in the Wianamatta–South Creek catchment

Water quality and flow related objectives for use as environmental standards in land-use planning



Department of Planning and Environment

Wianamatta–South Creek stormwater management targets

Table 2. Operational Phase Targets – Stormwater Quality

Parameter	Target
Gross Pollutants (anthropogenic litter >5mm and coarse sediment >1mm)	90% reduction (minimum) in mean annual load from unmitigated development
Total Suspended Solids (TSS)	90% reduction in mean annual load from unmitigated development
Total Phosphorus (TP)	80% reduction in mean annual load from unmitigated development
Total Nitrogen (TN)	65% reduction in mean annual load from unmitigated development

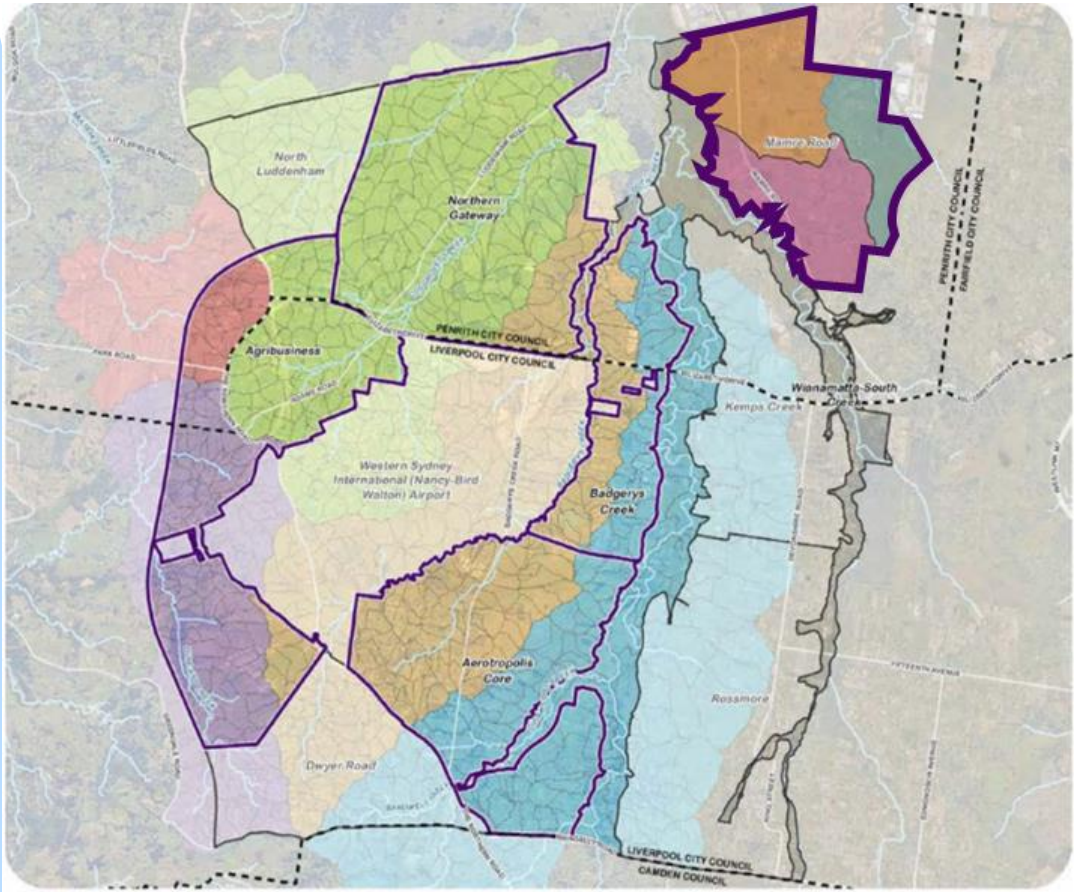
Parameter	Target
Mean annual runoff volume (MARV)	≤2 ML/ha/y at the point of discharge to the local waterway
90%ile flow	1,000–5,000 L/ha/day at the point of discharge to the local waterway
50%ile flow	5–100 L/ha/day at the point of discharge to the local waterway
10%ile flow	0 L/ha/day at the point of discharge to the local waterway

