

Integrated Water Management Plan

Project Details

Project Name: 5-9 Cowan Road, St Ives

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I Alexander Raad confirm this Integrated Water Management Plan addresses the requirement of SEAR Infrastructure Requirements and Utilities requirements regarding water management. This report addresses relevant State and local legislation, policies, and guidelines including all Authorities listed in Section 2.4 of this report. I further confirm that none of the information contained in the Integrated Water Management Plan Report is false or misleading.

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1 Introduction

1.1 GENERAL

This Services Design Intent Report accompanies an Environmental Impact Statement (EIS) pursuant to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act), in support of a State Significant Development Application (SSDA) for the construction and operation of proposed mixed-use development, reference SSD-73228210.

This report addresses the Secretary's Environmental Assessment Requirements (SEARs) issued for the project, notably:

SEARs Requirement	Section of Report where response is provided
Water Management	3.2,3.3 and 3.5

1.2 PURPOSE

The Integrated Water Management Plan serves as a key reference document that outlines the mutual agreements between Goldfish and Bay and the Client and/or their representatives. This document captures the commitments made during the planning phase, providing all stakeholders with a clear and consistent framework to ensure aligned expectations throughout the project.

Our primary goal in developing the concept design is to deliver value-driven insights by focusing on value engineering whilst incorporating environmentally friendly initiatives for life cycle of the build. By integrating these critical elements, we aim to provide solutions that are both efficient and practical for real-world implementation.

This plan aims to clearly present the scope of services to be designed. It is not intended to serve as a Specification or Bill of Materials, nor does it include detailed selections of primary equipment. Instead, it offers an overview of the services to be integrated within the building to ensure alignment with the client's objectives and requirements.

The plan includes an Integrated Water Management Strategy for the development, prepared in consultation with the local council and other relevant drainage or water authorities. The strategy:

- Details the water-related servicing infrastructure required for the development, based on anticipated and ultimate servicing demand increases, while exploring opportunities to reduce water usage, such as recycled water options.
- Specifies the proposed drainage design (stormwater and wastewater) for the site, including on-site treatment, reuse, detention facilities, water quality management measures, and designated discharge points.
- Demonstrates compliance with local council or other drainage and water authority requirements to avoid adverse downstream impacts.
- Provides full hydraulic details and detailed plans for any drainage infrastructure works that will be handed over to the local council or other drainage or water authorities, ensuring they are prepared in consultation with, and comply with, relevant standards.

2 PROJECT BACKGROUND

2.1 PROPOSED DEVELOPMENT SITE

The property comprises 10 lots situated between Pymble Golf Club and the northwestern edge of St Ives Shopping Centre, one of Australia's top-performing retail assets. Just off Mona Vale Road, it offers excellent transport connectivity, located 12 km from Chatswood and 23 km from Sydney CBD.

The development consists of 74 spacious 2- and 3-bedroom apartments, pending planning outcomes. We are currently considering a mix of build to sell and affordable for 15 years. The property is located on ridge, benefiting from vistas over Pymble Golf Club and district views to the southeast.



Figure 1- Aerial view of the site (Source: SIX MAPS)

