



Integrated Water Management Plan

Application No: SSD-99319962

173-183 Rickard Road, Leppington

Prepared For

Leppington (1) 88 Development Pty Ltd

Revision C June 2026

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Disclaimer

The advice and information contained within this report relies on the quality of the records and other data provided by the Client and obtained from Council along with the time and budgetary constraints imposed.

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1 INTRODUCTION

1.1 Executive Summary

This Integrated Water Management Plan has been prepared by Telford Consulting on behalf of Leppington (1) 88 Development Pty Ltd (the Applicant) to address the project-specific Secretary's Environmental Assessment Requirements (SEARs) issued the proposed State Significant Development Application (SSDA) SSD-99319962. The development is located at 173-183 Rickard Road, Leppington (the Site) and is located within the South West Growth Area (SWGA) within the Camden Local Government Area (LGA).

This report concludes that the proposed mixed-use development is suitable and warrants approval subject to the implementation of the following mitigation measures:

- Stormwater quantity assessment:

The stormwater design strategy intends to allow stormwater runoff to drain from the site by gravity.

All surface runoff from the paved and unpaved areas is captured by the proposed pit and pipe network across the site, and directed to the On-Site Detention and Water quality treatment chambers before being discharged from the site via the lawful point of discharge.

In the short-term servicing, the stormwater from the proposed development will discharge via a temporary headwall that connects to a level spreader at the lowest point in site. This arrangement will remain in place until the future roads are constructed.

In the long-term servicing, the discharge from the lots will transition to the roads through the ultimate drainage system. The existing temporary headwall will be removed along with the existing level spreader, the existing stubbed pipes will be activated, and the stormwater system will connect to the ultimate system in the road.

The proposed development will not increase any stormwater discharge towards the lawful point of discharge. To mitigate the increased post-development runoff, it has been proposed to install an OSD prior to the discharge point. On-site detention (OSD) has been designed for this development to attenuate the 1 in 100-year storm events.

The DRAINS ILSAX model was used to analyse the detention requirements for a range of storm events.

- Stormwater quality treatment:

Storm filter cartridge treatment systems have been proposed to be installed within the OSD tanks for water quality treatment to achieve the required targets. MUSIC software was used to assess pollutant generation and the performance of the proposed stormwater treatment measures for the development.

Following the implementation of the above mitigation measures, the remaining impacts are considered appropriate.

The proposed site-based stormwater management measures have been developed and coordinated with the proposed site design and layout. Based on the assessment undertaken, the recommended stormwater management measures are considered practical and capable of being successfully delivered within the development site while achieving the required stormwater management objectives.

1.2 Project Description

The project seeks detailed development consent for the construction of a mixed-use development to deliver Leppington Civic Centre, comprising shop top housing to support residential development and commercial land uses at 173-183 Rickard Road, Leppington.

Specifically, the SSDA seeks consent for:

- Demolition and earthworks to prepare the site for future development.
- Delivery of new roads and approximately 6,500 sqm of open space.
- Delivery of 8 residential buildings to accommodate a total of 1493 units, comprising of:
 - Build to Sell Apartments: 864
 - Build to Rent Apartments: 412
 - Affordable Apartments 217 (representing circa 15% of total residential yield)
- Delivery of a 156-key hotel (non-residential).
- Approximately 40,500 sqm of non-residential Gross Floor Area (GFA).
- Loading and car parking facilities on the lower ground and basement levels.

The proposed development is supported by concurrent rezoning application to seek amendments to Appendix 5 Camden Growth Centres Precinct Plan within the *State Environmental Planning Policy (Precincts – Western Parkland City) 2021* pursuant to the concurrent rezoning process through the Housing Delivery Authority (HDA) planning pathway. This concurrent rezoning will provide the rezoning and variations to development standards required to facilitate the delivery of the Leppington Civic Centre and Leppington Town Centre, generally in accordance with the Leppington Town Centre State-Assessed Rezoning Proposal (**SARP**).