Parameter	Target
95%ile flow	3,000–15,000 L/ha/day at the point of discharge to the local waterway
90%ile flow	1,000–5,000 L/ha/day at the point of discharge to the local waterway
75%ile flow	100–1,000 L/ha/day at the point of discharge to the local waterway
50%ile flow	5–100 L/ha/day at the point of discharge to the local waterway
Cease to flow	Cease to flow to be between 10% and 30% of the time

Sydney Water - Regional Stormwater Authority

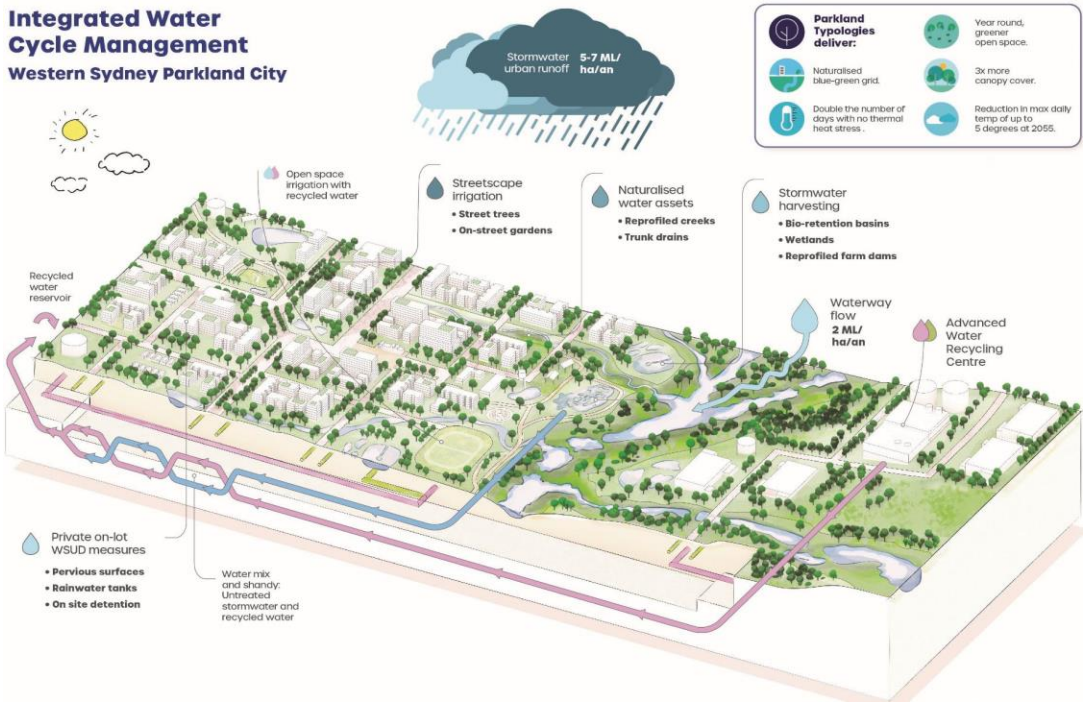
Regional stormwater delivers up to $2.2b[1] net benefits to community

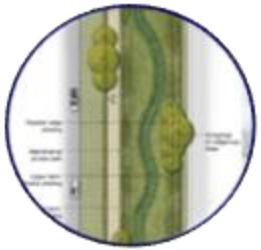
- Environmental benefits
- Min land used
- Infrastructure cost
- Waterway health
- Governance reform



1. Source: Frontier economics – Governance of stormwater and waterways in Wianamatta South Creek (Leading Precincts) – Final Strategic Business Case, 21 December 2021 ; the benefit of about $2.2b is based on the Central Case scenario; the lower bound estimate of the net benefits is about $600m

What's different ?



