

# **68-80 Beauchamp Road, Hillsdale, Affordable Housing**

Integrated Water Management Plan

March 2026



# Acknowledgment of Country

On behalf of Mott MacDonald, we would like to begin by acknowledging the Traditional Custodians of the land on which we meet today, and pay our respects to their Elders past and present.

We recognise and respect their cultural heritage, beliefs, continued connection to the land and water and commit to building a brighter future together.

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# **68-80 Beauchamp Road, Hillsdale, Affordable Housing**

## **Integrated Water Management Plan**

March 2026

# Issue and Revision Record

| Revision | Date     | Originator   | Checker    | Approver   | Description               |
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# Executive summary

This Integrated Water Management Plan has been prepared by Mott Macdonald as part of the Environmental Impact Statement (EIS) for a State Significant Development Application (SSDA) for a residential development at 68-80 Beauchamp Road, Hillsdale.

The site is located at 68-80 Beauchamp Road, Hillsdale in the Bayside Local Government Area (LGA) and comprises Lot 12 DP736905 with a site area of 7,857sqm. The site is currently occupied by two storey buildings containing 39 social housing dwellings.

The SSD application seeks approval for demolition of all existing structures and construction of two residential flat buildings comprising a total of 179 social housing dwellings.

The report has been prepared to address the Secretary’s Environmental Assessment Requirements (SEARs) issued for the project (SSD-83256478) on 12 May 2025 as detailed in the table below.

**Table 1: Relevant SEARs considered**

| Issue                          | SEARS requirement  | Section reference   |
|--------------------------------|--|---|
| <p><b>Water Management</b></p> | <ul style="list-style-type: none"> <li>Detail the proposed drainage design and service infrastructure to be incorporated as part of the development (stormwater and wastewater).</li> <li>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.</li> </ul> | <ul style="list-style-type: none"> <li>Stormwater Management</li> <li>Water Quantity Management</li> <li>Legal Discharge Point</li> <li>Tailwater Assumption</li> <li>Water Quantity Catchment</li> <li>Overland Flow Path</li> <li>Water Quality Management</li> </ul> |

This report concludes that the proposed residential development appropriately considers Bayside Council Technical Specification, Stormwater Management subject to the implementation of the following mitigation measures:

- Stormwater Management
- Stormwater Quality Design Requirements

# 1 Introduction

## 1.1 Purpose of Report

The purpose of this Integrated Water Management Plan is to outline the proposed site stormwater management strategy for the development and demonstrate compliance with the stormwater management quantity and quality requirements in accordance with the SEARs issued for the project including, but not limited to, Bayside Stormwater Technical Specification Stormwater Management 2023 the Bayside Development Control Plan 2022, Sutherland Shire Stormwater Specification 2009, and relevant Australian and industrial standards.

## 1.2 Scope of Work

This management plan details the stormwater assessment undertaken, including modelling results, and presents the proposed strategy for both stormwater quantity and quality management for the development.

The assessment includes the following components:

- Understanding the existing stormwater conditions for the site including flood risk, overland flow paths, permeability, existing infrastructure and current points of discharge.
- Assessing the post-development flows for the proposed development by DRAINS to determine any increase in runoff and implement mitigation measures as required under the design criteria.
- Assessing the use of various stormwater quality treatment measures, including Water Sensitive Urban Design (WSUD) initiatives, to meet the stormwater quality objectives under the design criteria.
- Designing a stormwater system to convey the minor flows from the development to nominated points of discharge from the site and incorporating quantity and quality measures from the above.
- Considering major flows and overland flow paths through the developed site for safety and conveyance of flows and implementing above-ground drainage measures as required.
- Implementing erosion and sediment control measures to minimise sediment runoff during the construction phase.

## 1.3 Limitation of this Report

The proposed Integrated Water Management Plan to be read in conjunction with relevant consultants including but not limited to, Architectural Plans, Landscape Plans, Geotechnical Report and relevant approval documents.

## 2 Design Guidelines and Methodologies

### 2.1 Consultation

Mott MacDonald is in consultation with the project team throughout the design phase to obtain a feasible design solution for the proposed development site. Iterations of the design were prepared in conjunction with the flood engineers' input to flood advice, structure engineers, hydraulic engineers, landscape architects and architects. The proposed stormwater drainage design was conducted in accordance with Bayside Council Development Control Plan 2022 (DCP), Sydney Water Corporation On-site Stormwater Detention Policy and Guidelines and other relevant guidelines.

### 2.2 Codes and Guidelines

The design has been undertaken in compliance with the irrelevant Australian Standards, and local government guidelines. Key documents used as guidance for the design are summarised in Table 2-1.

**Table 2-1: Design Criteria and Guidelines**

| Reference                | Title  | Version or Date             | Originator                      |
|--------------------------|--|-----------------------------|---------------------------------|
| DRAINS                   | DRAINS User Manual   |                             | DRAINS                          |
| eWater                   | MUSIC User Manual  | V5                          | eWater                          |
| Blue Book                | Managing Urban Stormwater – Soils and Construction, Volume 1, 4 <sup>th</sup> edition, March 2004, Landcom | March 2004                  | Landcom                         |
| NCC                      | National Code Australia  | 2022                        | Australian Building Codes Board |
| AS/NZS 3500.3            | Plumbing and Drainage – Stormwater Drainage  | 2021                        | Standards Australia             |
| Bayside Council          | Technical Specification Stormwater Management  | 10 <sup>th</sup> April 2023 | Bayside Council                 |
| Bayside Council          | Development Control Plan   | 10 <sup>th</sup> April 2023 | Bayside Council                 |
| Sydney Water Corporation | Onsite Stormwater Detention Policy   | v. 34, dated: 04/02/2021    | SWC                             |
| Sydney Water Corporation | Onsite Stormwater Detention Guidelines   | v. 2, dated: 16/06/2020     | SWC                             |
| Sydney Water Corporation | Water Sensitive Urban Design (WSUD)  | SW277 03/18                 | SWC                             |

### 2.3 Other Consultants Inputs

The proposed stormwater design is also based on the following source of information received:

- Architectural design layouts provided by Studio SC, Job no: 20250036
- Survey undertaken by LTS, Reference no. 5202001DT, dated 22.04.2025.
- Landscape design layouts provided by Landform, dated 16.10.25
- Geotechnical Investigation provided by JBS&G, Reference no: PSM5745-01R DRAFT, dated 19<sup>th</sup> August 2025.

## 2.4 Methodologies

- DRAINS
  - DRAINS software package has been utilised to size the proposed below ground pit and pipe network to convey the major/minor storm events flows.
  - This software has also been used to undertake iterations to determine suitably sized stormwater detention tanks under the stormwater management quantity requirements.
  - The DRAINS model has been undertaken the online rainfall data from ARR Data Hub.
  - Climate change rainfall modifier has been applied to undertake the hydraulic analysis.
- MUSIC
  - Modelling of the proposed development was undertaken using the Model for Urban Stormwater Improvement Conceptualisation (MUSIC) Version 6.3 software. The software was utilised to simulate urban stormwater systems operating at a range of temporal and spatial scales. MUSIC models the total amounts of gross pollutants, phosphorus, nitrogen, and total suspended solids produced within various types of catchments. It allows the user to simulate the removal rates expected when implementing water quality treatment devices to reduce the increase gross pollutant and nutrient levels created by the proposed development.
  - The water quality modelling has been undertaken in accordance with the current NSW Music Modelling Guidelines 2015.
- BYDA
  - Before You Dig Australia, due diligence investigations have been carried out with a combined services coordination and verification. The information is a supplementary to existing survey to assist civil/stormwater design and other consultants at approval submission stage.

## 2.5 Stormwater Management Design Criteria

### 2.5.1 Design Storm Events

The design storm events vary from design purposes and have been summarised below, detailed design regulations to be discussed in the following chapters:

- Water Sensitive Urban Design (WSUD) is designed for 1 in 3-month storm events.
- Permissible Site Discharge (PSD) is designed for the 20%, 10%, 5%, 2%, and 1% AEP storm event peak flow under the “state of nature” condition of the Site (i.e., the Site is totally grassed/turfed) for all typical durations from 10 minutes to 2 hours. Additionally, the permissible site discharge for the 1% AEP event shall not exceed 277L/s as stipulated by Sydney Water.
- The stormwater network is designed to convey the 5 minute 5% AEP design rainfall.
- On-Site Detention (OSD) volume is designed for 1% AEP storm events in accordance with Sydney Water requirements which specify a minimum volume of 120 cubic meters.

### 2.5.2 Design Requirements

The listed Bayside Technical Specifications in Table 2-1 above provide the synopsis of the design requirements for the subject site. Design criteria have been developed to ensure the proposed design adheres to the requirements denoted in the Bayside Technical Specification. Table 2-2 below summarises the design criteria for hydrology and hydraulics analysis.

**Table 2-2: Hydraulics and Hydrology Design Criteria**

| Item  | Standard   | Adopted  |   |   |
|---|--|--|---|---|
| <b>Hydrology &amp; Hydraulics</b>                         |  |  |   |   |
| Hydrological Model  | Bayside Technical Specification Stormwater Management, Section 6.2 Computer Modelling Requirements | DRAINS (ILSAX)   |   |   |
| Design Rainfall Data                                      | Bayside Technical Specification Stormwater Management, Section 8.4                                 | AR&R Online Data   |   |   |
| Urban Rainfall Losses                                     | Bayside Technical Specification Stormwater Management, Section 6.2 Computer Modelling Requirements | Paved (impervious) area depressions storage (mmm)=1<br>Supplementary area depression storage (mm) = 1<br>Grassed (previous) area depression storage (mm) = 5                         |   |   |
| Soil Type   | Bayside Technical Specification Stormwater Management, Section 6.2 Computer Modelling Requirements | AMC = 3  |   |   |
| Major Design Storm  | Bayside Technical Specification Stormwater Management, Section 4.3 Private Drainage Easements      | 100YR Average Recurrence Interval (1% AEP)   |   |   |
| Minor Design Storm  | Bayside Technical Specification Stormwater Management, Section 3.4.2                               | Pipes shall be designed to convey the 5 minute 20 year ARI (5% AEP) design rainfall.   |   |   |
| Manning's Roughness Coefficient (Kinematic Wave Equation) | AS/NZS 3500.3:2021, Table 5.4.9  | Surface Type   | Typical values for n  |   |
|   |  | Polyethylene (PE)  | 0.009 to 0.010  |   |
|   |  | Polyvinylchloride (PVC)  | 0.009 to 0.010  |   |
|   |  | Smooth concrete  | 0.011 to 0.012  |   |
|   |  | Trowelled concrete   | 0.012 to 0.015  |   |
|   |  | Asphalt paving   | 0.013 to 0.015  |   |
|   |  | Brickwork  | 0.014 to 0.016  |   |
|   |  | Roughly jointed bricks or pitchers   | 0.016 to 0.020  |   |
|   |  | Sprayed concrete (gunite)  | 0.016 to 0.020  |   |
|   |  | Earth-lined channels   | 0.018 to 0.025  |   |
|   |  | Corrugated metal   | 0.012 to 0.015  |   |
|   |  | Rock lining or riprap  | 0.025 to 0.030  |   |
| Rock cut  | 0.035 to 0.040   |  |   |   |
| Grassed or vegetated channels                             | 0.025 to 0.075   |  |   |   |
| Pipes and Culvert Colebrook-White (n value) formular      | ARR, Book 6 – Flood Hydraulics Table 6.2.1   | uPVC – 0.009<br>Spun Precast Concrete – 0.013<br>Fibre Reinforced Concrete – 0.011   |   |   |
| Pit Losses  | -  | QUDM   |   |   |
| Pit Blockage Factors                                      | Australian Rainfall & Runoff Blockage of Hydraulic Structures Stage 2 Report, Section 7, Table 7.1 | Sag kerb inlet – 80%<br>Sag grated – 50%<br>Continuous Grade (on-grade)<br>Kerb inlet – 80%<br>Longitudinal bar grated – 60%<br>Transverse bar grate or longitudinal bar grate – 50% |   |   |
| Tail water level/sea water level                          | Bayside Technical Specification Stormwater Management, Section 6.3.3                               | 1% AEP flood level   |   |   |
| Overland Flow Safety Criteria                             | ARR, Book 6, Table 6.7.1   | <b>DV (m<sup>2</sup>s-1)</b>   | <b>Children (H.M = 25 to 50)<sup>1</sup></b>                            | <b>Adults (H.M&gt;50)</b>   |
|   |  | 0  | Safe  | Safe  |
|   |  | 0-0.4  | Low Hazard if depth < 0.5m and velocity < 3m/s otherwise Extreme Hazard | Low Hazard if depth < 1.2m and velocity < 3m/s otherwise Extreme Hazard |
|   |  |  |   |   |

