

# INTERGRATED WATER MANAGEMENT PLAN

FOR

NEWINGTON PUBLIC SCHOOL

MARCH 2026



PROJECT TITLE: Newington Public School Integrated Water Management Plan

PROJECT NUMBER: 10944

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|--------------|-----------------|------------------|
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The following abbreviations are utilised in this report.

| Abbreviation | Description                                              |
|--------------|----------------------------------------------------------|
| IWMP         | Integrated Water Management Plan                         |
| AEP          | Annual Exceedance Probability                            |
| ARI          | Annual Recurrence Interval                               |
| ARR          | Australian Rainfall & Runoff (2016)                      |
| Ha           | Hectare                                                  |
| MUSIC        | Model for Urban Stormwater Improvement Conceptualisation |
| OSD          | On Site Detention                                        |
| PSD          | Permissible Site Discharge                               |
| WSUD         | Water Sensitive Urban Design                             |

## 1. INTRODUCTION

This Integrated Water Management Plan (IWMP) has been prepared by Indesco to support the proposed upgrade of Newington Public School, located within the City of Parramatta Local Government Area (LGA).

The IWMP outlines the civil and stormwater management strategy for the project, addressing water quantity, water quality, reuse, and flood management in accordance with City of Parramatta Council's engineering standards and relevant NSW policies.

The purpose of this plan is to demonstrate that the proposed activity will achieve neutral or beneficial effects on water quality, maintain existing stormwater performance, and integrate sustainable water management practices consistent with Council's Water Sensitive Urban Design (WSUD) objectives.

### 1.1 OBJECTIVES

- Demonstrate compliance with Parramatta City Council's stormwater and WSUD requirements.
- Confirm that the proposed activity does not increase impervious area or stormwater discharge.
- Integrate Orion's overland flow management recommendations into the site design.
- Promote water reuse, pollution reduction, and sustainable water cycle management.

This report should be read in conjunction with Indesco's Civil Concept drawings.

### 1.2 SITE DESCRIPTION

**Site Address** 49A Newington Blvd, Newington NSW 2127

The Newington Public School site is situated within the Parramatta River Catchment, discharging via an existing water quality and detention system into Haslam's Creek.

Existing conditions include a mix of impervious roof and hardstand areas, vegetated zones, and a southern OSD tank providing detention and stormwater treatment.

The proposed activity will result in school site, at completion of the proposed activity, having less total impervious area.

Orion has undertaken previous overland flow and flood studies, identifying required overland flow management works to ensure safe conveyance of major storm events through the site.

The site falls generally from east to west towards the rear property boundary with the lowest point located at the south west.

A Locality plan of the site is included in **Figure 1**.



**Figure 1      Locality Plan**

### 1.3      PROPOSED ACTIVITY

This report accompanies a Review of Environmental Factors (REF) that seeks approval for the upgrade of Newington Public School, which involves the following works:

- Construction of a new two (2) storey building comprising:
  - General and specialist learning areas
  - Staff facilities
  - External stairwell and lift
- Construction of a new covered walkway and partial demolition of an existing covered walkway
- Landscaping
- Ancillary services and infrastructure upgrades