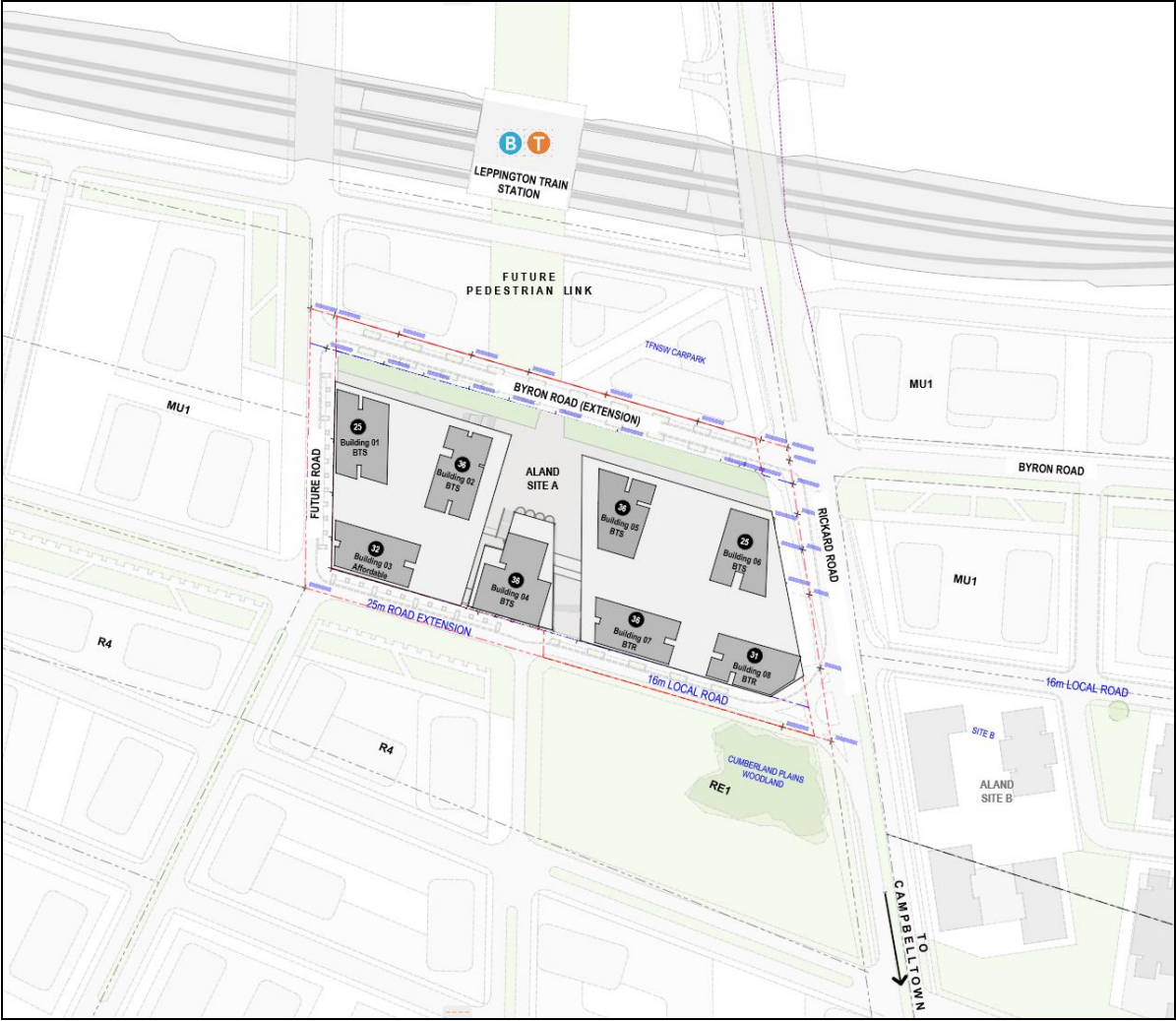


Figure 1.2.1 SSDA – Proposed Works

I Dr. Michel Chaaya, confirm this Integrated Water Management Plan addresses the requirement of SEAR No.11 Water Management and relevant State and local legislation, policies, and guidelines including Camden Council Engineering Design Specification and Austral & Leppington North Precincts Water & Cycle Management. I further confirm that none of the information contained in the Integrated Water Management Plan is false or misleading.