| Item                         | Standard   | Adopted   |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
|------------------------------|--|---|---------|--|--|---------|-------------------------------------|---|---------|--|--|------|--|-------------------------------------|
|                              |  | <table border="1"> <tr> <td data-bbox="884 286 1043 483">0.4-0.6</td> <td data-bbox="1043 286 1251 483">Significant Hazard;<br/>Dangerous to most if depth &lt; 0.5m and velocity &lt; 3m/s otherwise<br/>Extreme Hazard</td> <td data-bbox="1251 286 1444 483"></td> </tr> <tr> <td data-bbox="884 483 1043 734">0.6-0.8</td> <td data-bbox="1043 483 1251 734">Extreme Hazard;<br/>Dangerous to all</td> <td data-bbox="1251 483 1444 734">Moderate Hazard;<br/>Dangerous to some if depth &lt; 1.2m and velocity &lt; 3m/s otherwise<br/>Extreme Hazard</td> </tr> <tr> <td data-bbox="884 734 1043 981">0.8-1.2</td> <td data-bbox="1043 734 1251 981"></td> <td data-bbox="1251 734 1444 981">Significant Hazard;<br/>Dangerous to most if depth &lt; 1.2m and velocity &lt; 3m/s otherwise<br/>Extreme Hazard</td> </tr> <tr> <td data-bbox="884 981 1043 1093">&gt;1.2</td> <td data-bbox="1043 981 1251 1093"></td> <td data-bbox="1251 981 1444 1093">Extreme Hazard;<br/>Dangerous to all</td> </tr> </table> | 0.4-0.6 | Significant Hazard;<br>Dangerous to most if depth < 0.5m and velocity < 3m/s otherwise<br>Extreme Hazard |  | 0.6-0.8 | Extreme Hazard;<br>Dangerous to all | Moderate Hazard;<br>Dangerous to some if depth < 1.2m and velocity < 3m/s otherwise<br>Extreme Hazard | 0.8-1.2 |  | Significant Hazard;<br>Dangerous to most if depth < 1.2m and velocity < 3m/s otherwise<br>Extreme Hazard | >1.2 |  | Extreme Hazard;<br>Dangerous to all |
| 0.4-0.6                      | Significant Hazard;<br>Dangerous to most if depth < 0.5m and velocity < 3m/s otherwise<br>Extreme Hazard |   |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
| 0.6-0.8                      | Extreme Hazard;<br>Dangerous to all  | Moderate Hazard;<br>Dangerous to some if depth < 1.2m and velocity < 3m/s otherwise<br>Extreme Hazard   |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
| 0.8-1.2                      |  | Significant Hazard;<br>Dangerous to most if depth < 1.2m and velocity < 3m/s otherwise<br>Extreme Hazard  |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
| >1.2                         |  | Extreme Hazard;<br>Dangerous to all   |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
| Permissible Site Discharge   | Bayside Technical Specification Stormwater Management Section 6.1  | <p>The Permissible Site Discharge (PSD) from the Site shall be designed to restrict the discharge to the predeveloped runoff in the "state of nature/greenfield" condition (Predeveloped Site must be assumed as 100% pervious (i.e. the Site is totally grassed/turfed) for the 20%, 10%, 5%, 2%, and 1% AEP storm events for all typical durations from 10 minutes to 2 hours. The OSD storage volume (SSR) shall be designed to ensure this achieved.</p> <p>Post developed flow shall be checked for all storm events (20%, 10%, 5%, 2%, and 1%) verifying that the post developed flow from the development Site during each storm event does not exceed the PSD for each storm event, and that this has been achieved in the design of the OSD system.</p>  |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
| On-Site Stormwater Detention | Bayside Technical Specification Stormwater Management Section 6  | On-site stormwater detention (OSD) systems shall be provided for all industrial development and development, which infiltration system is not permitted or feasible   |         |  |  |         |                                     |   |         |  |  |      |  |                                     |
| Pollution Reduction Targets  | Bayside Technical Specification Stormwater Management Section 7.1.1                                      | Litters 90%<br>Total Suspended Solids (TSS) 85%<br>Total Phosphorus (TP) 60%<br>Total Nitrogen (TN) 45%   |         |  |  |         |                                     |   |         |  |  |      |  |                                     |

## 3 Existing Site and Stormwater Conditions

### 3.1 The Site

The site is located at 68-80 Beauchamp Road, Hillsdale (Lot 12 DP736905) in the Bayside Local Government Area (LGA) with a site area of 7,854sqm. The site is currently occupied by two storey residential buildings containing 39 social housing dwellings.

The site has frontage to Beauchamp Road to the south which is a Regional Road. It adjoins Matraville Public School to the north and east. To the west it adjoins a two-storey single dwelling which fronts Beauchamp Road and low-rise apartment buildings which front Flack Avenue as well as Flack Avenue reserve which connects Beauchamp Road to Flack Avenue. To the south across Beauchamp Road are low rise single dwellings.



Figure 3-1: Subject site, (Studio S.C, Rev C, 22.10.2025)

### 3.2 Existing Stormwater Drainage Characteristics

An existing Sydney Water culvert transects the proposed development site, presenting a key consideration in the stormwater management design. Based on the survey data, the Site generally grades towards Beauchamp Road, indicating the natural direction of surface runoff.

Notably, no existing stormwater pits have been identified along the frontage of the development site. This absence of formal drainage infrastructure reinforces the importance of a well-integrated stormwater strategy to manage both minor and major storm events effectively.

The proposed stormwater management approach, including on-site detention and overland flow provisions, is discussed in detail in **Section 5** of this report.



Figure 3-2: Survey Information, (LTS, Dated 17.07.25)

## 4 Proposed Development

The SSD application seeks consent for the following:

- Demolition of all existing structures on the site, tree removal, excavation and site preparation works
- Construction of two residential flat buildings of 7-8 storeys with 179 social housing dwellings
- A single access from Beauchamp Road providing servicing and basement car park access
- Associated landscaping and communal open space
- Infrastructure servicing.

A detailed description of the project is included in the EIS.

## 5 Stormwater Management

### 5.1 Water Quantity Management

This section outlines the proposed stormwater drainage strategy for the Site, including an assessment of the required on-site detention (OSD) volume. The primary objective of the stormwater quantity management is to mitigate runoff from the Site and prevent surcharge to the existing street drainage infrastructure.

Survey data indicates the presence of an existing Sydney Water culvert traversing the proposed development area. In response to this constraint, Mott MacDonald has engaged with Sydney Water to determine the minimum OSD volume necessary for the Site. Refer to Sydney Water correspondence attached in Appendix B.

Sydney Water has advised the following requirements:

- Minimum on-site detention volume: 120 m<sup>3</sup>
- Permissible site discharge (PSD): 277 L/s
- Allowable bypass: 15%

For further details regarding the proposed OSD location and design specifications, refer to the civil drawing set prepared by Mott MacDonald.

#### 5.1.1 Legal Discharge Point

As noted above, an existing Sydney Water culvert transects the site and currently accommodates stormwater connections. As part of the proposed development, new stormwater pits will be constructed along this existing line to ensure continuity of flow and maintain the current invert levels. This approach is intended to preserve the hydraulic performance of the existing system while integrating the new infrastructure.

For detailed design and layout, refer to the drainage plan prepared by Mott MacDonald.

#### 5.1.2 Tailwater Assumption

The downstream tailwater level is a critical parameter used to evaluate potential backwater effects at the proposed outlet, considering the performance and capacity of the existing stormwater network. In the 1% AEP event the Sydney Water culvert is full during peak flow. The water level within the culvert at the OSD outlet point is 13.57m AHD. Therefore, the OSD outlet invert level shall be designed 100mm higher at 13.67m AHD. DRAINS modelling assessment will be undertaken in future stage to understand any backwater effect.

#### 5.1.3 Minor Drainage

The minor drainage network has been designed to Council's Stormwater Management Technical Specifications. It specifies that the minor drainage system shall be designed to convey the 5 minute 5% AEP design rainfall. Refer to Appendix 4 for DRAINS results for the minor storm event. Permissible site discharge for all minor events is in accordance with council requirements outlined in section 2.5.

#### 5.1.4 Water Quantity Catchment

A water quantity catchment plan has been developed to clearly illustrate the drainage catchments contributing to the on-site detention system, as well as any areas bypassing it. This

plan supports the overall stormwater management strategy by identifying flow paths and ensuring compliance with discharge requirements.

Refer to Drawing No. 103419-MMD-HILL-XX-DR-C-0511 for detailed catchment delineation and associated design information.

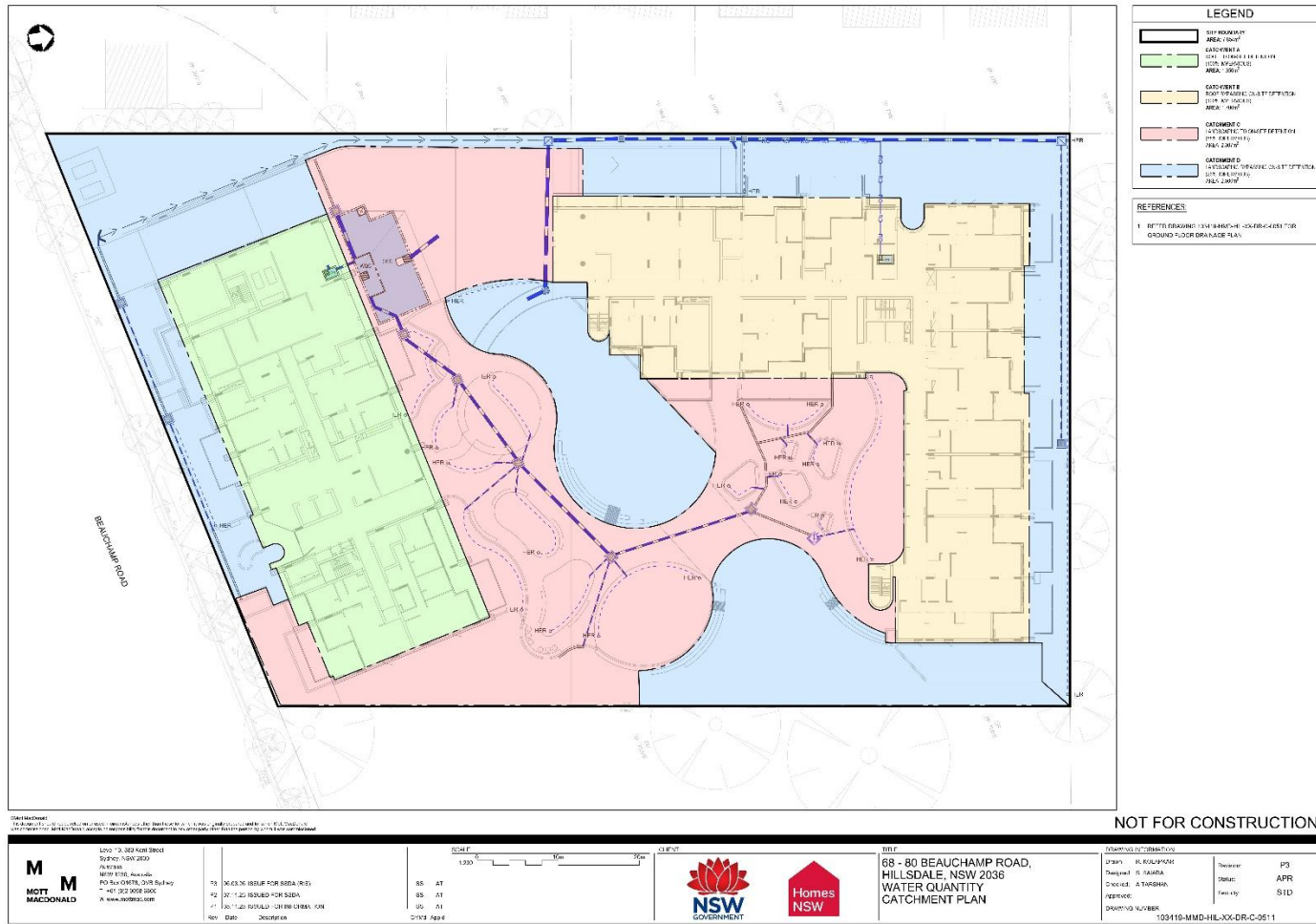


Figure 5-1: Water Quantity Catchment Plan

### **5.1.5 Overland Flow Path**

To ensure the Site remains protected during major storm events or in scenarios where stormwater pits and pipes become blocked or overwhelmed, an overland flow path has been incorporated into the design. This flow path provides a critical relief mechanism, allowing excess stormwater to safely exit the site without causing internal flooding or structural damage.

The designated overland flow route directs surface runoff towards Beauchamp Road, leveraging the natural topography and ensuring compliance with flood risk mitigation principles. This approach supports resilience in the stormwater system and aligns with best practice in urban drainage design.

## 6 Water Quality Management

To ensure that the development improves the quality of stormwater leaving the development Site Mott MacDonald has reviewed the Site, formulated a Water Sensitive Urban Design concept modelled the treatment train effectiveness and summarised the results in this section of the report. MUSIC software was utilised to simulate urban stormwater systems operating at a range of temporal and spatial scales. MUSIC models the total amounts of gross pollutants, phosphorus, nitrogen and total suspended solids produced within various types of catchments. It allows the user to simulate the removal rates expected when implementing water quality treatment devices to reduce the increased gross pollutant and nutrient levels created by the proposed development.