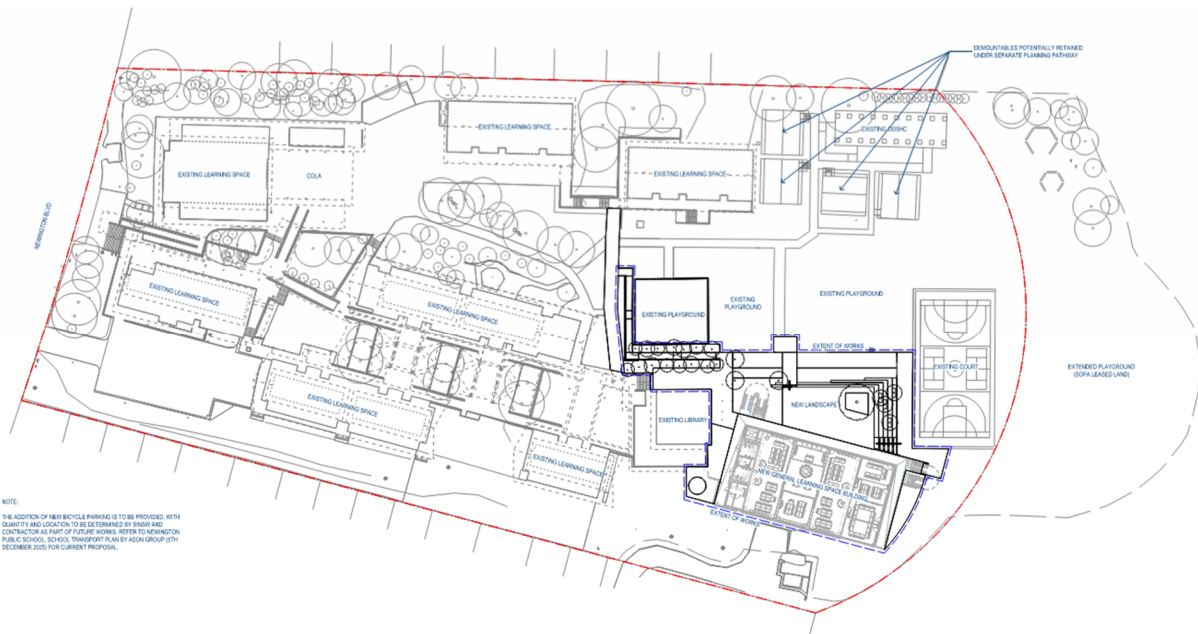
For a detailed project description, refer to the Review of Environmental Factors (REF) prepared by EPM Projects.

The proposed activity is required to reduce reliance on demountable teaching spaces by replacing them with permanent teaching spaces that provide improved educational amenity and long-term operational efficiency.

The proposed project will address asset suitability, equity, and infrastructure performance through:

- Improve site layout and open space use.
- Construction of a new permanent school building incorporating modern learning facilities.
- Provision of Special Program Rooms to support curriculum delivery.
- Upgrades to civil, stormwater, and services infrastructure to support the new activity and ensure compliance with City of Parramatta Council's engineering and environmental standards.

The proposed activity is required to reduce reliance on demountable teaching spaces by replacing a portion of these with permanent teaching facilities, while retaining four (4) demountables and the existing OOSH facility as part of the ongoing school operations. These retained structures have been considered within the civil and stormwater assessment to ensure the overall site continues to operate within acceptable hydraulic and environmental performance limits.



**Figure 2**      **Concept Plan**

## 2. POLICY AND TECHNICAL FRAMEWORK

The design and management approach outlined in this IWMP are guided by the following key documents and standards:

- City of Parramatta Council – Stormwater Disposal Policy (2020)
- City of Parramatta Council – Water Sensitive Urban Design (WSUD) Strategy and Design Guidelines (2018)
- City of Parramatta Council – Development Engineering Design Guidelines
- Australian Rainfall and Runoff (ARR, 2019 Edition)
- Parramatta River Catchment Group Masterplan
- Greater Parramatta and Olympic Peninsula (GPOP) Water Cycle Strategy
- NSW State Environmental Planning Policies (Sustainable Buildings SEPP 2022)
- Managing Urban Stormwater: Soils and Construction (Blue Book, 4th Edition)

### 2.1 CITY OF PARRAMATTA COUNCIL – STORMWATER DISPOSAL POLICY (2020)

This policy governs how developments manage stormwater quantity within the Parramatta LGA. Considerations for the proposed activity:

- The school must ensure post-development stormwater discharge does not exceed pre-development flow rates.
- On-site detention (OSD) may be required unless a reduction in impervious area is demonstrated.
- Existing OSD infrastructure must be verified for compliance with Council's capacity and discharge standards.
- All stormwater outlets and connections to Council's system must be designed to Council specifications.

### 2.2 CITY OF PARRAMATTA COUNCIL – WATER SENSITIVE URBAN DESIGN (WSUD) STRATEGY AND DESIGN GUIDELINES (2018)

This strategy promotes the integration of sustainable water management measures into all urban development.

Considerations for the proposed activity:

- Incorporation of WSUD measures such as rain gardens, vegetated swales, and rainwater harvesting systems.
- Achievement of Council's pollutant reduction targets (e.g., 85% Gross Pollutants, 45% TSS, 65% TP, 45% TN).
- Encouragement of reuse and infiltration to improve water quality and reduce runoff.
- Requirement for designs to demonstrate a neutral or beneficial impact on the water cycle.