SEARS Item	Report Reference
11. Water Management - Detail the proposed drainage design and servicing infrastructure to be incorporated as part of the development (stormwater and wastewater). - Demonstrate how the development complies with council's drainage requirements and identify proposed stormwater treatment and water quality management measures to minimise adverse environmental impacts.	Section 2 and 3

1.2.1 Detailed Project Description and Proposed Works

The proposal seeks consent for:

- **Approval of a Concurrent Rezoning Amendment:** To facilitate the built form proposed under SSD- 99319962, concurrent amendments are sought to the WPC SEPP pursuant to the concurrent rezoning process facilitated by the HDA planning pathway. This concurrent rezoning seeks to vary existing controls under the WPC, whilst also seeking broad alignment with the LTC SARP which is expected to be finalised by DPHI mid-2026. Specifically, the project seeks to amend the WPC SEPP as follows:
 - Amend the Land Zoning Map to rezone the site from B3 Commercial Centre to MU1 Mixed Use.
 - Amend Clause 4.3 to increase the height of buildings control from 24m to 138.5m.
 - Introduce a floor space ratio control of 5.8:1 for the entire site, equates to approximately 188,000sqm of GFA.
 - Incorporating a site-specific provision, requiring the provision of a minimum of 6,500sqm of public open space
- **State Significant Development consent for the proposed development:** The SSDA seeks detailed consent for the following works:
 - Demolition of existing structures, clearing of vegetation and site preparation works across the site.
 - Subdivision of the site to create separate lots and road reserves.
 - Bulk earthworks and civil infrastructure works across the site.
 - Construction of an internal street (road) network.
 - Construction of 8 residential buildings to accommodate a total of 1493 units, comprising of:
 - Build to Sell Apartments: 864
 - Build to Rent Apartments: 412
 - Affordable Apartments 217 (representing circa 15% of total residential yield)
 - Delivery of approximately 40,500m² of non-residential floor space, including:
 - Hotel (with ancillary function spaces)
 - Centre-based child care facility, accommodating approx. 70 children.
 - Pub (licensed)
 - Shop – neighbourhood supermarket, discount department store (DDS), other retail
 - Retail liquor store
 - Food and beverage premises
 - Vehicle repair station – Tyre and auto, carwash
 - Recreation facility (indoor) – Indoor swim school, Gym
 - Delivery of retail and residential parking spaces across seven (7) basement levels
 - Delivery of an active and connected public domain, including:
 - Approximately 6,500sqm of public open space in the form of north-south and east-west linear parks that connect with the broader town centre.

- communal open space for all residential occupants and visitors.
- Street landscaping, tree planting and public domain works throughout the site.
- Installation of building signage to support wayfinding and building identification across the precinct.

1.3 Subject site

The subject site comprises 2 existing lots known as 173 Rickard Road, Leppington legally described as Lot 2 DP 812366 & 183 Rickard Road, Leppington legally described as Lot 1 DP 812366.

It has an area of approximately 3.242ha.

The property is situated within the Southwest Growth Area (SWGA) within the Camden Local Government Area (LGA) and is located on land zoned B3 Commercial Core, under the State Environmental Planning Policy (Precincts – Western Parkland City) 2021 (WPC SEPP).

It is accessed via Rickard Road. The site has currently 2 single storey residence, workshop and sheds.

Overall ALAND landholding is denoted in the blue hatch outline below. Early work has commenced with the site clearing and demolition.

The location of the site is shown in Figure 1.3.1 below.



Figure 1.3.1 Locality Map

1.4 Surrounding Context

The site is bound by Rickard Road, the surrounding rural residential and agricultural lots. Located in the Leppington Town Center, it spans across two LGAs, being Camden and Liverpool.

The site is well connected to local transport infrastructure, with Leppington Train Station approximately 450m away and Bus Interchange and Leppington Village nearby.