### 6.1.1 MUSIC Modelling Pluviograph Data Input

The water quality analysis requires historical rainfall data recorded by a pluviography station. As such, pluviograph data from rainfall station noted as Sydney Airport was utilised for the Site. This station was considered appropriate as it is situated relatively close to the Site and contains periods of both dry and wet weather. The pluviography is shown in Table 6-1.

**Table 6-1: Bayside City Pluviograph Data**

| Location | Records   | Data Interval |
|----------|-----------|---------------|
| Bayside  | 1962-1966 | 6-minute      |

### 6.1.2 Water Quality Catchment

The MUSIC model was set up to represent the post-developed scenario. The Site was divided into sub-catchments based on the layout and topography. The proposed MUSIC catchment breakdown is shown in Figure 5 5. Details of water quality catchment delineation shall be read in conjunction with civil drawings set prepared by Mott Macdonald (Ref. 103419-MMD-HILL-XX-DR-C-0512, Revision P1, dated 06/03/2026).



The proposed catchments are separated into the following land use types:

- **Roof** – The roof area of all proposed buildings.
- **Mixed Landscape** – Landscaped, paved and natural areas that are within the development.

MUSIC soil and groundwater parameters are set as per Table 6-2 and MUSIC node rainfall runoff parameters are set as per Table 6-3 respectively.

**Table 6-2: Soil/groundwater parameters for adoption in MUSIC modelling**

|                                       | Units         | Mixed | Roof |
|---------------------------------------|---------------|-------|------|
| <b>Impervious area parameters</b>     |               |       |      |
| Rainfall threshold                    | mm/day        | 0.3   | 1    |
| <b>Pervious area parameters</b>       |               |       |      |
| Soil storage capacity                 | mm            | 120   | 120  |
| Initial storage                       | % of capacity | 30    | 25   |
| Field capacity                        | mm            | 80    | 80   |
| Infiltration capacity coefficient - a |               | 200   | 200  |
| Infiltration capacity coefficient - b |               | 1     | 1    |
| <b>Groundwater properties</b>         |               |       |      |
| Initial depth                         | mm            | 10    | 10   |
| Daily recharge rate                   | %             | 25    | 25   |
| Daily baseflow rate                   | %             | 5     | 5    |
| Daily deep seepage rate               | %             | 0     | 0    |

**Table 6-3: Stormwater Quality Parameters for MUSIC modelling**

| Land Use   | Storm Flow |      |       |      |      |      | Base Flow |      |       |      |      |      |
|--|------------|------|-------|------|------|------|-----------|------|-------|------|------|------|
|  | TSS        |      | TP    |      | TN   |      | TSS       |      | TP    |      | TN   |      |
|  | Mean       | SD   | Mean  | SD   | Mean | SD   | Mean      | SD   | Mean  | SD   | Mean | SD   |
| (All values expressed as log <sub>10</sub> mg/l) |            |      |       |      |      |      |           |      |       |      |      |      |
| Mixed  | 1.3        | 0.32 | -0.89 | 0.25 | 0.30 | 0.19 | 0.00      | 0.00 | 0.00  | 0.00 | 0.00 | 0.00 |
| Roads  | 2.43       | 0.32 | -0.30 | 0.25 | 0.34 | 0.19 | 1.20      | 0.17 | -0.85 | 0.19 | 0.11 | 0.12 |
| Roofs  | 1.30       | 0.32 | -0.89 | 0.25 | 0.30 | 0.19 | 1.10      | 0.17 | -0.82 | 0.19 | 0.32 | 0.12 |

(Note: SD = Standard Deviation, TSS = Total Suspended Solids, TP = Total Phosphorus and TN = Total Nitrogen)

### 6.1.3 Water Quality Treatment Train

The following treatment train has been proposed for the Site:

Stormwater capture within the development area is directed into the civil stormwater network consisting of pit and pipe networks and to be treated by rainwater tank and Storm filters from Ocean Protect or equivalent.

Stormwater runoff not draining to the water quality chamber shall be installed with an Ocean guard basket within the pit to treat suspended solids as best practice. A vegetated overland flow gully will also provide treatment to a portion of the runoff.

The treatment train that has been modelled is inclusive of the new building drainage network that drains into the combined water quality / detention tank and the drainage network that bypasses the detention tank treatment. Figure 6-2 below is the proposed treatment train, as set out in the MUSIC model.

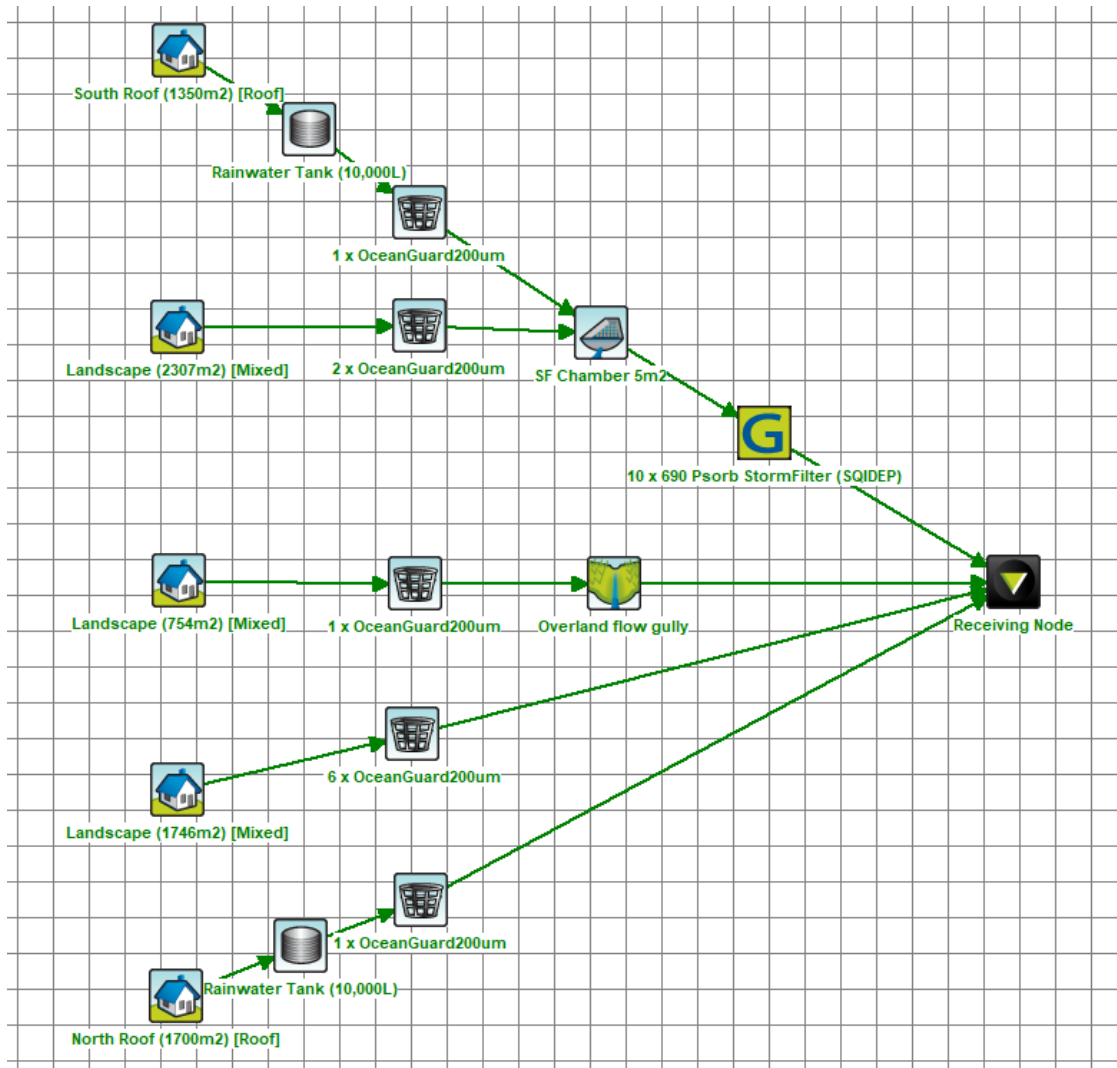


Figure 6-2: MUSIC Model

### 6.1.4 Rainwater Re-use

Two 10,000L rainwater tanks have been introduced as part of the treatment train and to satisfy BASIX requirement as per sustainability engineer’s and council’s specifications.

Downpipes with first flush devices to be installed before roof stormwater entering into rainwater tank to avoid any debris blockage. Overflow from rainwater tank shall be directly into ocean guards and storm filter chamber for further treatment.

### 6.1.5 MUSIC Modelling Results

Based on the results of this assessment, the proposed water quality treatment train will provide adequate improvements in Total Suspended Solids, Total Phosphorus, Total Nitrogen and Gross Pollutants for the proposed development. Similarly, Table 6-4 below indicate the minimum works required to meet the water quality targets. Further options could be explored during the detailed design phase of the project to further refine the stormwater network and treatment train and/or achieve higher standards where feasible.

| Pollutant                | Average annual pollution load reduction objective (%) |
|--------------------------|---|
| Gross pollutants (>5 mm) | 90  |
| Total suspended solids   | 85  |
| Total phosphorus         | 60  |
| Total nitrogen           | 45  |

\* Pollutant removal design criteria was adopted by the Western Sydney Growth Centres stormwater guidance for precinct planning in DEC Nov 2006.

**Figure 6-3: Sydney Water - Stormwater Quality Targets**

**Table 6-4: MUSIC Modelling Assessment Results**

| Pollutants                   | Bayside Technical Specification<br>Stormwater Management 7.1.1 | Reduction % | Results |
|------------------------------|--|-------------|---------|
| Gross Pollutants (GP)        | 90%  | 100%        | Satisfy |
| Total Suspended Solids (TSS) | 85%  | 89.3%       | Satisfy |
| Total Phosphorus (TP)        | 60%  | 60.0%       | Satisfy |
| Total Nitrogen (TN)          | 45%  | 46.2%       | Satisfy |

## 7 Maintenance, Access and Safety

### 7.1 Maintenance Requirement

Throughout the operational life of the development, the stormwater system will require regular simple maintenance to ensure effective functionality, minimise lifecycle costs and maintain safety.

It is proposed maintenance activities are the responsibility of the strata facilities department and should generally include:

- Removal of gross pollutants such as litter and debris from open areas to prevent from entering the stormwater network.
- Periodic inspection of the stormwater network including pit/pipe network, StormFilters, detention tanks and outlets at street pits.
- Periodic inspection of rainwater tanks (requirements to be set out by building hydraulic design).
- Unblocking of inlets and outlets (system flushing) as required, including flushing of subsoil drainage systems.
- Removal of sediment build-up as required.
- Landscaping maintenance to grass swales and bio-retention basins.
- Regular inspection of safety elements (such as proposed fencing/gates around bio-retention basins).

### 7.2 Access and Safety

The following items for access and safety should be considered by the project architect and civil engineering team for the detailed design stage of the project:

- Covers and grates to stormwater network to be lockable to prevent unauthorised access or displacement.
- Appropriate fencings / barriers with lockable gates to detention tanks and pipe headwall outlets to prevent access from children.

## 8 Erosion and Sediment Control

The erosion and sediment control measures will be undertaken for each lot with reference to Landcom Blue Book; Managing Urban Stormwater Soil for best practice through the construction phase to limit any sediments generated from the Site from entering the external stormwater network and creek. As such the following measures are to be undertaken as part of the proposed construction works:

- Sediment fence to be installed around the Site perimeter to trap any sediment.
- Shaker grid/wash down facility to be installed at the Site egress to limit any sediments from being carried outside of the constructions Site.
- Stockpile location to be confirmed by contractor on-Site during the construction phase, preferably to be located at the highest point of the Site.

### 8.1 Construction Phase Pollutants of Concern

Pollutants that are typically generated during the construction phase of a development have been identified by reviewing the Managing Urban Stormwater: Soils and construction by Landcom. The various pollutants and their priority ratings are listed in Table 8-1 below.

**Table 8-1: Construction Phase Pollutant Loads**

| Pollutant              | Source   | Priority |
|------------------------|--|----------|
| Litter                 | Paper, construction packaging, food packaging, cement bags, off-cuts                         | High     |
| Sediment               | Unprotected exposed soils and stockpiles during earthworks and building                      | High     |
| Hydrocarbons           | Fuel and oil spill, leaks from construction equipment and temporary carpark areas            | High     |
| Toxic materials        | Cement slurry, asphalt prime, solvents, cleaning agents, wash waters (e.g., from tile works) | High     |
| pH altering substances | Acid sulfate soils, cement slurry and wash waters  | High     |

### 8.2 Construction phase performance criteria

The construction phase performance criteria are limited to those parameters that are directly linked to construction Site management practices are listed in Table 8-2.