### 2.3 CITY OF PARRAMATTA COUNCIL – DEVELOPMENT ENGINEERING DESIGN GUIDELINES

These guidelines define the technical standards and design requirements for drainage and civil infrastructure development.

Considerations for the proposed activity:

- Civil and stormwater designs consider Council's engineering standards for pipe sizing, flow capacity, and pit design.
- Overland flow paths are maintained in accordance with Council's flood conveyance requirements.
- Finished floor levels (FFLs) are set above the 1% AEP flood level.
- Engineering drawings submitted for approval demonstrates compliance with Council's standard details and specifications.

## **2.4 AUSTRALIAN RAINFALL AND RUNOFF (ARR, 2019 EDITION)**

ARR provides national guidelines for flood estimation, stormwater design, and hydrological modelling. Considerations for the proposed activity:

- Stormwater and overland flow calculations must adopt ARR 2019 rainfall data, temporal patterns, and design events.
- Flood assessments must be consistent with 1%, 5%, and 10% AEP design events.
- OSD and drainage systems must be designed to perform under critical storm durations identified in ARR.
- Supports consistency between the school's civil design and broader flood risk management principles.

## **2.5 PARRAMATTA RIVER CATCHMENT GROUP MASTERPLAN**

The Masterplan outlines regional goals for improving waterway health and achieving a swimmable Parramatta River.

Considerations for the proposed activity:

- The school must contribute to improved stormwater quality outcomes for the Parramatta River Catchment.
- Encourages source control measures such as filtration, pollutant trapping, and reduced nutrient discharge.
- Aligns the project with regional objectives for catchment rehabilitation and river health.

## **2.6 GREATER PARRAMATTA AND OLYMPIC PENINSULA (GPOP) WATER CYCLE STRATEGY**

This strategy focuses on integrated water management across the GPOP region, balancing growth, resilience, and sustainability.

Considerations for the proposed activity:

- Promotes integrated water cycle management (IWCM) principles including stormwater reuse, infiltration, and reduced potable demand.
- Encourages alignment with regional water efficiency and liveability targets.
- Reinforces the importance of designing for flood resilience and supporting Council's strategic urban water initiatives.

## **2.7 NSW STATE ENVIRONMENTAL PLANNING POLICIES (SUSTAINABLE BUILDINGS SEPP 2022)**

This SEPP establishes sustainability requirements for all new developments in NSW. Considerations for the proposed activity:

- Requires demonstration of water efficiency and reuse measures to meet sustainability benchmarks.
- Rainwater harvesting and reuse systems must comply with the SEPP's minimum performance standards.
- Aligns the project's water management outcomes with broader state-level environmental and energy efficiency objectives.

## **2.8 MANAGING URBAN STORMWATER: SOILS AND CONSTRUCTION (BLUE BOOK, 4TH EDITION)**

The Blue Book provides industry standards for erosion and sediment control during construction. Considerations for the proposed activity:

- Temporary controls (e.g., sediment fences, stabilised site entry, stockpile management) must be implemented during construction.
- A Soil and Water Management Plan (SWMP) must be prepared in accordance with Blue Book guidelines.
- Prevents sediment-laden runoff from impacting downstream waterways or Council's drainage infrastructure.

Together, these documents establish a comprehensive regulatory and technical framework for managing water on the Newington Public School site. In practical terms, they require the design to:

- Maintain or reduce pre-development stormwater discharge;
- Incorporate WSUD and water reuse infrastructure;
- Ensure compliance with ARR 2019 flood modelling;
- Protect local and downstream waterways; and
- Manage construction-phase erosion and sedimentation.

The cumulative effect is an activity that has compliance, sustainability, and resilience—consistent with Parramatta City Council's and NSW Government's integrated water management objectives.

### 3. INTEGRATED WATER MANAGEMENT STRATEGY

The proposed integrated water management strategy, designed and coordinated by Indesco's civil engineering team, addresses five key elements:

1. Stormwater Quantity Management
2. Stormwater Quality Management
3. Water Reuse and Efficiency
4. Catchment and River Health Integration
5. Flood and Overland Flow Management

This strategy ensures compliance with the technical framework above and supports a vision for a water-sensitive and flood-resilient urban environment.

#### 3.1 WATER QUANTITY MANAGEMENT

##### 3.1.1 Existing Drainage Infrastructure

An existing On-Site Detention (OSD) tank is located to the south of the site. Based on available records and design assumptions, the OSD system was designed to:

- Limit post-development peak discharge to pre-development levels for the 5% and 10% AEP design storm events.
- Detain runoff from roof and hardstand surfaces.
- Manage back-to-back storm events with a 7-minute critical duration.