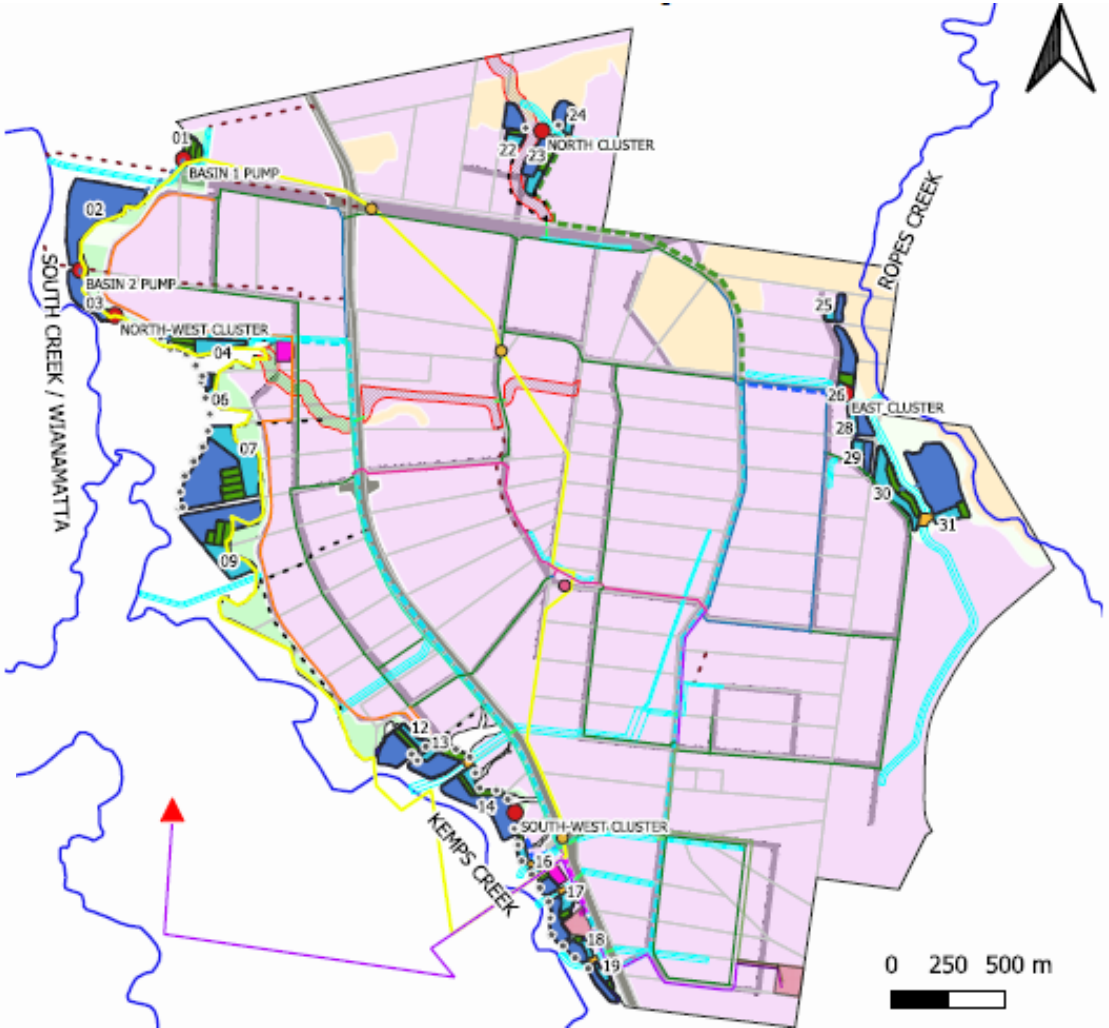


- Naturalised Trunk drainage Channels
- Rehabilitated Existing Waterways

- Regional WSUD Basins – Wetland, Bioretention and stormwater harvesting ponds

- Treated recycled water storage and distribution

Mamre Road Integrated Scheme Plan



Key:

Indicative Recycled Water Assets
- Shut Valves
- PRV location
- Reservoir/treatment footprint