**Table 8-2: Construction Phase Performance Criteria**

| Issue           | Construction Phase Stormwater Design Objectives   |
|-----------------|---|
| Erosion Control | <p>Erosion Control Measures</p> <ul style="list-style-type: none"> <li>• Minimise exposure of disturbed soils at any time</li> <li>• Divert water run-off from undisturbed areas around disturbed areas.</li> <li>• Determine the erosion risk rating using local rainfall erosivity, rainfall depth, soil-loss rate or other acceptable methods.</li> <li>• Implement erosion control methods corresponding to identified erosion risk rating</li> </ul> |

| Issue                                     |   | Construction Phase Stormwater Design Objectives   |
|---|---|---|
| Sediment Control                          | Sediment control measures                                   | Determine appropriate sediment control measures using: <ul style="list-style-type: none"> <li>• Potential soil loss rate, or</li> <li>• Monthly erosivity, or</li> <li>• Average monthly rainfall</li> </ul>  |
|   | Design storm for sediment control basins                    | Collect and drain stormwater from disturbed soils to sediment basin for design storm event:   |
|   | Sediment basin dewatering                                   | <ul style="list-style-type: none"> <li>• Design storm for sediment basin sizing is 80<sup>th</sup> % five-day event or similar.</li> </ul> Site discharge during sediment basin dewatering: <ul style="list-style-type: none"> <li>• TSS &lt; 50mg/l TSS, and</li> <li>• Turbidity not &gt; 10% receiving water turbidity, and</li> </ul> |
| Water Quality                             | Litter and other waste, hydrocarbons and other contaminants | Avoid wind-blown litter; remove gross pollutants.<br>Ensure there is no visible oil or grease sheen on released waters.<br>Dispose of waste containing contaminants at authorised facilities  |
| Water stability and flood flow Management | Changes to the natural waterway hydraulics and hydrology    | For peak flow for the 1-year and 100-year ARI event, use constructed sediment basins to attenuate the discharge rate of stormwater from the Site  |

# 9 Responses to Bayside Council Comments

Project Reference: SSD- 83256478

| Bayside Council Comments and Mott MacDonald Response |   |   |
|--|---|---|
| Headings   | Comments  | Mott MacDonald Response   |
| <b>1. On site detention (OSD) design</b>             | a. The Integrated Water Management Plan (Section 2.5) is to be revised to confirm that, as the stormwater connection is to a Sydney Water stormwater asset, Sydney Water OSD requirements are to be adhered to (as per Section 3.9 of the Bayside Technical Specification – Stormwater Management). | The design refers to Sydney Water requirements for the OSD outlet connection to their assets (the existing culvert). Process and approvals to be sought during detail design phase and prior to construction. |
|  | b. The water quantity catchment plan does not accurately reflect the stormwater design and is to be updated.  | Noted, Mott MacDonald (MM) has updated the quantity catchment plan in the latest issue of the Integrated Water Management Plan (Rev C)  |
|  | c. The OSD and catchment design must ensure 1% AEP overland floodwaters do not enter the OSD.   | Agreed; this is currently the case with MM design. See section 5.1.2 of the Integrated Water Management Plan (Rev C)  |
|  | d. Civil plans currently show two OSD sections both labelled “Section 02”; these are to be corrected and reissued at an increased scale (full-page where possible).   | Noted, Mott MacDonald (MM) has rectified this in the latest issue of the Integrated Water Management Plan (Rev C)   |
|  | e. The OSD base plan is to include weir heights of the water quality chamber and incorporate an overflow chamber.   | Noted, Mott MacDonald (MM) has rectified the inclusion of an overflow chamber and added notation of weir height to the OSD base plan in the latest issue of the Integrated Water Management Plan (Rev C)      |
|  | f. Pit surface levels for the OSD are to be flush with the driveway surface and reflected in the sections.  | Noted, Mott MacDonald (MM) has updated OSD sections accordingly.  |
|  | g. OSD volume and TWL are to be confirmed on plans and sections.  | Noted, Mott MacDonald (MM) has updated the OSD sections and drainage plan accordingly.  |
|  | h. The invert of the orifice and OSD outlet is to be set at least 100 mm above the 1% AEP flood level.  | Noted; this is currently the case with MM design. See section 5.1.2 of the Integrated Water Management Plan (Rev C)   |
|  | i. Orifice plate calculations demonstrating compliance with PSD requirements are to be provided.  | The design was based on Sydney Water (SWC) advice regarding the OSD PSD requirements, etc. MM included the SWC advice as an appendix to the IWMP.   |
|  | j. A safe emergency overflow provision (e.g. pipe blockage scenario) is to be clearly shown, including a safe overflow route to the Sydney Water stormwater channel surface drains.   | The safe emergency overflow is through the grates located above the outlet; however, a separate overflow chamber can be added if needed.  |
| <b>2. Water Quality Design</b>                       | a. Update the water quantity catchment plan to model the 2 × 10,000L rainwater tanks in MUSIC and include them in the treatment train.  | Noted, Mott MacDonald (MM) has rectified this in the MUSIC Model and section 6.1.4 of the latest issue of the Integrated Water Management Plan (Rev C)  |
|  | b. Enlarge MUSIC model snapshots to clearly show all nodes and areas (m <sup>2</sup> ), consistent with the catchment plan.   | Noted, Mott MacDonald (MM) has rectified this in the latest issue of the Integrated Water Management Plan (Rev C)   |

|   |  |
|---|--|
| c. Include impervious/pervious percentages for all catchments and ensure naming aligns between plans and MUSIC modelling.   | Noted, Mott MacDonald (MM) has rectified this in the latest issue of the Integrated Water Management Plan (Rev C)  |
| d. Resolve inconsistencies between Figures 6-1 and 6-2 and Section 6.1.3 of the Integrated Water Management Plan.   | Noted, Mott MacDonald (MM) has rectified this in the latest issue of the Integrated Water Management Plan (Rev C)  |
| e. Show locations of pit inserts (Oceanguards) on civil plans and ensure alignment with the MUSIC model.  | Noted, Mott MacDonald (MM) has rectified this in the latest issue of the Integrated Water Management Plan (Rev C)  |
| f. Demonstrate how roof runoff from both buildings drains through separate Oceanguards prior to entering the SF chamber.  | Water quality design has been updated in the latest issue of the Integrated Water Management Plan (Rev C)  |
| g. Revise the rear building rainwater tank arrangement — basement tank overflow via pump to OSD is not supported. The tank is to be located at ground level with gravity overflow to the Water Quality Chamber/OSD.   | Noted, coordination with the Hydraulic Engineer is required. See JHA Hydraulic design.   |
| h. Direct all non-trafficable roof runoff to rainwater tanks connected to: <ul style="list-style-type: none"> <li>• ground floor toilet flushing,</li> <li>• cold water supply to ground floor washing machines, and</li> <li>• ground floor landscape irrigation (non-potable reuse).</li> </ul> | The rainwater re-uses values are required. Homes NSW to request the information to be provided by the Hydraulic Engineer so MM can include the rainwater reuse tank in the MUSIC model.  |
| i. Update civil plans to include surface and invert levels for pits and pipes, plus full overland flow path details and sections.   | Noted, Mott MacDonald (MM) has rectified this in the latest issue of the Integrated Water Management Plan (Rev C)  |
| j. Confirm Sydney Water approval for works over and adjacent to the stormwater asset.   | Noted, drainage has been designed in accordance with Sydney Water advice attached in appendix B and C noting the following extract in particular: “No buildings or permanent structures are permitted over the stormwater channel, within the Sydney Water easement, or within 1.5 metres from the outside wall of the channel— whichever is greater. This applies regardless of depth or height.” |
| k. Provide details of surface inlets draining to the Sydney Water culvert along the overland flow path.   | Refer to the Flood Impact and Risk Assessment for pre- and post-development overland flow path and run-off management.   |
| l. Provide a basement stormwater plan including pump-out pit and calculations.  | Basement drainage to be provided by the Hydraulic Engineer. Refer to Appendix A basement drainage design in Mott MacDonald (MM) IWMP (Rev C). For further details see JHA Hydraulic design.  |
| m. Basement to be designed as a fully tanked, watertight structure (due to sandy soils and shallow groundwater), with tanking shown on stormwater plans.  | Basement drainage to be provided by the Hydraulic Engineer. Refer to Appendix A basement drainage design in Mott MacDonald (MM) IWMP (Rev C). For further details see JHA Hydraulic design.  |
| n. Rising main from basement pump-out pit to discharge into the WSUD chamber.   | Basement drainage to be provided by the Hydraulic Engineer. Refer to Appendix A basement drainage design in Mott MacDonald (MM) IWMP (Rev C). For further details see JHA Hydraulic design.  |

## 10 Conclusion

The objective of this stormwater management report is to provide a comprehensive and detailed overview of the proposed stormwater drainage system for each building within the development Site. It also outlines the approach taken to ensure compliance with various regulations and guidelines, including those set forth by the Bayside Council DCP 2022, relevant Council guidelines and Sydney Water Corporation design guidelines and requirements.

For a comprehensive understanding of the Integrated Water Management Plan, this report should be read in conjunction with the civil drawing sets prepared by Mott MacDonald in Appendix A.

This Water Management Plan has been developed in accordance with the guidelines and standards listed outlined below:

- Bayside Council Technical Specification Stormwater Management
- Sydney Water Corporation – On-site stormwater detention
- Sydney Water Corporation – Onsite Stormwater Detention Policy
- Sydney Water Corporation – Stormwater Quality Targets
- Australian Standards 3500.3 Plumbing and Drainage – Stormwater Drainage
- DRAINS User Manual
- MUSIC User Manual
- Managing Urban Stormwater – Soils and Construction, Volume 1, 4th edition, March 2004, Landcom
- National Code Australia

To manage the impacts of the proposed development on the existing Site and downstream stormwater conditions. The plan has the following components:

- Stormwater quantity management includes implementing detention tanks to mitigate the peak flows from the Site to retain existing conditions.
- Stormwater quality management implementing treatment trains with StormFilter cartridges, OceanGuard baskets and rainwater tank to achieve the water quality objectives.
- Recommended maintenance and safety and access considerations.
- Construction phase erosion and sediment control measures to minimise soil erosion and control sediment discharge from Site.

The implementation of the measures outlined in this plan in the development of this Site will result in no worsening stormwater and environmental conditions and will provide improvement to quality of the runoff discharged from the Site.

For a comprehensive understanding of the stormwater management plan, this report should be read in conjunction with the civil drawing sets prepared by Mott MacDonald (Appendix A).

## A.1 APPENDIX A: CIVIL DRAWING



## GENERAL NOTES

- GN1** ALL WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE NATIONAL CONSTRUCTION CODE OF AUSTRALIA AND THE RELEVANT CURRENT AUSTRALIAN STANDARDS.
- GN2** ANY DISCREPANCIES, OMISSIONS OR ERRORS SHALL BE REPORTED TO THE SUPERINTENDENT FOR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
- GN3** DO NOT SCALE MEASUREMENTS FROM THE DRAWINGS.