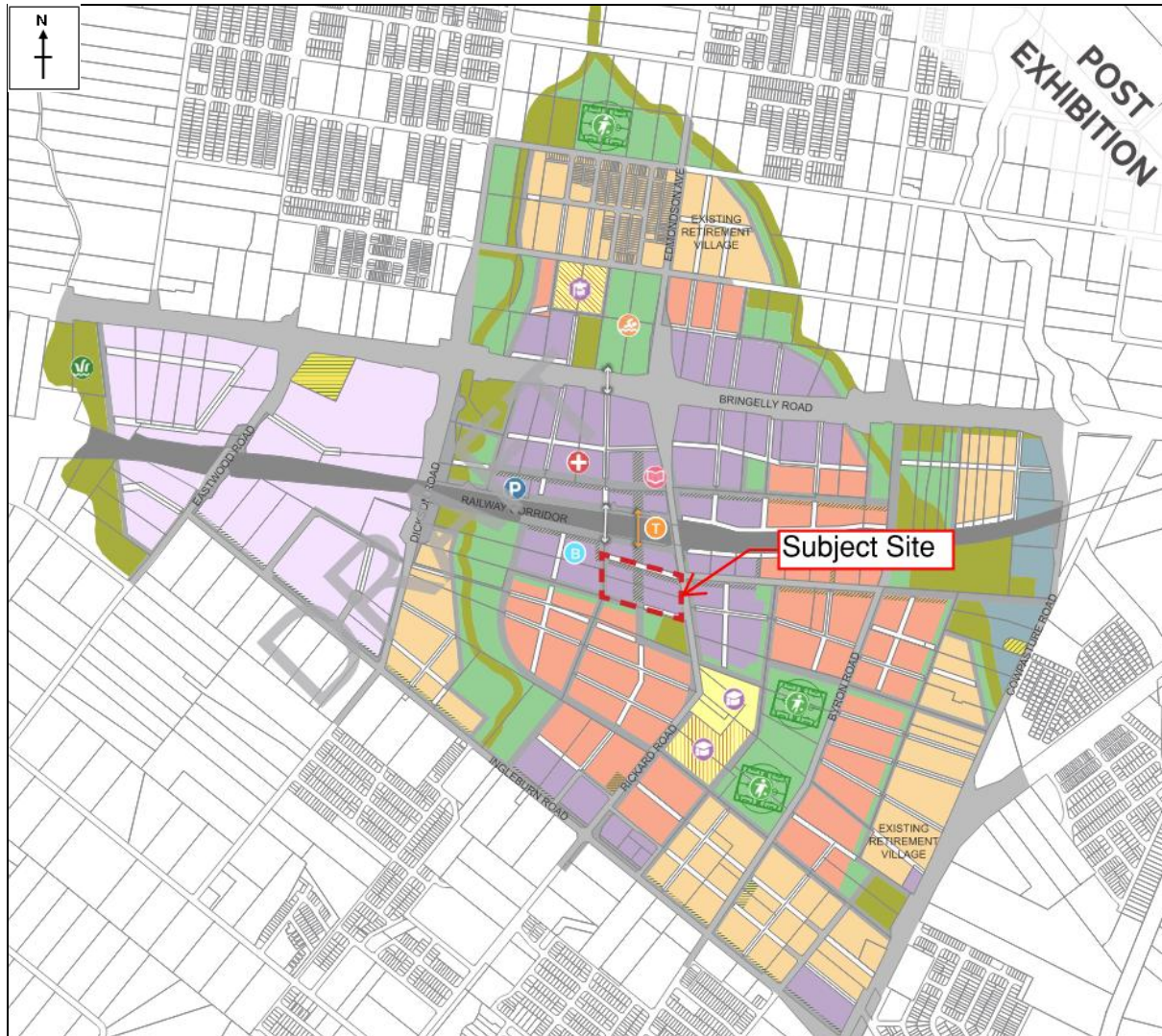


Figure 1.4.1 The surrounding

1.5 Existing Topography

Based on the survey provided by SDG Pty Ltd dated 28/10/2021 (Appendix B), the topography of the subject site slopes from south east to north west.

The subject site accommodates a total level change of approximately 10 metres.

1.6 Flooding

A review of the Upper South Creek Flood Study prepared for Camden Council (October 2022, adopted February 2023) was undertaken to confirm the flood characteristics of the subject site.

The flood mapping from this study (refer to Figure 1.6.1) indicates that the subject site is located outside the mapped flood extent.

In addition, available LiDAR topographic data was reviewed to understand the local drainage patterns and site topography. The LiDAR data indicates that the subject site is situated near a local

high point within the surrounding area, with no identifiable overland flow paths or mainstream river systems traversing or immediately adjoining the site.