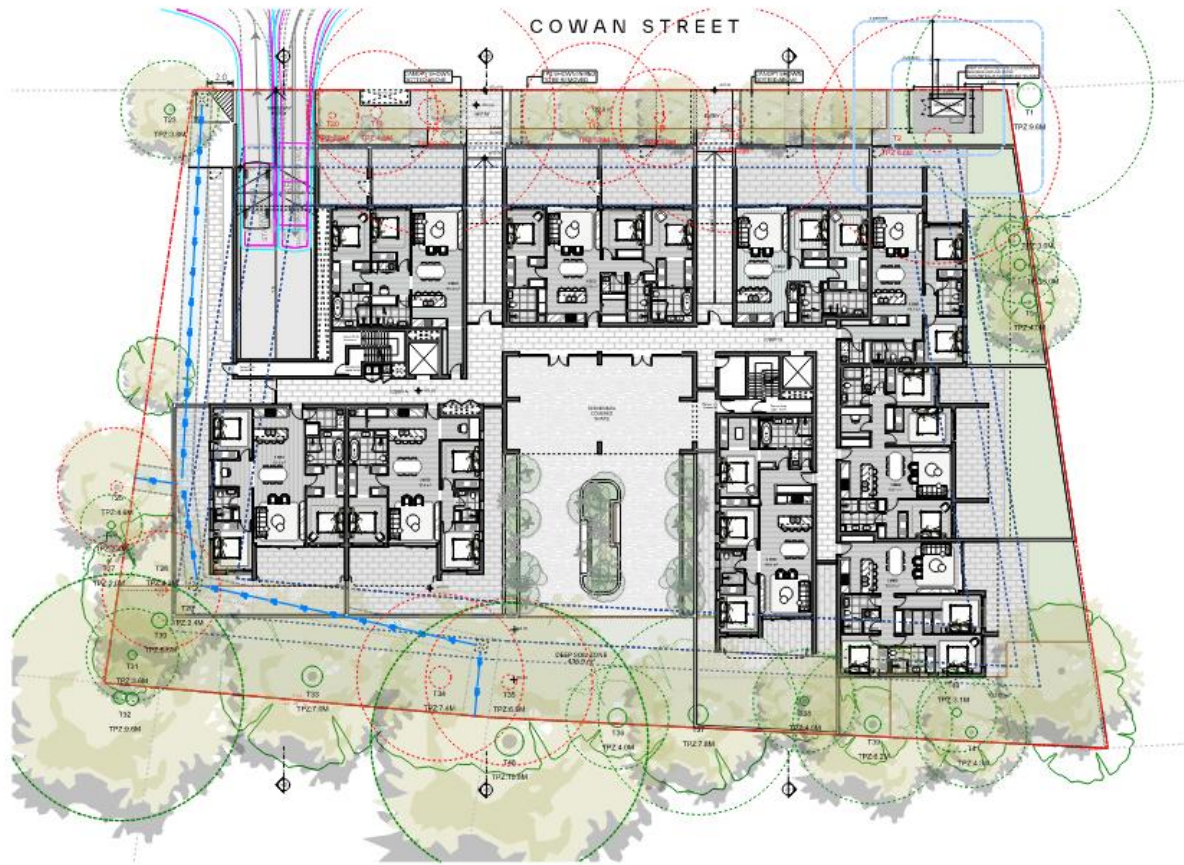


Figure 1.1 - Site plan (by PBD architects)

2.2 Stratums

The project will be expected to be split into 2 stratums.

3 Hydraulic Services

3.1 STANDARDS AND CODES

The hydraulic assessment is based on the below relevant standards and codes

Referencing Document	Description
AS3500.1:2021	Plumbing and Drainage Part 1: Water Services
AS3500.2:2021	Plumbing and Drainage Part 2: Sanitary Plumbing and Drainage
AS3500.3:2021	Plumbing and Drainage Part 3: Stormwater Drainage
AS3500.4:2021	Plumbing and Drainage Part 4: Heated Water Services
AS5601:2022	Gas Installations
AS2441:2005	Installation of Fire Hose Reels
NCC 2022	National Construction Code
Sydney Water Regulations	
Jemena Network Operating Rules	
Burwood Council	
Canada bay Council	
Fire & Rescue NSW	

3.2 SANITARY DRAINAGE

3.2.1 REQUIRED DEVELOPMENT LOAD

The main reticulated sewer drainage line serving the development will be designed in accordance with

AS/NZS 3500.2-2021 and preliminary proposed fixture unit calculations are as follows:

Area	Units	Fixture Units
Residential	74	1500
Non-residential	n/a	0
Subtotal sewer connection		1500
150mm @ 1% Capacity		855
225mm @ 1% Capacity		4,500

A network of sewer drainage systems will transfer sewerage waste from all levels of the proposed building to the nominated sewer connection. It is expected that only 1 connection to the authority main is required.

3.2.2 UTILITIES

As illustrated in Figure 4, the proposed site is surrounded by the following sewer mains:

- A 150mm concrete-encased sewer main at the rear of the site within the lot boundary.

During the detailed design phase, it is crucial to coordinate with the Water Servicing Coordinator (WSC) to finalize the point of connection. This coordination will ensure that the necessary adjustments are made to accommodate the proposed development.

Engaging a Water Servicing Coordinator (WSC) at the earliest opportunity is highly recommended. The WSC will provide a design proposal to Sydney Water for consideration, facilitating a streamlined approval process and ensuring the sewer infrastructure meets the requirements of the development.