Recycled water Main
- 100mm
- 150mm
- 200mm
- 250mm
- 300mm
- 375mm
- 450mm

- Pressure Zone Boundary

Indicative Stormwater Assets
- Private Drainage
- Culvert/Pipe connections
- Waterways with Riparian Corridor
- Naturalised Trunk Drainage Channel

Regional WSUD Basins
- Batters & maintenance tracks
- Bioretention
- Pond
- Sediment Basin
- Wetland

- Harvesting Pumps
- Cluster Connection Pipeline

Stormwater Rising Main
- 150mm
- 200mm
- 250mm
- 300mm

Major Waterways
- Named Watercourse

Indicative Waste Water Assets
- Wastewater Pump Station
- AWRC

Zoning information
- Lot Boundary

DCP Land Zoning
- IN1
- RE1
- RE2
- SP2
- C2

Roads
- Road

‘Water for One Health’

- An approach to balance and optimize the health of interdependent people, animals, and ecosystems

- *The One Health concept can be applied to the links between stormwater management and healthy cities (Grigg 2009)*

Scheme Design Principles

Waterway Health

Social Amenity

Connection to Country

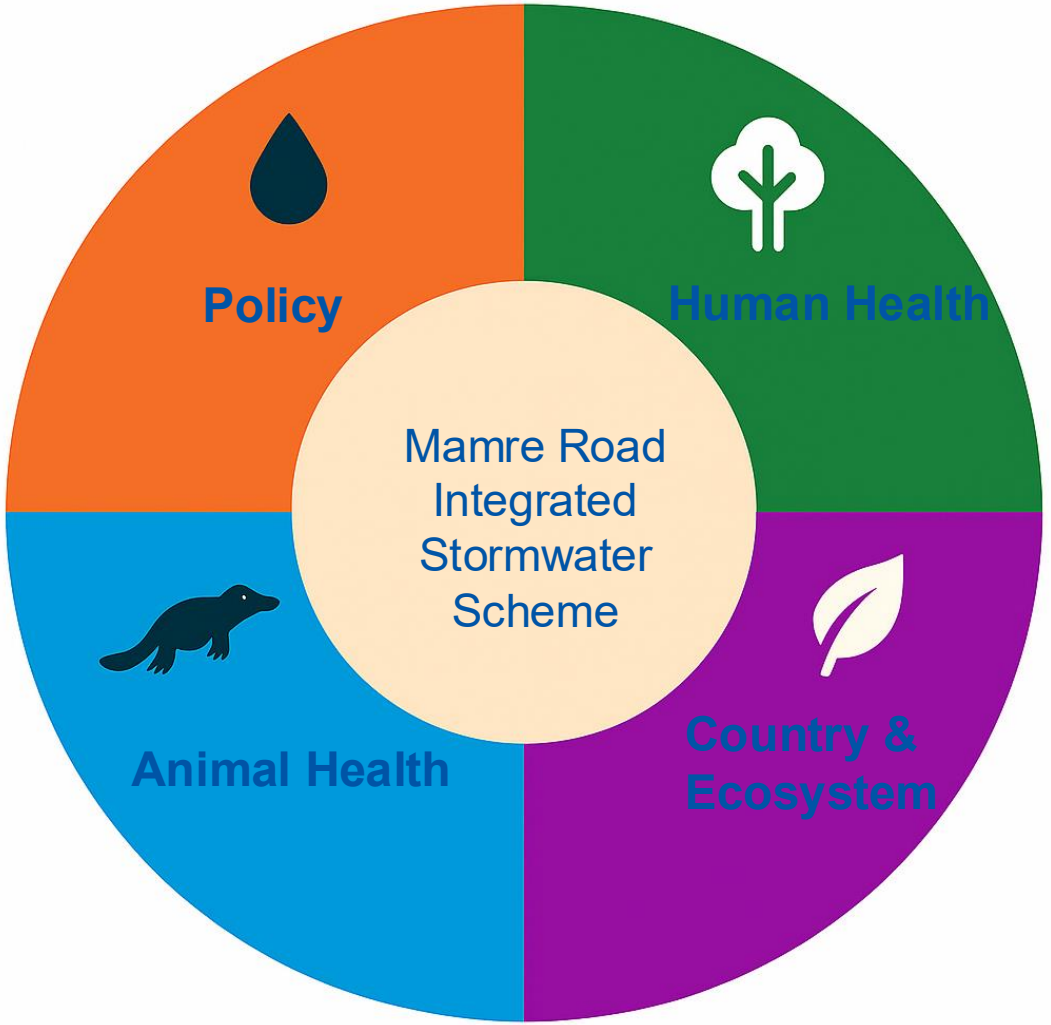
Wildlife management

Health and Wellbeing

^StormWater for ‘One Health’

A holistic approach delivering multiple benefits:

- aligns with government policy and the vision for a green, liveable Western Parkland City.
- shaped by Aboriginal engagement, ensuring cultural values are embedded in design.
- restores and protects waterways, supports biodiversity, and provides green, cool spaces for the community.



Few Challenges!

- Efficient scheme cost
  - Flood prone land
- Topography
  - Shadow Impacts
- Wildlife strike risks

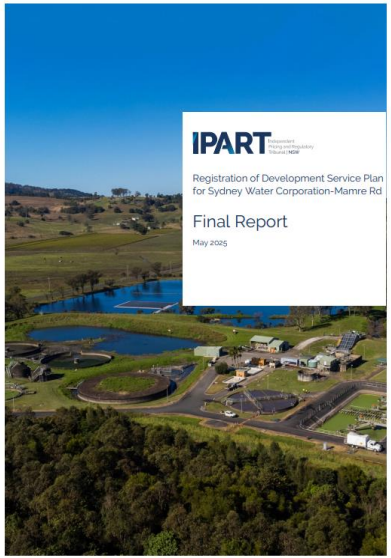
  Bird and Bat Adaptive Management, Mitigation and Monitoring Strategy

What's Next

- Development Servicing Plan (DSP) registered by IPART (FY25-26 $898,253/Nha)
- Developers working with SWC for the delivery of infrastructure
- Scheme Planning for Aerotropolis Initial precincts (about 6500 ha!)

Key Takeaways

- IWCM coupled with Strategic land use planning offers multiple benefits