## STORMWATER NOTES

- SW1** FOR RESIDENTIAL SUBDIVISIONS AND PUBLIC ROADS -  
ALL Ø325mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø600mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO).  
ALL PVC-U DRAINAGE PIPES IN FOOTWAYS OR ACCESS WAYS SHALL BE DIV4 GRADE CLASS S16 IN ACCORDANCE WITH AS/NZS 1260:2009 - PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION. HEAVY DUTY PVC-U PIPES TO BE IN ACCORDANCE WITH AS/NZS 1254 : 2010 - PVC PIPES AND FITTINGS FOR STORM AND SURFACE WATER APPLICATIONS MAY BE USED WITHIN ALLOTMENTS.
- SW2** FOR COMMERCIAL OR INDUSTRIAL SITES -  
ALL Ø300mm TO Ø600mm DRAINAGE PIPES SHALL BE CLASS 4 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO). ALL Ø600mm OR LARGER DRAINAGE PIPES SHALL BE CLASS 3 APPROVED SPIGOT AND SOCKET REINFORCED CONCRETE PIPES WITH RUBBER RING JOINTS (UNO).  
ALL DRAINAGE PIPES LESS THAN OR EQUAL TO Ø225mm SHALL BE PVC-U DIV4 GRADE CLASS S16 IN ACCORDANCE WITH AS/NZS 1260:2009 - PVC-U PIPES AND FITTINGS FOR DRAIN, WASTE AND VENT APPLICATION WITH SOLVENT WELDED JOINTS.
- SW3** EQUIVALENT STRENGTH FIBROUS REINFORCED CONCRETE (F.R.C) AND / OR HIGH DENSITY POLYETHYLENE (H.D.P.E.) MAY BE USED SUBJECT TO APPROVAL BY THE SUPERINTENDENT.
- SW4** ALL PIPE JUNCTIONS UP TO AND INCLUDING Ø450mm AND TAPERS, SHALL BE VIA PURPOSE MADE FITTINGS (UNO).
- SW5** MINIMUM GRADE TO STORMWATER LINES TO BE 1% (UNO).
- SW6** CONTRACTOR TO SUPPLY AND INSTALL ALL FITTINGS AND SPECIALS INCLUDING VARIOUS PIPE ADAPTORS TO ENSURE PROPER CONNECTION BETWEEN DISSIMILAR PIPEWORK.
- SW7** ALL CONNECTIONS TO EXISTING DRAINAGE PITS SHALL BE MADE IN A TRADESMAN-LIKE MANNER AND THE INTERNAL WALL OF THE PIT AT THE POINT OF ENTRY SHALL BE CEMENT RENDERED TO ENSURE A SMOOTH FINISH WITH NO PROTRUSIONS.
- SW8** ALL IN-SITU CONCRETE PITS TO BE 32Mpa MINIMUM AT 28 DAYS.
- SW9** PITS AND PIPES IN AREAS OF SALINITY HAZARD SHALL HAVE INCREASED COVER TO ANY REINFORCEMENT.
- SW10** PRECAST CONCRETE PITS MAY BE INSTALLED IN LIEU OF CAST IN-SITU PITS, WHEN PIPE JUNCTIONS ARE ACCOMMODATED WITHIN THE OVERALL DIMENSIONS OF THE PIT, AND APPROVED BY THE SUPERINTENDENT.
- SW11** PITS DEEPER THAN 1000mm SHALL HAVE STEP IRONS INSTALLED IN ACCORDANCE WITH THE LOCAL OR STATUTORY AUTHORITY REQUIREMENTS.
- SW12** BEDDING SHALL BE TYPE H2 (UNO) FOR PIPES NOT UNDER PAVEMENTS, AND TYPE S2 FOR PIPES UNDER PAVEMENTS IN ACCORDANCE WITH AS/NZS 3725 : 2007 - DESIGN FOR INSTALLATION OF BURIED CONCRETE PIPES.
- SW13** BACKFILL TRENCH WITH SAND OR APPROVED GRANULAR BACKFILL TO 300mm (MIN) ABOVE THE PIPE. WHERE THE PIPE IS UNDER PAVEMENTS BACKFILL REMAINS OF TRENCH TO PAVEMENT SUBGRADE WITH SAND OR APPROVED GRAVEL. SUB-BASE COMPACTED IN 150mm LAYERS TO 98% STANDARD MAXIMUM DRY DENSITY. THE CONTRACTOR IS TO ENSURE COMPACTION EQUIPMENT IS APPROPRIATE FOR THE PIPE CLASS USED.
- SW14** WHERE STORMWATER LINES PASS UNDER FLOOR SLABS DIV4 GRADE PVC-U RUBBER RING JOINTS ARE TO BE USED (UNO).
- SW15** WHERE SUBSOIL DRAINAGE LINES PASS UNDER FLOOR SLABS AND VEHICULAR PAVEMENTS, UNSLOTTED PVC-U DIV4 GRADE CLASS S16 PIPE SHALL BE USED.
- SW16** PROVIDE 3m LENGTH OF Ø100mm SUBSOIL DRAINAGE LINE OR 200 'NEX' ST80P DRAIN SURROUNDING WITH 150mm OF 20mm BLUE METAL OR GRAVEL AND WRAPPED IN BIDIM A24 GEOTEXTILE FILTER FABRIC OR APPROVED EQUIVALENT. AT INVERT OF INCOMING UPSTREAM PIPE ON EACH PIT.

## SITeworks NOTES

- SN1** DATUM - Australian Height Datum (AHD)  
ORIGIN OF LEVELS - SSM133971, RL37.632 (AHD) SCIMS  
ORIGIN OF CO-ORDINATES - Mapping Grid of Australia (MGA)  
NORTON SURVEY PARTNERS  
SURVEY PREPARED BY: T: 02 955 2144 | E: office@nspartners.com.au  
W: www.nspartners.com.au
- SN2** THE CONTRACTOR MUST VERIFY ALL DIMENSIONS AND EXISTING LEVELS ON SITE PRIOR TO COMMENCEMENT OF WORK AND REPORT ANY DISCREPANCIES TO THE SUPERINTENDENT.
- SN3** ALL EXISTING SERVICES (INCLUDING ANY NOT SHOWN ON THE PLANS) MUST BE ACCURATELY LOCATED IN POSITION AND LEVEL PRIOR TO ANY EXCAVATION. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT. MINIMUM SERVICE CLEARANCES SHALL BE MAINTAINED FROM THE RELEVANT SERVICE AUTHORITY.
- SN4** THE CONTRACTOR SHALL ARRANGE FOR ALL SETTING OUT BY A REGISTERED SURVEYOR.
- SN5** IT IS THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE DEPARTMENT OF LAND AND PROPERTY INFORMATION NSW, OF ANY SURVEY MARKS THAT WILL BE DESTROYED IN THE CONSTRUCTION OF WORKS.  
CONTACT HEAD OFFICE ON 1300 052 637 www.lpi.nsw.gov.au AND http://scims.lpi.nsw.gov.au/status\_report\_frames.html
- SN6** THE CONTRACTOR SHALL OBTAIN ALL REGULATORY AUTHORITY APPROVALS AT THEIR OWN EXPENSE.
- SN7** WHERE NEW WORKS ABUT EXISTING, THE CONTRACTOR MUST ENSURE THAT A SMOOTH AND EVEN PROFILE, FREE FROM ABRUPT CHANGES IS OBTAINED.
- SN8** ALL DISTURBED AREAS SHALL BE RESTORED TO THEIR ORIGINAL CONDITION, UNLESS SPECIFIED OTHERWISE.
- SN9** EXCAVATED TRENCHES SHALL BE COMPACTED TO THE SAME DENSITY AS THE ADJACENT NATURAL MATERIAL. ANY SUBSIDENCES DURING THE PERIOD TO BE RECTIFIED AS DIRECTED BY THE SUPERINTENDENT.
- SN10** ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE LANDSCAPE ARCHITECT'S DETAILS AND / OR BY -  
PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE, ENSURING THAT NOTHING IS NAILED TO THEM.  
PROHIBITING PAWING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS -  
ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5m OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICHEVER IS THE GREATER.  
A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (e.g. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300mm CARE IS TAKEN NOT TO CUT ROOTS UNNECESSARILY NOR TO COMPACT THE SOIL AROUND THEM.
- SN11** RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SUPERINTENDENT OR AS SPECIFIED IN THE WORKS CONTRACT.




## EXISTING SERVICES NOTES

- ES1** EXISTING SERVICES HAVE NOT BEEN PLOTTED FROM SUPPLIED DATA AND AS SUCH THEIR ACCURACY CANNOT BE GUARANTEED. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH THE LOCATION AND LEVEL OF ALL EXISTING SERVICES PRIOR TO THE COMMENCEMENT OF ANY WORK. ANY DISCREPANCIES SHALL BE REPORTED TO THE SUPERINTENDENT.
- ES2** THE CONTRACTOR SHALL ALLOW FOR THE CAPPING OFF, EXCAVATION AND REMOVAL, IF REQUIRED OF ALL REDUNDANT EXISTING SERVICES IN AREAS AFFECTED BY WORKS WITHIN THE CONTRACT AREA, AS SHOWN ON THE DRAWINGS UNLESS DIRECTED OTHERWISE BY THE SUPERINTENDENT.
- ES3** THE CONTRACTOR SHALL ENSURE THAT AT ALL TIMES SERVICES TO ALL BUILDINGS NOT AFFECTED BY THE WORKS ARE NOT DISRUPTED.
- ES4** IF REQUIRED, THE CONTRACTOR SHALL CONSTRUCT TEMPORARY SERVICES TO MAINTAIN EXISTING SUPPLY TO BUILDINGS REMAINING IN OPERATION DURING WORKS TO THE SATISFACTION AND APPROVAL OF THE SUPERINTENDENT. ONCE DIVERSION IS COMPLETE AND COMMISSIONED THE CONTRACTOR SHALL REMOVE ALL SUCH TEMPORARY SERVICES AND MAKE GOOD TO THE SATISFACTION OF THE SUPERINTENDENT AND THE RELEVANT SERVICE AUTHORITY.
- ES5** INTERRUPTION TO SUPPLY OF EXISTING SERVICES SHALL BE DONE SO AS NOT TO CAUSE ANY INCONVENIENCE TO THE PRINCIPAL. THE CONTRACTOR IS TO GAIN APPROVAL FROM THE SUPERINTENDENT FOR THE TIME OF INTERRUPTION - THE CONTRACTOR IS RESPONSIBLE FOR ALL LIAISON.
- ES6** ALL BRANCH GAS AND WATER SERVICES UNDER DRIVEWAYS AND BRICK PAVING SHALL BE LOCATED IN Ø600mm PVC SEWER GRADE CONDUITS EXTENDING A MINIMUM OF 500mm BEYOND THE EDGE OF PAWING.
- ES7** CLEARANCE AND COVER REQUIREMENTS SHALL BE OBTAINED FROM THE RELEVANT SERVICE AUTHORITY BEFORE COMMENCEMENT OF WORKS AND SHALL BE ADHERED TO AT ALL TIMES.
- ES8** CARE IS TO BE TAKEN WHEN EXCAVATING NEAR EXISTING SERVICES. NO MECHANICAL EXCAVATIONS ARE TO BE UNDERTAKEN OVER TELECOM OR ELECTRICAL SERVICES. HAND EXCAVATE IN THESE AREAS ONLY.