In summary, the existing sewer infrastructure should be able to cater for this development, subject to WSC assessment

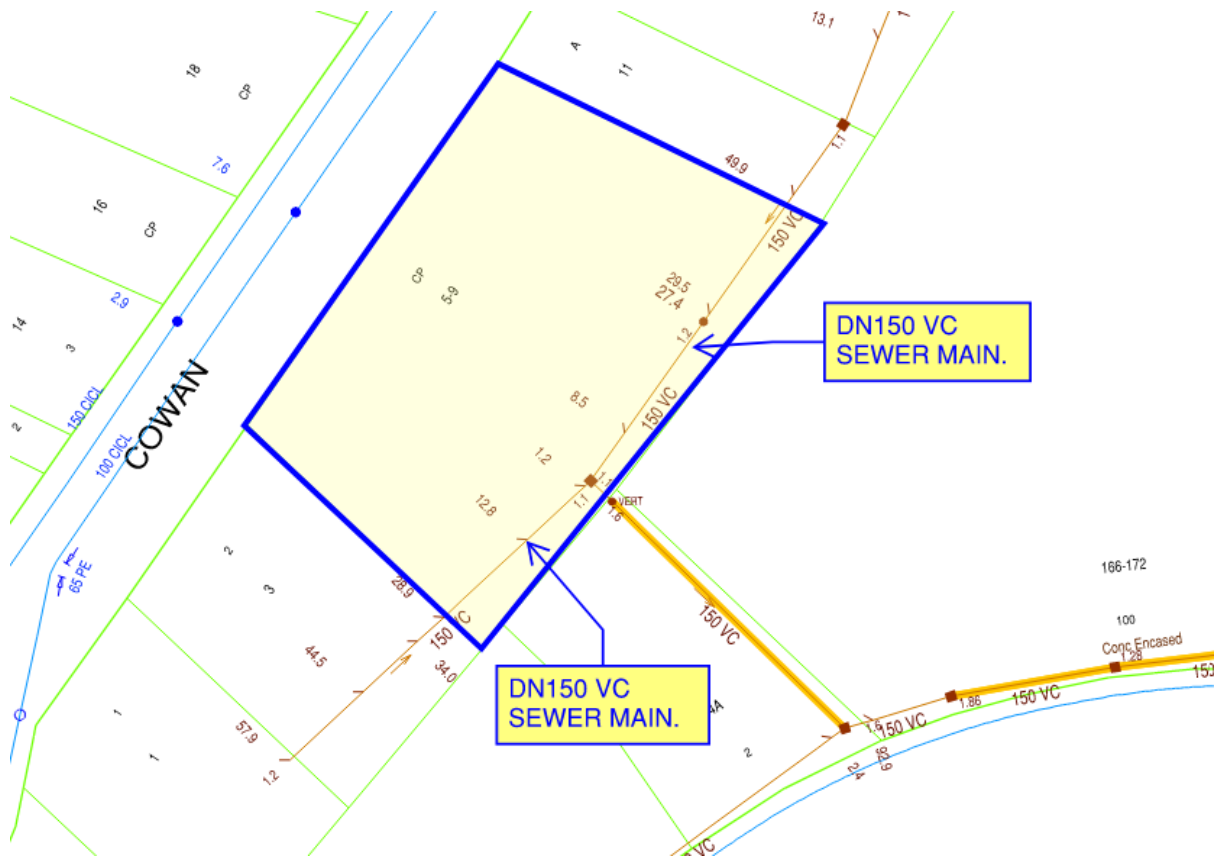


Figure 2 - Hydra Sewer Map (by Sydney Water)

3.2.3 WASTEWATER MANAGEMENT

After evaluating the projected sewer discharge volumes, it has been determined that the existing infrastructure is more than capable of managing the load without requiring extensive upgrades or adjustments. Given this, it is not economically or operationally feasible to implement a wastewater reuse system. Systems such as greywater recycling, blackwater treatment, or constructed wetlands are generally designed for developments where sewer discharge volumes exceed local infrastructure capacity or where sustainability goals specifically prioritize water recycling. In this case, the discharge from the development is well within the capacity of existing sewer mains and treatment facilities managed by the local authority.

Additionally, the environmental cost of implementing an onsite wastewater reuse system would outweigh its benefits. Treating wastewater onsite requires significant energy input, operational resources, and maintenance efforts, leading to a higher carbon footprint. Given that the local infrastructure can handle the wastewater efficiently with fewer environmental impacts, the more sustainable approach is to avoid unnecessary resource consumption associated with onsite treatment.

As a result, the most practical approach is to channel all wastewater directly into the existing sewer mains, leading to the authority's treatment plants. By doing so, we ensure compliance with local regulations while avoiding the complexities, costs, and environmental burdens of onsite wastewater treatment.

With wastewater effectively managed through existing infrastructure, the focus of our water management strategy will pivot to maximizing the reuse of stormwater drainage. This approach offers more tangible benefits in terms of sustainability and water efficiency for this development. By capturing, treating, and reusing stormwater, we can reduce potable water demand, support landscape irrigation, and even provide non-potable water for certain building uses (e.g., toilet flushing).