Based on the above review of the adopted flood study mapping and available LiDAR data, the subject site is not considered to be flood affected.



Figure 1.6.1 Upper South Creek Flood Study Review – Peak flow depth – 1% AEP event

1.7 Agency Consultation Meetings

Several meetings were held with the relevant agencies, during which it was agreed that the proposed stormwater strategy adequately addresses all applicable requirements. As part of the consultation process, Aland met with the agencies below:

- **Camden Council:** Aland met with Council on 18 February 2026 to discuss the latest Rickard Road design to ensure alignment with intersection design and road widths.
- **Schools Infrastructure NSW:** Aland met with SINSW on 25 February 2026 to understand delivery timeframes of the Leppington Public School upgrade works and Leppington High School development timeframes. The southern interface with the public school was also discussed to ensure consistency with the school upgrade works and proposed access.
- **TfNSW:** Aland met with TfNSW on 2 March 2026 to present an update on the proposed development and the access strategy off Rickard Road.

2 STORMWATER QUANTITY ASSESSMENT

2.1 Aims & Objectives

Austral & Leppington North Precincts Water & Cycle Management states that On-site Detention (OSD) would be included in commercial/industrial lots. The lot based OSD approach would aim to retard post-development flows to pre-development levels within the private domain.

This is in accordance with Camden Council Engineering Design Specification that states that an On-Site Detention system will be required by the Council Engineer for the reduction of the impacts of a development on a downstream drainage system or property: The maximum discharge from the post-development site shall not exceed the pre-development flows for all storms up to and including the 1% AEP and shall not be concentrated.

Moreover, as per Leppington Major Centre – Schedule 2: water sensitive urban design has objectives to integrate stormwater detention and treatment with the urban structure of the Leppington Major Centre.

Given all the above, On-Site Detention is required.

The OSD is designed on the basis that the total discharge of stormwater from the post development site is less or equal than that from the site before it was developed.

To mitigate the increase in post-development, it is proposed to install an on-site detention tank for all Blocks.

In the short-term servicing, the stormwater from the proposed development will discharge via a temporary headwall that connects to a level spreader at the lowest point in site. This arrangement will remain in place until the future roads are constructed.

In the long-term servicing, the discharge from the lots will transition to the roads through the ultimate drainage system. The existing temporary headwall will be removed along with the existing level spreader, the existing stubbed pipes will be activated, and the stormwater system will connect to the ultimate system in the road.

Refer to the stormwater plans shown in Appendix C for more details.

2.2 DRAINS Modeling and Results

DRAINS ILSAX model was used to analyse the detention requirements for a range of storm events (0.2EY, 10%, 5%, 2% & 1% AEP Storm events). The following table details the preliminary detention storage requirements for the proposed OSD tank.

The following images and tables show the Results of DRAINS modelling for the proposed OSD tank:

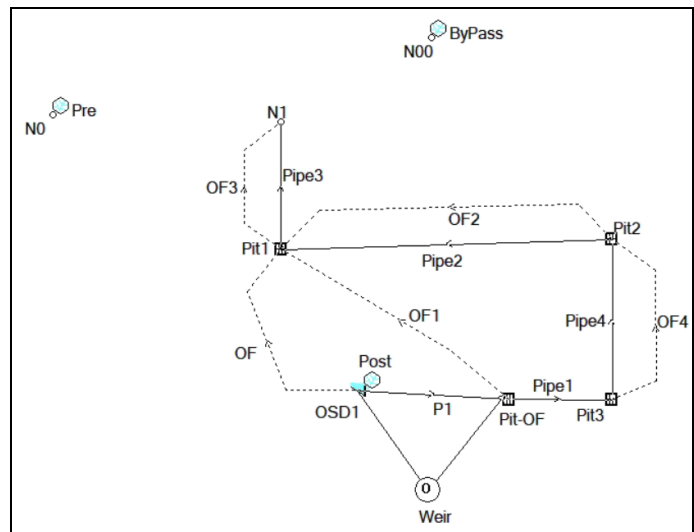
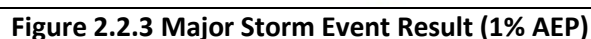
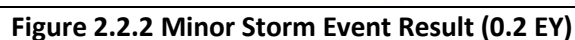


Figure 2.2.1 DRAINS Model



Name	Volume (m ³)	Area (m ²)	Average Depth (m)
OSD Tank	444.7	374	1.187

Table 2.2 Summary of peak discharge

Outlet	Scenario	STORM EVENT (AEP)				
		0.2EY	10%	5%	2%	1%
Site	Pre-dev	580	760	929	1210	1430
	Post-dev	580	673	806	1101	1315

The table indicates that with the proposed detention tank, the development will successfully attenuate all post-development peak discharges from the proposed development, for all investigated return periods.