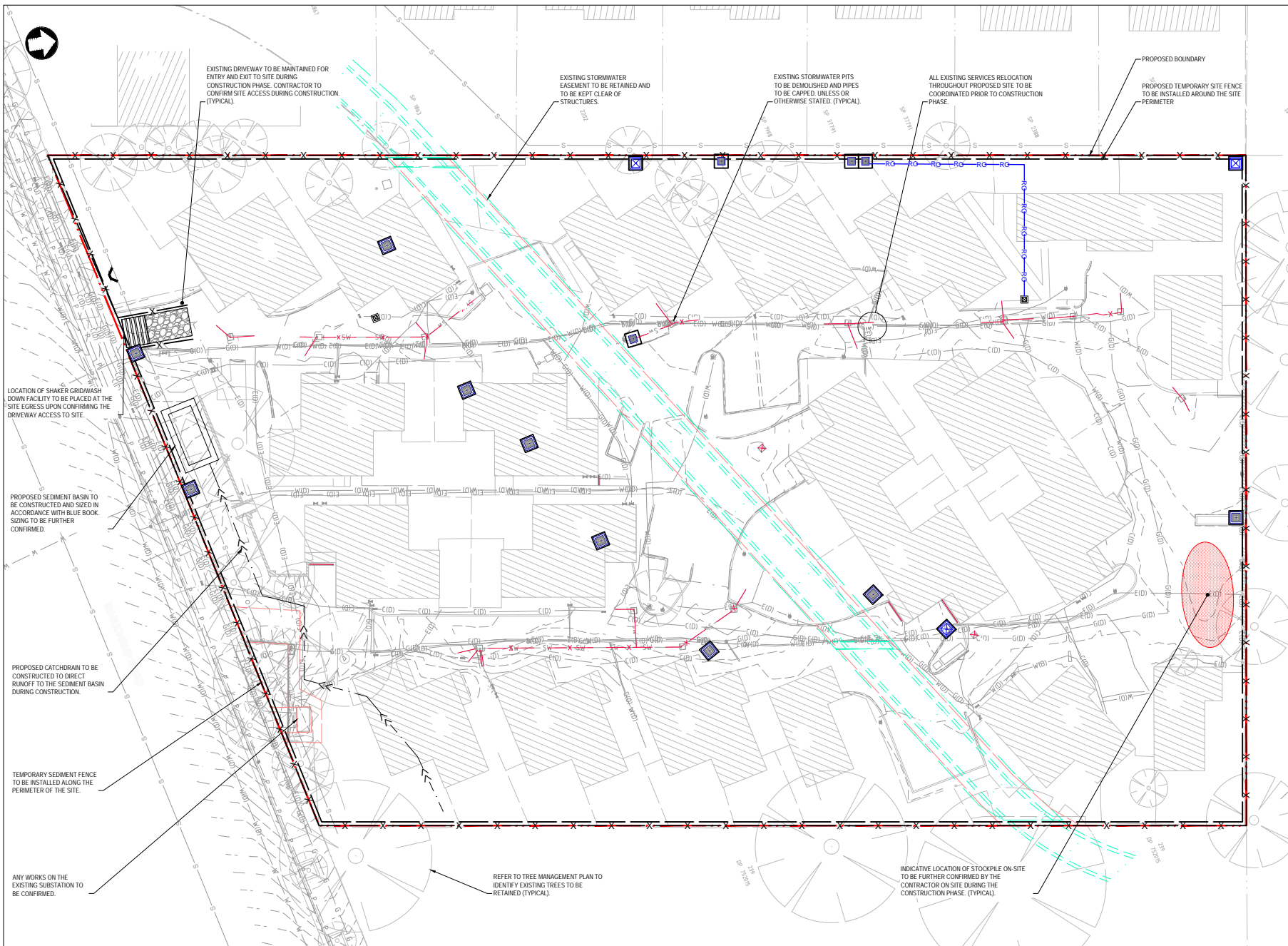
## SOIL AND WATER MANAGEMENT NOTES

- GENERAL INSTRUCTIONS**
- SWM01** THESE PLANS PRESENT A CONCEPTUAL SOIL AND WATER MANAGEMENT PLAN (SWMP) ONLY AND SHOWS A POSSIBLE WAY OF MANAGING SOIL AND EROSION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ESTABLISHMENT AND MANAGEMENT OF THE SITE AND PREPARING A DETAILED PLAN AND OBTAINING APPROVAL FROM THE RELEVANT AUTHORITY PRIOR TO THE COMMENCEMENT OF ANY WORKS.
- SWM02** THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE ENGINEERING PLANS AND ANY OTHER PLANS WRITTEN OR REFERENCED. SPECIFICATION OR DOCUMENTATION THAT MAY BE ISSUED AND RELATING TO DEVELOPMENT OF THE SUBJECT SITE.
- SWM03** THE CONTRACTOR WILL ENSURE THAT ALL SOIL AND WATER MANAGEMENT WORKS ARE CONSISTENT WITH MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION - ALSO KNOWN AS THE BLUE BOOK.
- SWM04** ALL BUILDERS AND SUB-CONTRACTORS SHALL BE INFORMED OF THEIR RESPONSIBILITIES IN MINIMISING THE POTENTIAL FOR SOIL EROSION AND POLLUTION TO DOWNSLOPE LANDS AND WATERWAYS.
- EROSION CONTROL**
- SWM05** WATER SHALL BE PREVENTED FROM ENTERING THE PERMANENT DRAINAGE SYSTEM UNTIL SEDIMENT CONCENTRATION IS LESS THEN OR EQUAL TO 10mg/L. IF THE CATCHMENT AREA HAS BEEN PERMANENTLY LANDSCAPED AND / OR ANY LIKELY SEDIMENT HAS BEEN FILTERED THROUGH AN APPROVED STRUCTURE.
- SWM06** ANY SAND USED IN THE CONCRETE CURING PROCESS (SPREAD OVER THE SURFACE) WILL BE REMOVED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM PLACEMENT.
- SWM07** ACCEPTABLE RECEPTORS WILL BE CONSTRUCTED FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER.
- SWM08** SEDIMENT FENCING WILL BE INSTALLED AS INDICATED ON THE PLANS AND AT THE DIRECTION OF SITE SUPERINTENDENT TO ENSURE CONTAINMENT OF SEDIMENT. THE SEDIMENT FENCING WILL OUTLET OR OVERFLOW UNDER STABILISED CONDITIONS INTO THE SEDIMENT BASIN, TO SAFELY CONVEY WATER INTO A SUITABLE FILTERING SYSTEM SHOULD THE PORES IN THE FABRIC BLOCK.
- SWM09** THE SEDIMENT BASINS WILL BE CONSTRUCTED WITH THE MINIMUM WET SEDIMENT CAPACITY OF N/A. CURB METRES AND DESIGNED TO REMAIN STABLE IN AT LEAST THE 1 IN 1% YEAR CRITICAL DURATION STORM EVENT. ARTIFICIAL FLOCCULATION OF THE FINER PARTICLES MAY NOT BE NECESSARY IN THIS INSTANCE.
- SWM10** STOCKPILES SHOULD NOT BE LOCATED WITHIN 5m OF TREES AND HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, DRAINAGE LINES, PAVED AREAS AND DRIVEWAYS, WHERE THEY ARE WITHIN 5M FROM SUCH AREAS. SPECIAL SEDIMENT CONTROL MEASURES SHOULD BE TAKEN TO MINIMISE POSSIBLE POLLUTION TO DOWNSTREAM WATERS. MEASURES SHOULD ALSO BE APPLIED TO PREVENT THE EROSION OF THE STOCKPILE.
- SWM11** ALL CUT AND FILL BATTERS ARE TO BE SEEDED AND MULCHED WITHIN 14 DAYS OF COMPLETION OF FORMATION.
- SWM12** ANY EXISTING TREES WHICH FORM PART OF THE FINAL LANDSCAPING PLAN WILL BE PROTECTED FROM CONSTRUCTION ACTIVITIES BY -  
a. PROTECTING THEM WITH BARRIER FENCING OR SIMILAR MATERIALS INSTALLED OUTSIDE THE DRIP LINE.  
b. ENSURING THAT NOTHING IS NAILED TO THEM.  
c. PROHIBITING PAWING, GRADING, SEDIMENT WASH OR PLACING OF STOCKPILES WITHIN THE DRIP LINE EXCEPT UNDER THE FOLLOWING CONDITIONS,  
(i) ENCROACHMENT ONLY OCCURS ON ONE SIDE AND NO CLOSER TO THE TRUNK THAN EITHER 1.5 METRES OR HALF THE DISTANCE BETWEEN THE OUTER EDGE OF THE DRIP LINE AND THE TRUNK, WHICHEVER IS THE GREATER.  
(ii) A DRAINAGE SYSTEM THAT ALLOWS AIR AND WATER TO CIRCULATE THROUGH THE ROOT ZONE (E.G. A GRAVEL BED) IS PLACED UNDER ALL FILL LAYERS OF MORE THAN 300 MLINE TREES DEPTH  
(iii) CARE IS TAKEN.
- SWM13** DURING WINDY WEATHER, LARGE DISTURBED UNPROTECTED AREAS SHOULD BE KEPT MOIST (NOT WET) BY SPRINKLING WITH WATER TO KEEP DUST UNDER CONTROL.
- SWM14** TEMPORARY PROTECTION FROM EROSION FORCES WILL BE UNDERTAKEN ON LANDS WHERE FINISH PAWING HAS NOT BEEN COMPLETED BUT WORKS ARE UNLIKELY TO PROCEED FOR PERIODS OF TWO MONTHS OR MORE (E.G. ON TOPSOIL STOCKPILES). THIS MAY BE ACHIEVED WITH A VEGETATIVE COVER. A RECOMMENDED LISTING OF PLANT SPECIES FOR TEMPORARY COVER IS -  
i) AUTUMN / WINTER SOWING  
- OATS / RYE/CORN AT 20 kg/ha  
- JAPANESE MILLET AT 10 kg/ha  
ii) SPRING / SUMMER SOWING  
- JAPANESE MILLET AT 20 kg/ha  
- OATS / RYE/CORN AT 10 kg/ha
- SWM15** DIVERSION BANKS / CHANNELS WILL BE REHABILITATED AS SOON AS POSSIBLE AND WITHIN 10 WORKING DAYS FROM THEIR FINAL SHAPING. OTHER THAN IN THE WINTER MONTHS, SUITABLE MATERIALS INCLUDE TURF GRASSES SUCH AS COUCH OR HIRAU, DURING WINTER, OR AT OTHER TIMES WHEN TEMPORARY REHABILITATION (MORE THAN 1 MONTHS) IS REQUIRED, IT IS SUGGESTED THAT HESSIAN CLOTH IS USED BUT ONLY IF TACKED WITH APPROPRIATE PEGS AND AN ANIONIC BITUMEN EMULSION. FOOT AND VEHICULAR TRAFFIC SHOULD BE KEPT AWAY FROM THESE AREAS.
- SWM16** UNDERTAKE SITE DEVELOPMENT WORKS IN ACCORDANCE WITH THE ENGINEERING PLANS, WHERE POSSIBLE, PHASE DEVELOPMENT SO THAT LAND DISTURBANCE IS CONFINED TO AREAS OF WORKABLE SIZE.
- CONSTRUCTION SEQUENCE**
- SWM17** WHERE PRACTICAL, THE SOIL EROSION HAZARD ON THE SITE SHOULD BE KEPT AS LOW AS POSSIBLE. TO THIS END, WORKS SHOULD BE UNDERTAKEN IN THE FOLLOWING SEQUENCE -  
(i) INSTALL INLET SEDIMENT TRAPS TO ALL GULLY PITS FRONTING THE SITE.  
(ii) INSTALL A 1.8m CHAIN WIRE FENCE AROUND THE BOUNDARIES AND ATTACH HESSIAN CLOTH OR SIMILAR TO IT ON THE WINDWARD SIDE (TIES AT THE TOP, CENTRE AND BOTTOM AND AT 1M INTERVALS OR AS INSTRUCTED BY THE SUPERINTENDENT).  
(iii) INSTALL GEOTEXTILE SEDIMENT FENCE AND SEDIMENT TRAPS AROUND ALL PERMANENT STORMWATER RETICULATION STRUCTURES AS SHOWN ON THE PLAN.  
(iv) CONSTRUCT STABILISED CONSTRUCTION ENTRANCE AS SHOWN ON THE PLAN OR TO LOCATION AS DETERMINED BY SUPERINTENDENT.  
(v) INSTALL DIVERSION BANKS ALONG THE BOUNDARY WHERE REQUIRED, REHABILITATE DISTURBED LANDS DOWNSLOPE FROM THE BASINS WITHIN 20 WORKING DAYS.  
(vi) ENSURE THAT THE SEDIMENT BASIN IS DIRECTED onto a TURFED AREA AND DRAINS TO A SUITABLE LOCATION. A TEMPORARY STORMWATER LINE MAY BE NECESSARY TO CONVEY THE FLOWS TO THIS LOCATION. CONSTRUCT DIVERSION CHANNELS AT THE BOUNDARY TO DRAIN INTO THE SEDIMENT BASIN AS SHOWN ON PLANS.  
(vii) AT COMPLETION STABILISE SITE AND DECOMMISSION SEDIMENT BASIN AND ALL EROSION CONTROL DEVICES.  
(viii) TEMPORARY SOIL AND WATER MANAGEMENT STRUCTURES WILL BE REMOVED ONLY AFTER THE LANDS THEY ARE PROTECTING ARE REHABILITATED.  
(ix) FINAL SITE LANDSCAPING WILL BE UNDERTAKEN AS SOON AS POSSIBLE AND WITHIN 20 WORKING DAYS FROM COMPLETION OF CONSTRUCTION ACTIVITIES.
- SITE INSPECTION AND MAINTENANCE**
- SWM20** AT LEAST WEEKLY AND AFTER EVERY RAIN FALL EVENT, THE CONTRACTOR WILL INSPECT THE SITE AND ENSURE THAT -  
(i) DRAINS AND ALL SEDIMENT CONTROL DEVICES OPERATE EFFECTIVELY AND INITIATE REPAIR OR MAINTENANCE AS REQUIRED.  
(ii) RECEPTORS FOR CONCRETE AND MORTAR SLURRIES, PAINTS, ACID WASHINGS, LIGHT-WEIGHT WASTE MATERIALS AND LITTER ARE TO BE EMPTIED AS NECESSARY. DISPOSAL OF WASTE SHALL BE IN A MANNER APPROVED BY THE SUPERINTENDENT.  
(iii) SPILLED SAND (OR OTHER MATERIALS) IS REMOVED FROM HAZARD AREAS, INCLUDING LIKELY AREAS OF CONCENTRATED OR HIGH VELOCITY FLOWS SUCH AS WATERWAYS, GULLERS, PAVED AREAS AND DRIVEWAYS.  
(iv) SEDIMENT IS REMOVED FROM BASINS AND / OR TRAPS WHEN LESS THAN 20% OF TRAPPING CAPACITY REMAINS PER 100% OF DISTURBED LANDS, AND / OR LESS THAN 500mm DEPTH REMAINS IN THE SETTLING ZONE. ANY COLLECTED SEDIMENT WILL BE DISPOSED IN AREAS WHERE FURTHER POLLUTION TO DOWN SLOPE LANDS AND WATERWAYS IS UNLIKELY.  
(v) REHABILITATED LANDS HAVE EFFECTIVELY REDUCED THE EROSION HAZARD AND INITIATE UPGRADING OR REPAIR AS APPROPRIATE.
- SWM21** THE CONTRACTOR SHALL PROVIDE ALL MONITORING CONTROL AND TESTING.