3.3 POTABLE COLD-WATER SUPPLY

3.3.1 REQUIRED DEVELOPMENT LOAD

The main reticulated water supply serving the development will be designed in accordance with AS/NZS 3500.1-2021. The parameters for sizing cold water services have been determined utilizing the following criteria:

Location	Design Velocity	Maximum Velocity	Minimum Pressure	Maximum Pressure
In ground	2.4 m/s	3.0 m/s	250kPa	500kPa
Internal in walls and ceilings	1.6 m/s	3.0 m/s		

Potable cold-water services will be sized with adequate capacity to convey water supply to all fixtures and appliances. A preliminary assessment of the probable simultaneous flow rates has been calculated as follows:

Area	PFSR (L/s)	Pipe Size (mm)
Residential	5.32	65

3.3.2 UTILITIES

As illustrated in Figure 6, the proposed site is surrounded by the following water mains:

- The DN100 CICL water main located in Cowan Street, which could serve as a potential connection point.
- The DN150 CICL water main located in Cowan Street, which could serve as a potential connection point.

During the detailed design phase, it is crucial to coordinate with the Water Servicing Coordinator (WSC) to finalize the incoming water connection point. This coordination will ensure that the necessary adjustments are made to accommodate the proposed development.

Engaging a Water Servicing Coordinator (WSC) at the earliest opportunity is highly recommended. The WSC will provide a design proposal to Sydney Water for consideration, facilitating a streamlined approval process and ensuring the water infrastructure meets the requirements of the development.

In summary, the existing water supply infrastructure will be able to cater for this development.

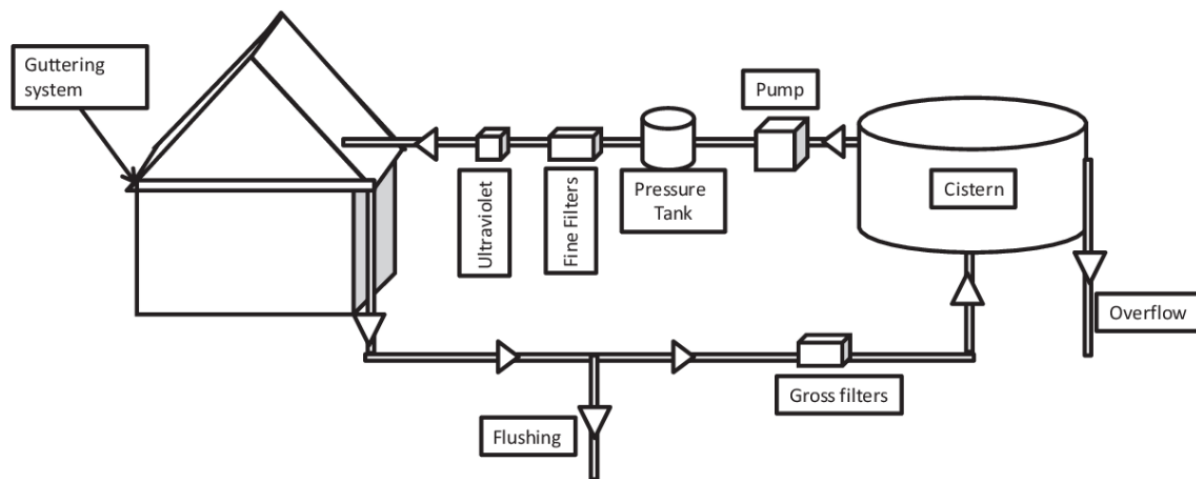


Figure 4 - Typical Rainwater reuse system

Once rainwater is captured from all roof surfaces, awnings, and open trafficable areas via rainwater outlets, it will be conveyed to the rainwater collection tanks integrated within the On-Site Detention (OSD) system. Before entering the rainwater tanks, the water will pass through a series of filtration stages, including gross pollutant traps and first flush devices, to remove larger debris and initial contaminants.

The storage tank is engineered with sufficient capacity to manage seasonal variations, accounting for both wet and dry periods, to optimize rainwater harvesting throughout the year. The system is designed to maximize collection during periods of high rainfall while retaining enough buffer capacity for extended dry spells, ensuring consistent availability of non-potable water.

When needed, the stored rainwater will be extracted using submersible pumps for non-potable applications. Prior to distribution, the water will undergo further treatment through a comprehensive filtration system, which includes UV sterilization, backwash filters, and bag filters to ensure it meets the necessary quality standards. This treated water will be reused for irrigation, common area washdown, and commercial toilet flushing, contributing to the overall sustainability and efficiency of the development.