- Sydney Water serves as a model for other Australian water utility providers to enhance resilience and liveability via stormwater.



Stormwater Developer Works Policy

1. Overview

Sydney Water (us, we, our) are committed to delivering efficient regional stormwater infrastructure to service Western Sydney Aerotropolis Initial Precincts including the Mamre Road Precinct in accordance with the adopted Regional Stormwater Scheme Principles and the information detailed within them. We understand that developers are often best placed to deliver our infrastructure, in parallel to land development, on behalf of Sydney Water.

1.1 Scope

This policy applies when regional stormwater infrastructure works are to be designed and constructed by developers on behalf of Sydney Water under an agreement with clear requirements for reimbursement.

This policy applies to areas where Sydney Water is the designated Regional Stormwater Authority (Western Sydney Aerotropolis initial precincts and Mamre Road precinct).

This policy is applicable to regional stormwater infrastructure provision only (it does not apply to drinking water supply, wastewater, or recycled water infrastructure).

References to stormwater infrastructure in this policy is to regional stormwater infrastructure required by Sydney Water as the Regional Stormwater Authority.

Out of scope: This policy adopts reimbursement methods currently available to Sydney Water. The development of an offset process and accounting mechanism as an alternative method of reimbursement is currently under investigation.

Acknowledgements:

- Co-Authors: Phill Birtles and Craig Bush
- Sydney Water: Integrated Water Cycle Management Team
- Planning Partner: Aurecon

References:

Grigg, N.S. (2024). Stormwater Management: An Integrated Approach to Support Healthy, Liveable, and Ecological Cities. Urban Science, 8(3), 89.

Brown, R.R., Keath, N. and Wong, T.H.F. (2009). Urban water management in cities: historical, current and future regimes. Water Science and Technology, 59(5), 847-855


Thank you
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