Refer to the Stormwater Concept Plans attached in Appendix C for further details.

3 STORMWATER QUALITY ASSESSMENT

3.1 Aims and Objectives

Austral & Leppington North Precincts Water & Cycle Management A specific DCP is proposed for the Leppington Town Centre to control development in a manner that reflects their WSUD strategy.

This is in accordance with Camden Council Engineering Design Specification that states that All development is to incorporate Water Sensitive Urban Design (WSUD). WSUD is to be adopted throughout the development to ensure sustainable and integrated management of land and water resources incorporating best practice stormwater management, water conservation and environmental protection.

Moreover, as per Leppington Major Centre – Schedule 2: Water Sensitive Urban Design has objective to meet stormwater quality targets.

The stormwater Treatment Targets for Development are listed below.

Table 3.1 Stormwater Treatment Targets.

Pollutant	% Post Development Average Annual Load Reduction	Achieved % Post Development Average Annual Load Reduction
Gross Pollutants	90%	97.08%
Total Suspended Solids	85%	85.18%
Total Phosphorus	65%	65.13%
Total Nitrogen	45%	49.25%

3.2 Site Analysis and Design Strategy

The proposed development offers the opportunity to provide stormwater quality treatment where none exists at present.

The proposed solution is to use Stormfilter Cartridges and Filtration Baskets to treat and remove gross pollutants from the stormwater drainage cycle from roof, hard surface and landscape, and to limit the mean annual runoff volume from the development site as well as ensuring suitable low flow regime in the streams. Filtration Baskets will also be used to treat the runoff from the internal road.

The elements of the proposed water quality management strategy include:

- Minimise areas of impervious surfaces to minimise runoff volume.
- Incorporate Stormfilter Cartridges to target TSS, TN & TP.
- Implement rainwater re-use tanks to reduce runoff volume.

MUSICX software was used to assess pollutant generation and the performance of stormwater treatment measures for the proposed development.

3.3 Water Quality Management Measures

3.3.1 Stormfilters Cartridges (Ocean Protect)

Stormfilter cartridges from OceanProtect installed within a chamber within the OSD tank as an end-of line treatment. The OceanProtect cartridges target the TSS, TP and TN. The number of Stormfilter cartridges proposed for the development was based on MUSIC modelling outcomes.

Refer to MUSIC results in section 3.4 of this report for more information.