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### LEGEND

- SITE BOUNDARY
- ADJACENT SITE BOUNDARY LINE
- TEMPORARY CONSTRUCTION SITE ACCESS WITH SHAKER GRID
- EXISTING STORMWATER PITS
- EXISTING LEVELS
- SEDIMENT TRAP - DROP INLET
- SEDIMENT FENCE
- TEMPORARY SITE FENCE
- TEMPORARY CATCH DRAIN
- INDICATIVE LOCATION OF STOCKPILE
- TEMPORARY SEDIMENT BASIN
- EXISTING STORMWATER PIPE TO BE REMOVED

- ### NOTES:
- CONTRACTORS TO CONFIRM PUMP-OUT FROM DEEP BASEMENT EXCAVATION.
  - UPON INSTALLATION OF NEW STORMWATER PITS, SANDBAGS ARE TO BE PLACED AROUND PROPOSED PITS TO PREVENT AND SEDIMENT RUNOFF TO THE PITS.
  - EROSION AND SEDIMENT CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE WITH THE PUBLICATION URBAN STORMWATER SOILS AND CONSTRUCTION "THE BLUE BOOK" 204 (4TH EDITION) PRIOR TO THE COMMENCEMENT OF ANY DEMOLITION, EXCAVATION OR CONSTRUCTION WORKS UPON THE SITE.
  - BUILDERS SHALL PROVIDE SEDIMENT FENCING MATERIAL DURING CONSTRUCTION TO THE LOW SIDE BOUNDARIES. SEDIMENT CONTROL FABRIC SHALL BE AN APPROVED MATERIAL (eg PROFAB SILT FENCE OR SIMILAR) STANDING MINIMUM 500mm ABOVE GROUND AND EXTENDING 200mm BELOW GROUND.
  - GRASS VERGES AND VEGETATION SHALL BE MAINTAINED AS MUCH AS PRACTICAL AND SHALL NOT BE CLEARED FROM NEIGHBORING SITE TO PROVIDE A BUFFER ZONE TO THE CONSTRUCTION SITE.
  - NO PARKING OR STOCK PILING OF MATERIALS IS PERMITTED ON THE LOWER SIDE OF SEDIMENT FENCE.
  - VEHICLE ACCESS SHALL BE RESTRICTED TO ONE DESIGNATED POINT AS SHOWN AND VEHICLE CROSSINGS ARE TO BE ADEQUATELY COVERED AT ALL TIMES WITH BLUE METAL OR THE LIKE.
  - TEMPORARY CONSTRUCTION ENTRY/EXIT SHALL BE AS PER DRAWING 0015. BUILDER TO ENSURE ALL DROPPABLE SOIL AND SEDIMENT IS REMOVED PRIOR TO CONSTRUCTION TRAFFIC EXITING SITE USING VEHICLE WHEEL WASH, CATTLE GRID, WHEEL SHAKER OR OTHER APPROPRIATE DEVICE. BUILDER SHALL ENSURE ALL CONSTRUCTION TRAFFIC ENTERING AND LEAVING THE SITE, DO SO IN A FORWARD DIRECTION.
  - ALL STORMWATER INCIDENT ON THE CONSTRUCTION SITE MUST BE COLLECTED AND APPROPRIATELY DISPOSED OF IN A MANNER THAT DOES NOT INCREASE THE FLOOD RISK FOR THE CATCHMENT AREA OR DEGRADE THE QUALITY OF WATER BEING DISPOSED OF TO COUNCIL STORMWATER INFRASTRUCTURE.
  - MEASURES OUTLINED IN THE EROSION AND SEDIMENT CONTROL PLAN MUST BE IMPLEMENTED PRIOR TO AND MAINTAINED DURING AND AFTER THE CONSTRUCTION WORKS.
  - ALL DISTURBED AREAS AND STOCKPILES TO BE STABILISED WITH 3 DAYS.
  - TOPSOIL TO BE STRIPPED, STOCKPILED AND RE-SPREAD ON COMPLETION OF EARTHWORKS. NONE TO BE REMOVED.
  - NO DISTURBANCE OF THE SITE OTHER THAN IMMEDIATE AREA OF WORKS.
  - SEDIMENT BASIN TO BE SIZED IN ACCORDANCE WITH SOILS AND CONSTRUCTION, VOLUME 1, MANAGING URBAN STORMWATER GUIDE.

- ### REFERENCES:
- REFER DRAWING 103419-MMD-HIL-XX-DR-C-0331 ON-SITE DETENTION DETAILS.
  - REFER TO DRAWING 103419-MMD-HIL-XX-DR-C-0512 FOR WATER QUALITY CATCHMENT PLAN

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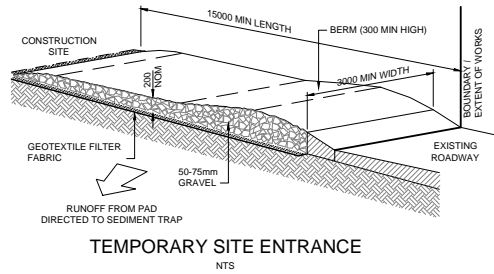
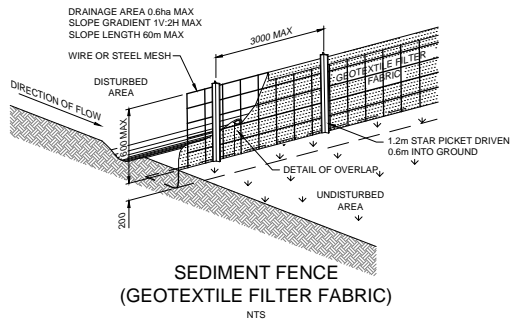
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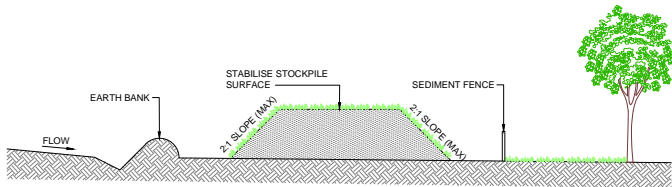
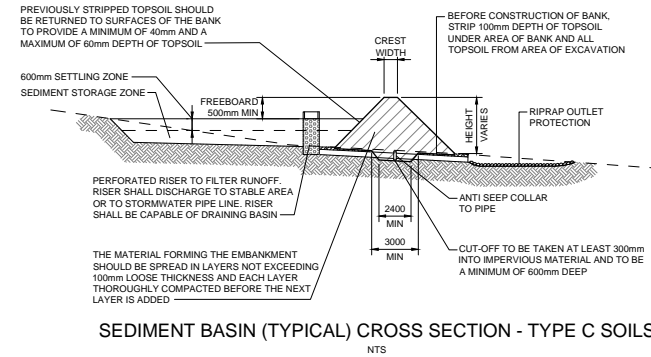
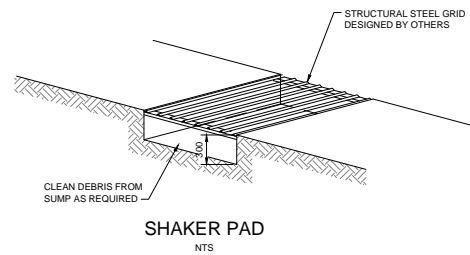
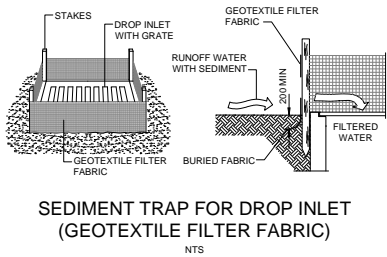
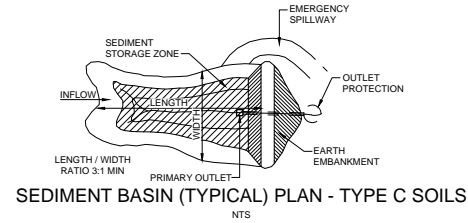
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**MAINTENANCE**

- THE TEMPORARY ACCESS SHALL BE MAINTAINED IN A CONDITION THAT PREVENTS TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS OF WAY.
- THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
- ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS OF WAY MUST BE REMOVED IMMEDIATELY.



**CONSTRUCTION NOTES**

1. PLACE STOCKPILES AS DIRECTED BY THE SUPERINTENDENT.
2. CONSTRUCT ON THE CONTOUR AS LOW, FLAT, ELONGATED MOUNDS.
3. WHERE THERE IS SUFFICIENT AREA, TOPSOIL STOCKPILES SHALL BE LESS THAN 2m IN HEIGHT.
4. WHERE THEY ARE TO BE IN PLACE FOR MORE THAN 10 DAYS, STABILISE FOLLOWING THE APPROVED E.S.C.P OR S.W.M.P. TO REDUCE THE C-FACTOR TO LESS THAN 0.10.
5. CONSTRUCT EARTH BANKS ON THE UPSLOPE SIDE TO DIVERT WATER AROUND STOCKPILES AND INSTALL SEDIMENT FENCES 1m TO 2m DOWNSLOPE CONSISTENT WITH MANAGING URBAN STORMWATER - SOILS AND CONSTRUCTION - ALSO KNOW AS THE BLUE BOOK.

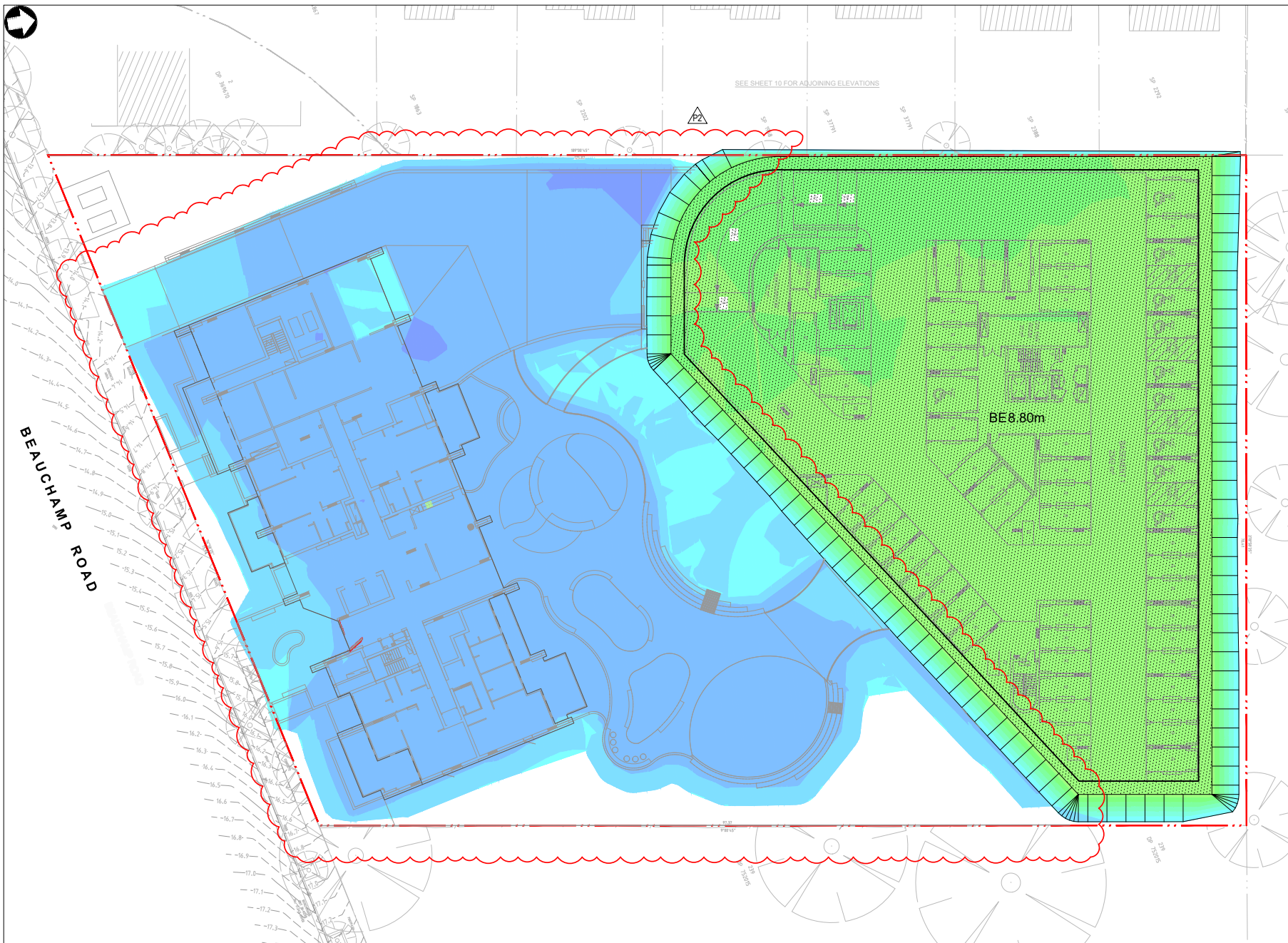
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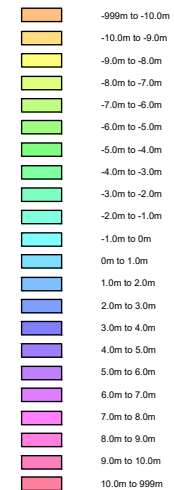
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### DEPTH RANGE LEGEND (1.0 m)



### CUT AND FILL VOLUMES

CUT AND FILL VOLUMES (APPROX):  
 CUT = - 16,000 m³  
 FILL = 4,853 m³  
 BALANCE = 11,147 m³ (EXCESS CUT)

ESTIMATED VOLUMES BETWEEN EXISTING SURVEY AND DESIGN EARTHWORKS LEVELS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL VOLUMES PRIOR TO CONSTRUCTION.

- ASSUMED 500mm BASEMENT SLABS
- HOLES IN SURVEY FOR EXISTING BUILDING HAS BEEN FILLED FOR VOLUME TRIANGULATION
- NO ALLOWANCE HAS BEEN MADE FOR TOPSOIL STRIPPING
- NO ALLOWANCE HAS BEEN MADE FOR ANY UNSUITABLE MATERIAL FOUND WITHIN PROJECT BOUNDARY
- NO ALLOWANCE FOR RETAINING WALL FOOTING
- NO ALLOWANCE FOR FOOTINGS
- NO ALLOWANCE FOR LIFT SHAFT EXCAVATION
- NO ALLOWANCE FOR WORKS FOR FUTURE BUILDING PAD
- VOLUME WITHIN STORMWATER TRENCHES HAS NOT BEEN CALCULATED
- NO BULKING FACTORS HAVE BEEN APPLIED.

