

Rozelle Village
Integrated Water Management Plan

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1. Executive Summary

This Integrated and Water Management Plan has been produced in response to the Director General's Part 3A planning requirements MP11_0015 for the redevelopment of land recently occupied by the Balmain Leagues Club together with adjoining lands to accommodate a high quality mixed use scheme.

It addresses water management and use across the development including addressing the minimum requirements of Basix, BCA and Section J but targets a much higher standard of environmental quality including cutting potable water demand by 65%, applying the Principles of Water Sensitive Urban Design, working to achieve a five star rating under the green star custom rating tool and incorporating the principles of the Green Star Communities framework.

The development of these key issues is reflected by measuring outcomes using the following targets:

- The BCA section J sets minimum energy performance requirements covering many components. The incorporated design will exceed these BCA requirements.
- The Basix requirements specified by the Department of Planning and Infrastructure states that energy and water use must be reduced in new residential developments. The project targets greatly exceed the minimum Basix requirements.
- The following sustainable principles will form the basis of decision-making.
 - ESD solutions reducing operating costs
 - Reducing possible water use and flows to sewer.
 - Improving stormwater quality and minimising run off quantities.
 - Engaging and respecting the community.
- The following evaluation principles will be adopted:
 - Design into the future 2020+
 - Ensure operational performance certainty.
 - Maximise connection and passive use of natural environment.
 - Provide key visual sustainable elements.
 - Cost benefit assessment methodology will be used.
 - Propose initiatives for community contribution.

2. Introduction

Rozelle Village is a comprehensive development of the site involving demolition of all the existing buildings, site remediation, excavation of eight levels for car parking, the construction of a supermarket, gymnasium, childcare centre, specialty retail space, restaurants, community areas and the return of the Balmain Leagues club within the 2-6 storey podium and in addition the construction of 304 residential apartments within the two residential towers. The footprint of the development covers the whole of the site area.

Key initiatives incorporated within the development to minimise water consumption include:

- Low water use fittings to appliances, toilets and taps;
- A Black Water System which recycles water throughout the development to supply toilet flushing, cleaning/ wash down, laundry and cooling tower make up water;
- Rainwater reuse for irrigation and other areas;
- On site detention system to reduce the effects on the existing authority stormwater system during peak storm conditions;
- Sub metering and smart meters to be included in order to encourage conservation of water usage.

This integrated water management plan combines detailed information provided within the Ecological Sustainable Development Report, Stormwater Management Report and other sections of the Project Application as it relates to water management and use.

3. Basix


The residential tower within the Rozelle Village development is required by NSW regulation to achieve BASIX targets for energy, water and thermal comfort. These are greatly exceeded by the proposed development, as shown in the following table:

Environmental Impact Category	NSW BASIX Minimum Target	Rozelle Village target
Water Savings	40%	65%
Energy Savings	20%	40-50% emissions savings across the whole development
Thermal Comfort	Pass	Average 30MJ/m ² total annual heating plus cooling load

Energy and water targets represent a percentage saving compared to a NSW average benchmark. Thermal comfort targets are a pass/fail measure and are assessed by thermal energy modelling of performance against heating and cooling load limits set by location. The project is targeting an average heating and cooling load of less than 30MJ/m²/annum (combined) in order to minimise the need for air-conditioning and achieve optimum thermal comfort for residents. This also contributes to the achievement of Green Star credits.

Water Strategies

Proposed strategies to achieve the BASIX water target of 65% reduction in potable water consumption are outlined in the table below¹:


BASIX Base Case	Water Conservation Strategies
Fixtures²	3-Star showerheads (6<7.5L/min) 6-Star kitchen and wash-hand basin mixers 4-Star dual-flush toilets.
Appliances	5-Star water-efficient dishwashers.
Recycled water	Wastewater treatment for toilets/urinal flushing, laundry, cleaning & wash-down; cooling tower make-up. Rainwater harvesting for irrigation and dedicated car washing bays as well as swimming pool top-up.
Minimum BASIX Water Savings Required	40%
Water Savings Achieved	69%
Pass?	

4. Potable Water reduction

Target: 65% reduction compared to current best practice

Key strategies are outlined in the following table:

System	Water-saving Strategies
<p>Fittings, fixtures & appliances</p> 	<p>All fixtures and fittings will be within 1-Star of the highest efficiency water-rating, with options on control to minimise total consumption (all areas tenants; common areas, landscaping, cooling towers, retail & commercial areas).</p> <p>Water efficient appliances will be installed in all apartments, including 5 star water-efficient dishwashers.</p> <p>Select equipment and size pipe-work to maximise efficiency;</p> <p>Install a pool evaporation blanket.</p>
<p>Recycled water use</p> 	<p>Wastewater from the development will be captured and treated to a high standard for reuse in:</p> <ul style="list-style-type: none"> • Toilet/urinal flushing; • Cleaning & wash-down; • Laundry; • Cooling tower water make-up. <p>Rainwater will be harvested from the rooftop for use in:</p> <ul style="list-style-type: none"> • Landscape irrigation; • Swimming pool top-up; • Dedicated car-washing bays.
<p>Cooling Towers</p>	<p>Cooling towers will be designed to have 6 cycles of concentration or greater, reducing water consumed in air-conditioning by up to 50%, as well as reducing chemical use in treatment;</p> <p>Cooling towers will be maintained to minimise water loss through leaks, overflow, evaporation, bleed, drift and splash. Refer to the Best Practice Guidelines for Cooling Towers (Sydney Water, 2007) and Water Efficiency Guidelines (DEH 2006) for further guidance.</p>
<p>Fire System Test Water</p>	<p>Fire test & maintenance drain-down water will be captured and stored for reuse on-site;</p> <p>Isolation valves or shut-off points will be provided to each floor for floor-by-floor testing.</p>

System	Water-saving Strategies
<p>Flows to Sewer</p>	<p>Estimated wastewater discharge to sewer will be significantly reduced relative to a standard building through the implementation of water efficiency measures and wastewater recycling.</p>
<p>Landscape</p> 	<p>The use of native, drought-resistant planting will be encouraged to reduce water consumption used in irrigation. Sub-soil irrigation systems with moisture sensors should be considered where non-native species are selected.</p>
<p>Metering</p>	<p>Sub-metering will be provided for major water uses, to identify abnormal usage patterns usually associated with leaks, helping to reduce the considerable water lost in this way. In addition, they will allow water efficiency measures to be monitored and tracked;</p> <p>Smart meters (displays) to each apartment and tenancy to encourage awareness and therefore reduction of consumption.</p>
<p>Education</p>	<p>Publicise water-saving initiatives and provide education for tenants.</p>



5. Water Sensitive Urban Design (WSUD)

Targets:

- Stormwater runoff to achieve a high quality of treatment, targeting the following reductions. Achievement of the stretch target is subject to detailed design development:

	Minimum Requirement	Stretch target
Total Suspended Solids	80%	80%
Gross Pollutants	85%	90%
Total Nitrogen	30%	45%
Total Phosphorus	30%	60%

- Peak stormwater runoff not increased for a 1.5 Average Recurrence Interval (ARI).

Item	Strategies to improve WSUD
<p>Stormwater Quantity</p> 	<p>Peak runoff quantities will be reduced by rainwater harvesting from rooftops for reuse on-site.</p> <p>Pervious areas are being increased in order to ensure that pre-development water balances on-site are maintained as much as possible.</p>
<p>Stormwater Quality</p> 	<p>Stormwater filtration equipment will be installed in the basement to improve the quality of stormwater runoff.</p> <p>Green roof areas (including communal gardens at the podium roof) will also assist in improving stormwater runoff quality.</p>

6. GHG Emissions Reduction Plan

The development has incorporated a number of strategies in order to reduce greenhouse gas emissions many of which include methods of heating and cooling by using passive design, efficient lighting systems including the use of dimers and timers, the use of smart meters, regenerative drive vertical transportation, photovoltaics and the possibility of using a co generation plant.

In addition the following water strategies will also be used:

- Highly efficient appliances will be supplied to all units including dishwashers, clothes washers and dryers and will be installed within one star of the top efficiency rating.
- Sub metering of water usage.
- The Principal will engage commercial and retail tenants to reduce operational water consumption through the promotion of education and information.
- A future proofing strategy will also be developed to allow for adaptability and flexibility and change of use or future efficient upgrades and ease of refurbishment.

7. Stormwater Management

Rain water from the roofs will be collected and discharged into a rainwater harvesting tank which will provide water to be reused within the development. This water will be used to provide the podium irrigation system and other areas which will meet with regulatory authority requirements.

General stormwater including the overflow from the rainwater harvesting tank will be discharged into a site detention tank (OSD). The hydrologic and hydraulic analysis was undertaken using a DRAINS programme, based on a one-off of a 100 year average reoccurrence interval (ARI). The limit of flows will be in accordance with predevelopment flows of 1.5, five and 100 year ARI events. The location of the OSD tank will be located so that the water can drain by gravity to the street drainage system.

Water discharge from the site will be pre-treated using gross pollution traps located in the gardens, terraces and fore courts when additional pre-treatment using storm filter cartridge modules before being discharged into the authorities stormwater systems.

8. Sedimentation and Erosion Control

It is necessary at all times to maintain sediment and erosion control system. This is especially important during the demolition and excavation stages of the construction and a plan of the intended method is shown below.

An Erosion and Sediment Control Plan has been prepared and is included within the Stormwater Management Plan prepared by Diversi.