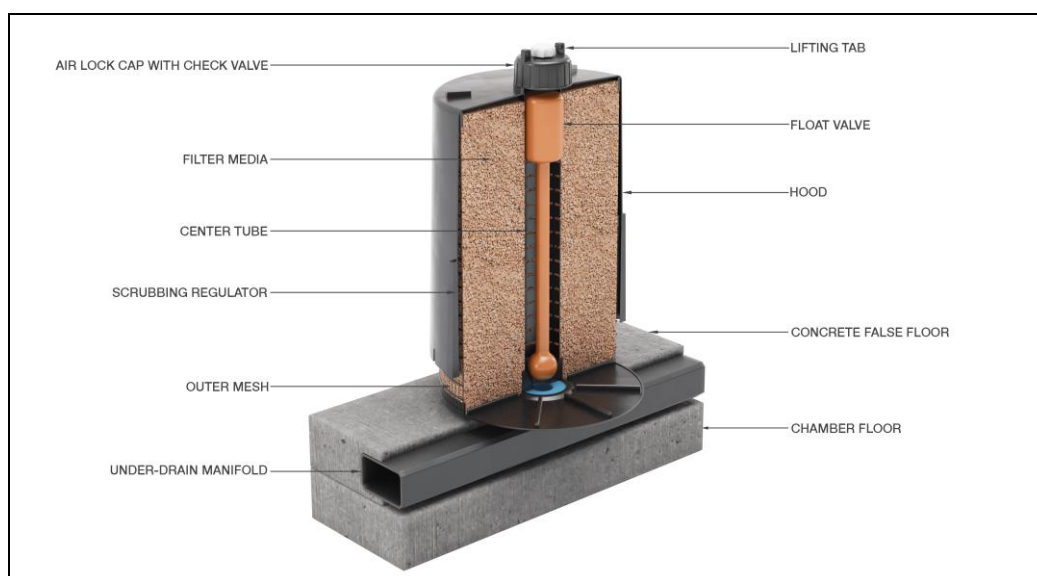


Figure 3.3.1 Ocean Protect Filtration Cartridge

3.3.2 Oceanguards Filtration Baskets (Ocean Protect)

Gully pit baskets from OceanProtect "OceanGuard" will be installed at some of the grated stormwater pits. The OceanGuard gully pit targets TSS and GP.

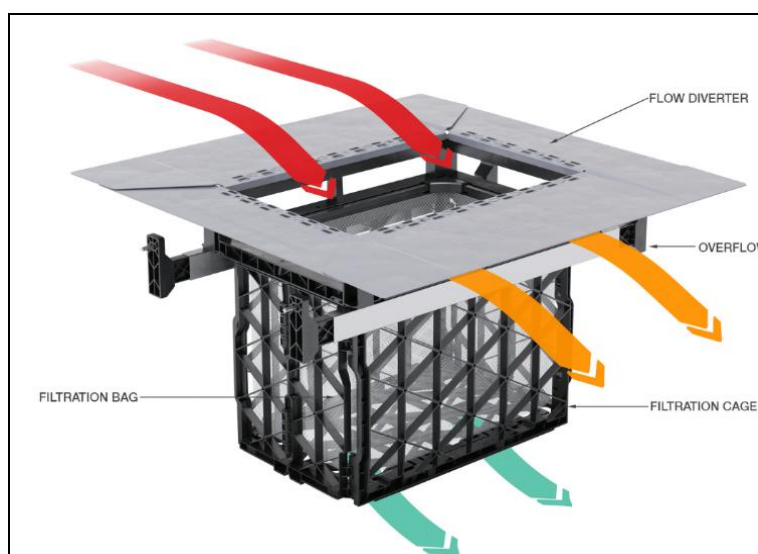


Figure 3.3.2 Ocean Guard Filtration Basket

3.4 MUSIC Modelling

The water quality model adopted for this project is the MUSICX.

MUSIC can model a wide range of treatment devices to identify the best way to capture and reuse stormwater runoff, remove its contaminants, as well as reduce runoff frequency, to achieve WSUD and integrated water cycle management (IWCM) goals.

The MUSIC model was generated using the rainfall data and Stormfilter nodes prepared by Ocean Protect.

Catchment characteristics were defined using a combination of catchments with varying imperviousness ratios to replicate the catchment for the development condition.

Figures below present the MUSIC model and results.