Key objectives for stormwater quantity management are as follows:

- to ensure that inundation of buildings located in flood-prone areas occurs only on rare occasions and that, in such events, surface flow routes convey floodwaters below the prescribed velocity/depth limits;
- to provide convenience and safety for pedestrians and traffic in frequent stormwater flows by controlling those flows within prescribed limits;
- retain within each catchment as much incident rainfall and runoff as is possible and appropriate for the planned use and the characteristics of the catchment; and
- to mitigate the flow of stormwater to achieve acceptable standards prior to discharge to receiving waters.
- given the presence of multiple buildings and hardstand areas across the site, it is important that any additional runoff generated by future structures is appropriately managed prior to entering the existing system

##### 3.1.2 Proposed Strategy

Given the proposed activity retains four (4) demountable buildings and the existing OOSH facility, these elements have been included within both the existing and post-development scenarios for the purposes of stormwater assessment.

The proposed works will result in a net reduction in impervious area across the site, and therefore, in accordance with Council's Stormwater Disposal Policy, additional on-site detention is not required subject to verification of the existing system.

Indesco have undertaken a detailed survey and hydraulic assessment of the existing OSD system to confirm its storage volume, discharge capacity, and compliance with Council's detention criteria. Should any deficiencies be identified, minor upgrades or adjustments to the existing system will be implemented to ensure compliance.

As the retained demountables and OOSH facility are accounted for within the pre- and post-development comparison, the proposed development is not expected to increase runoff or adversely impact the performance of the existing drainage infrastructure. The overall strategy therefore focuses on

maintaining and verifying the performance of the existing system rather than introducing new detention measures.

### 3.1.3 Council Reference

Under the City of Parramatta Stormwater Disposal Policy (2020):

“Where redevelopment does not increase impervious area or adversely affect downstream drainage systems, existing OSD systems may be retained subject to confirmation of adequacy.”

The proposed approach is therefore consistent with Council’s stormwater management expectations.

## 3.2 WATER QUALITY MANAGEMENT

### 3.2.1 Existing Performance

The site currently incorporates detention and basic treatment through the existing OSD and water quality system and vegetated areas. The reduction in impervious area will result in equal or improved pollutant load outcomes.

### 3.2.2 Proposed Water Quality and WSUD Measures

To enhance water quality outcomes in accordance with Council’s WSUD Design Guidelines (2018), Indesco can propose:

- Bio-retention/rain gardens to capture and treat runoff from roof and paved areas.
- Gross Pollutant Trap (GPT) at the primary stormwater outlet to capture litter and coarse sediment.
- Rainwater harvesting systems as per hydraulic engineer design and sizing.
- Sediment and erosion control measures during construction (as per Blue Book).
- Maintenance access and design in accordance with Council’s WSUD maintenance requirements.

### 3.2.3 Indicative Council Performance Targets

If water quality modelling (e.g. MUSIC) is required, Indesco will adopt the following minimum pollutant reduction targets consistent with Parramatta City Council’s WSUD Guidelines:

- 85% reduction in Gross Pollutants
- 45% reduction in Total Suspended Solids (TSS)
- 65% reduction in Total Phosphorus (TP)
- 45% reduction in Total Nitrogen (TN)

Given the reduction in impervious area and retention of existing demountables and OOSH within the assessed site condition, the development is expected to achieve a neutral or beneficial effect on stormwater quality. The introduction of rainwater harvesting and potential WSUD measures will further enhance pollutant reduction and support compliance with Council requirements.

Where appropriate, additional WSUD measures such as rain gardens, vegetated swales, or gross pollutant traps (GPTs) may be incorporated to further improve stormwater quality outcomes in accordance with City of Parramatta Council’s WSUD Design Guidelines.

### 3.3 WATER EFFICIENCY AND REUSE

Consistent with both Green Star sustainability targets and Parramatta Council's water reuse objectives, rainwater harvesting will be implemented to improve water efficiency and reduce potable water demand.

Proposed reuse applications can include:

- Toilet flushing in school buildings
- Irrigation of landscaped areas
- External cleaning and maintenance

Tank sizing and configuration will be confirmed during detailed hydraulic design. Tanks may also provide supplementary detention and treatment capacity, contributing to both water efficiency and stormwater quality management.