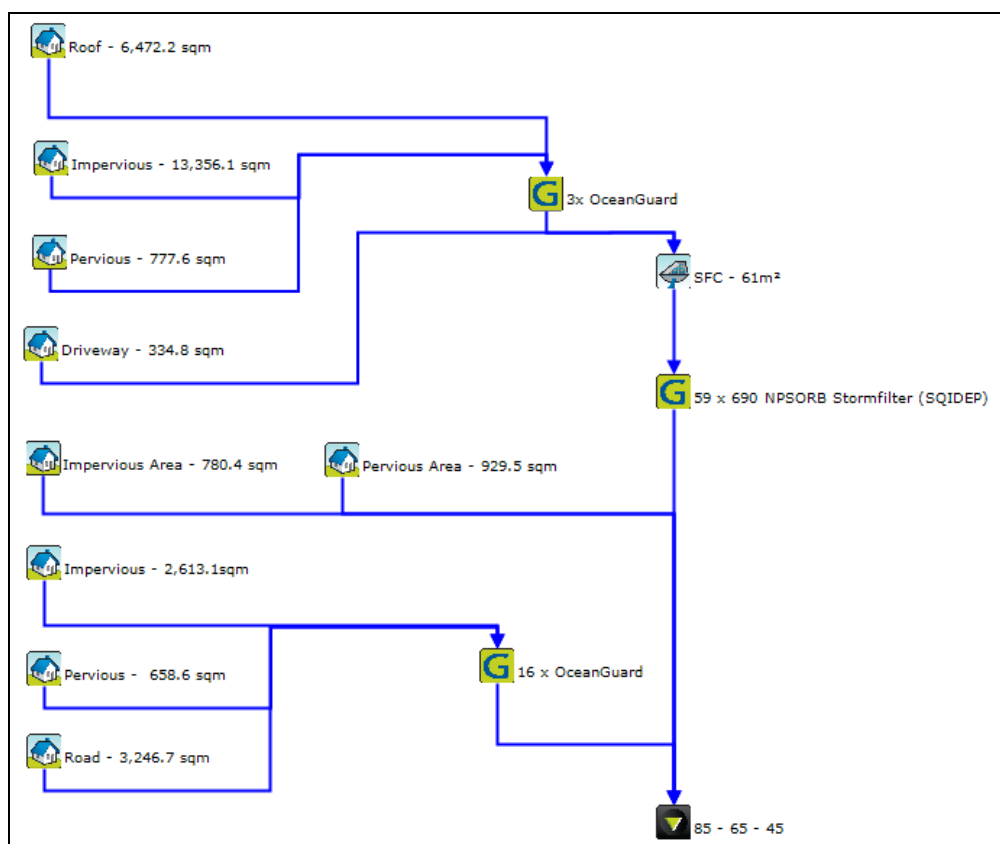


Figure 3.4.1 Music Model

	Sources	Residual Load	% Reduction
Flow (ML/yr)	19	19	0.0006842
Total Suspended Solids (kg/yr)	3472	520.8	85
Total Phosphorus (kg/yr)	7.122	2.493	65
Total Nitrogen (kg/yr)	50.54	25.56	49.43
Gross Pollutants (kg/yr)	510	14.85	97.09

Figure 3.4.2 Music Results

The MUSIC results above demonstrate compliance with the targets specified in the Leppington Major Centre – Schedule 2: Water Sensitive Urban Design, Table 3.1.1.

4 CONCLUSIONS

This Integrated Water Management Plan has been prepared for the proposed Development at 173-183 Rickard Road, Leppington. This report has demonstrated that the site will be able to manage site-based stormwater quantity and quality requirements for the design storms up to and including the 1% AEP event.

The proposed site-based stormwater management measures are as below:

The Lawful Point of Discharge has been maintained for the proposed development in the location where the natural pre-development overland flow from the site discharges.

In the short-term servicing, the stormwater from the proposed development will discharge via a temporary headwall that connects to a level spreader at the lowest point in site. This arrangement will remain in place until the future roads are constructed.

In the long-term servicing, the discharge from the lots will transition to the roads through the ultimate drainage system. The existing temporary headwall will be removed along with the existing level spreader, the existing stubbed pipes will be activated, and the stormwater system will connect to the ultimate system in the road.

On-site detention tank will provide non-worsening of post-development discharge from the proposed development by reducing the total discharge of stormwater from the site less than that from the site before it was developed.

A filtration system with Stormfilter cartridges and filtration baskets will be incorporated to provide stormwater quality treatment for the runoff from the proposed development.

The assessment confirms that the recommended site-based stormwater management measures have been appropriately integrated with the proposed development layout and design. The proposed measures are capable of being implemented on site and will facilitate compliance with the relevant stormwater management requirements and performance objectives.

The conclusion of this Integrated Water Management Plan is that by implementing the proposed stormwater quantity and quality management measures, the proposed development will ensure no worsening effects downstream of the proposed development and conforms to best engineering practices in accordance with Austral & Leppington North Precincts Water & Cycle Management.

5 References

- Austral & Leppington North Precincts Water & Cycle Management
- Camden Council Engineering Design Specification (Feb 2020)
- Leppington Major Centre – Schedule 2

APPENDIX A

Architectural Plans

APPENDIX B

Survey Plans

APPENDIX C

Stormwater Concept Plans