### 3.4 CATCHMENT AND RIVER HEALTH INTEGRATION

The school site ultimately drains to the Parramatta River Catchment. The proposed water management strategy ensures protection of downstream environments by:

- Treating all runoff prior to discharge.
- Incorporating vegetated WSUD elements to support infiltration and biodiversity.
- Avoiding direct discharge of untreated stormwater to outlet network.
- Maintaining compliance with the Parramatta River Catchment Group Masterplan.
- Providing opportunities for environmental education and student engagement through signage and learning modules.

### 3.5 FLOOD AND OVERLAND FLOW MANAGEMENT

Orion has identified existing overland flow paths and local flood management works required to maintain safe flow conveyance during major storm events.

Indesco's civil design will integrate these works by:

- Preserving the primary overland flow path corridors through the site.
- Ensuring Finished Floor Levels (FFLs) are set above the PMF flood level as per Floodplain Risk Management Policy.
- Designing surface grading, landscaping, and drainage pits to safely direct flow toward external drainage systems.
- Verifying compliance with Australian Rainfall and Runoff (ARR 2019) and Council's Development Engineering Guidelines.

This integrated approach ensures the school development does not exacerbate flooding either on-site or downstream.

#### 4. IMPLEMENTATION, MONITORING, AND MAINTENANCE

##### Mitigation Measures

In addition to the standard mitigation measures, the following site-specific bespoke mitigation measures are required to manage potential water-related impacts associated with the activity.

| Ref   | Impact                                                                             | Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                             | Responsibility                             |
|-------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| MM-W1 | Flooding and stormwater impacts                                                    | Survey and confirm the existing on-site detention (OSD) tank capacity and compliance with approved design requirements                                                                                                                                                                                                                                                                                         | Indesco                                    |
| MM-W2 | Stormwater quality                                                                 | Incorporate WSUD measures including rain gardens, GPTs, and water quality treatment devices in accordance with Parramatta City Council's WSUD Guidelines: 85% reduction in Gross Pollutants, 45% reduction in Total Suspended Solids (TSS), 65% reduction in Total Phosphorus (TP), 45% reduction in Total Nitrogen (TN)                                                                                       | Indesco / Landscape Architect / Contractor |
| MM-W3 | Water reuse                                                                        | Confirm rainwater tank sizing, overflow configuration, and hydraulic connections to ensure compatibility with the overall site drainage design. Tanks must be designed to operate effectively under both reuse and storm events without increasing peak discharge or adversely impacting the performance of the existing drainage system.                                                                      | Indesco / Hydraulic Engineer               |
| MM-W4 | Flood risk                                                                         | Verify that all finished floor levels are set above the 1% AEP flood level and PMF, as applicable                                                                                                                                                                                                                                                                                                              | Indesco                                    |
| MM-W5 | Ongoing asset performance                                                          | Establish and implement an asset maintenance schedule for all WSUD and stormwater infrastructure in accordance with the City of Parramatta Council Water Sensitive Urban Design (WSUD) Strategy and Design Guidelines (2018), including recommended inspection frequencies, maintenance activities, and asset management responsibilities to ensure long-term performance.                                     | School Facilities / Council                |
| MM-W6 | Stormwater runoff associated with retained demountable buildings and OOSH facility | Ensure that stormwater runoff from retained demountable buildings and the existing OOSH facility is appropriately captured and conveyed within the existing site drainage system. Verification of system capacity is to be undertaken to confirm no increase in peak discharge or adverse hydraulic impacts. Any required minor upgrades are to be incorporated during detailed design to maintain compliance. | Indesco / Hydraulic Engineer / Contractor  |

**Table 1 Water mitigation measures – implementation, monitoring, and maintenance**

## 5. CONCLUSION

From a civil engineering perspective, this Integrated Water Management Plan demonstrates that the Newington Public School activity, as designed by Indesco, will:

- Comply with City of Parramatta Council's Stormwater Disposal Policy (2020) and WSUD Guidelines (2018);
- Maintain or improve pre-development hydrological performance;
- Integrate overland flow management works to ensure flood safety;
- Deliver neutral or beneficial impacts on water quality and runoff; and
- Support the long-term health and resilience of the Parramatta River Catchment.

Accordingly, the activity is considered consistent with Council's engineering and sustainability objectives for integrated water management.