### LEGEND

- BULK EARTHWORKS CONTOUR (MAJOR)
- BULK EARTHWORKS CONTOUR (MINOR)
- B 10.00 BULK EARTHWORKS SPOT LEVEL
- BE 10.00 BULK EARTHWORKS PLATFORM AND LEVEL
- BATTER 1 CONSTRUCT BATTER SLOPE

THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE LATEST ARCHITECTURAL PLANS AND STRUCTURAL ENGINEERS PLANS FOR DETAILS.

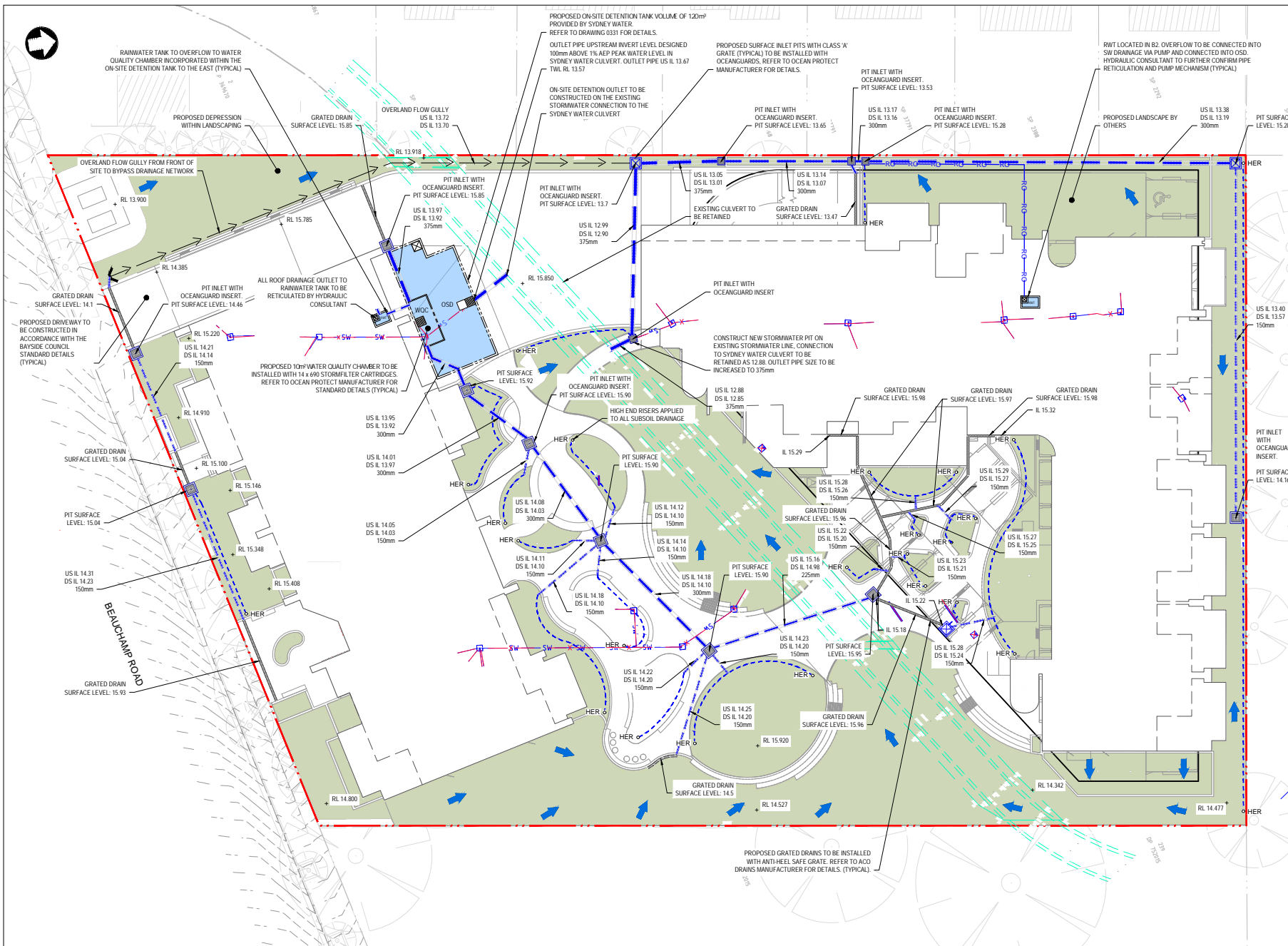
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### LEGEND

--- SITE BOUNDARY  
 - - - - - BASEMENT FOOTPRINT

**EXISTING**

- - - - - SW EXISTING STORMWATER PIPE
- EXISTING STORMWATER PIT
- - - - - X EXISTING STORMWATER PIPE TO BE REMOVED

**PROPOSED**

- STORMWATER PIPE
- - - - - SUBSOIL DRAINAGE LINE
- HER HIGH END RISER
- OVERLAND FLOW GULLY
- RAINWATER OUTLET PIPE
- PIT INLET WITH OCEANGUARD INSERT
- PROPOSED SURFACE INLET PIT
- PROPOSED JUNCTION PIT
- GRATED TRENCH DRAIN
- HEADWALL
- PROPOSED OSD TANK
- PROPOSED OVERLAND FLOW PATHS

- ### NOTES:
- TOTAL SITE AREA = 7,854 m²
1. PROPOSED STORMWATER DRAINAGE IS CONCEPT ONLY FOR DEVELOPMENT APPROVAL AND SUBJECT TO DETAILED DESIGN AT CONSTRUCTION ON CERTIFICATE STAGE.
  2. EXISTING SERVICE SHOWN INDICATIVE ONLY. REFER TO SERVICE PLANS APPROVED BY RELEVANT AUTHORITIES FOR FURTHER INFORMATION. EXISTING SERVICES SUBJECT TO FURTHER INVESTIGATION PRIOR TO CONSTRUCTION FOR DETAILED DESIGN PURPOSES.
  3. ALL PROPOSED STORMWATER TO BE DESIGNED TO CATER FOR MINOR STORM IN ACCORDANCE WITH BAYSIDE TECHNICAL SPECIFICATION
  4. SAFE OVERLAND FLOW PATH TO CATER FOR MAJOR STORM OF 100 YEAR ARI.
  5. ALL BUILDING DRAINAGE TO BE CONFIRMED BY HYDRAULIC CONSULTANTS.
  6. PROVIDE OCEAN PROTECT STORMFILTER CARTRIDGES OR SIMILAR, DETAILS TO BE PROVIDED BY THE MANUFACTURER.

- ### REFERENCES:
1. REFER DRAWING 103419-MMD-HIL-XX-DR-C-0331 ON-SITE DETENTION DETAILS.
  2. REFER TO DRAWING 103419-MMD-HIL-XX-DR-C-0512 FOR WATER QUALITY CATCHMENT PLAN
  3. FOR SITE BOUNDARY INTERFACE, REFER TO STUDIO SC 'INTERFACE SECTIONS' DRAWING AD-DA30\_207

THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE LATEST ARCHITECTURAL PLANS AND DETAILS. PROPOSED LEVELS ARE AS PER ARCHITECTURAL PLANS.

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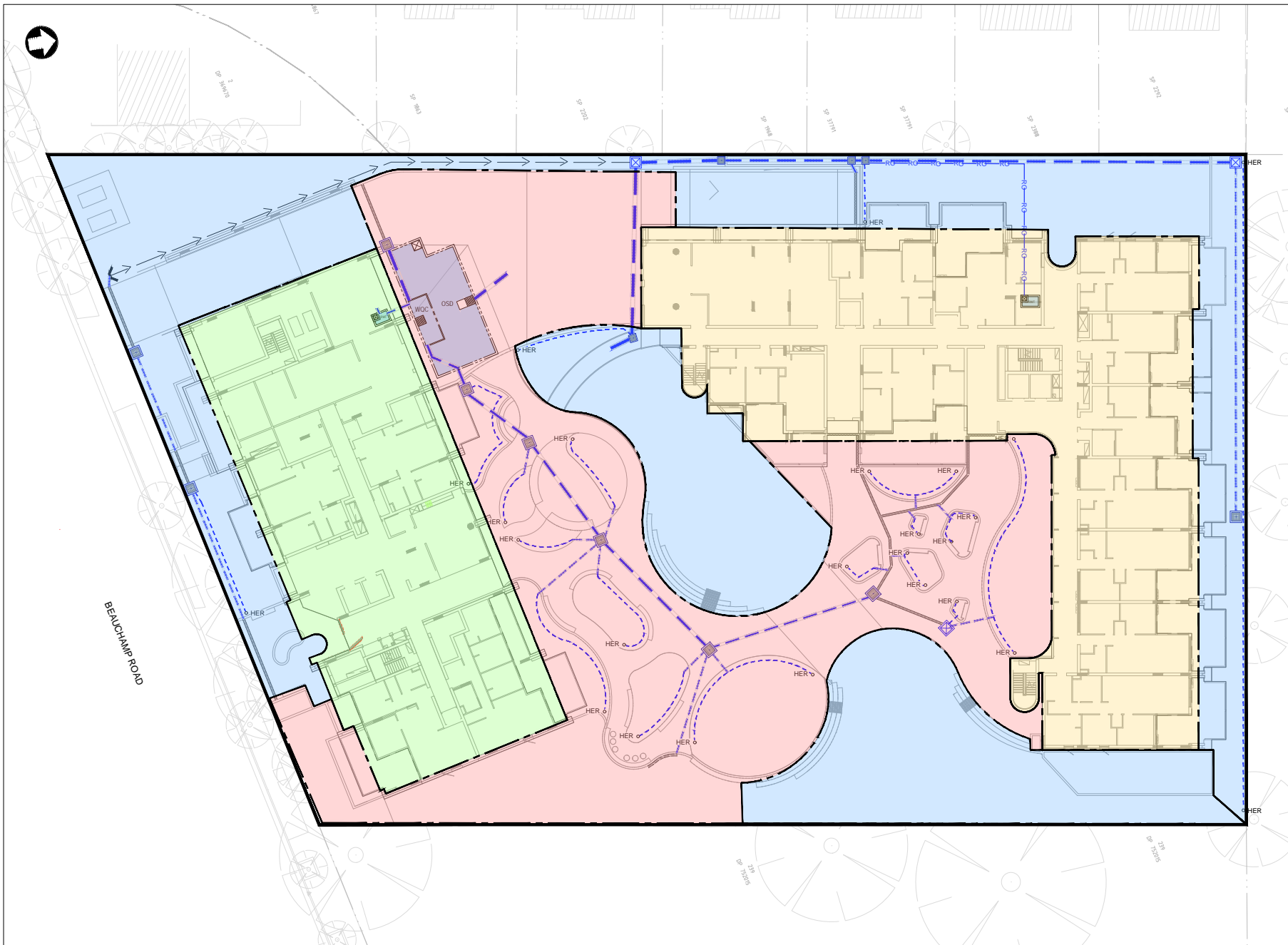
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**LEGEND**


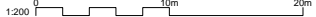


- SITE BOUNDARY  
AREA: 7.854m<sup>2</sup>
- CATCHMENT A  
ROOF TO ON-SITE DETENTION  
(100% IMPERVIOUS)  
AREA: 1.350m<sup>2</sup>
- CATCHMENT B  
ROOF BYPASSING ON-SITE DETENTION  
(100% IMPERVIOUS)  
AREA: 1.700m<sup>2</sup>
- CATCHMENT C  
LANDSCAPING TO ON-SITE DETENTION  
(58% IMPERVIOUS)  
AREA: 2.307m<sup>2</sup>
- CATCHMENT D  
LANDSCAPING BYPASSING ON-SITE DETENTION  
(26% IMPERVIOUS)  
AREA: 2.500m<sup>2</sup>

**REFERENCES:**

1. REFER DRAWING 103419-MMD-HIL-XX-DR-C-0051 FOR GROUND FLOOR DRAINAGE PLAN

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| P2   | 07.11.25   | ISSUED FOR SSDA   | SS    | AT       |                 |    |    |    |          |                        |    |    |     |      |             |       |       |   |   |  |  |                    |              |                     |             |                    |               |             |  |
| P1   | 05.11.25   | ISSUED FOR INFORMATION  | SS    | AT       |                 |    |    |    |          |                        |    |    |     |      |             |       |       |   |   |  |  |                    |              |                     |             |                    |               |             |  |
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| Designed: S. SAIARA  | Status: APR  |   |       |          |                 |    |    |    |          |                        |    |    |     |      |             |       |       |   |   |  |  |                    |              |                     |             |                    |               |             |  |
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| Approved: -  |  |   |       |          |                 |    |    |    |          |                        |    |    |     |      |             |       |       |   |   |  |  |                    |              |                     |             |                    |               |             |  |
| DRAWING NUMBER <b>103419-MMD-HIL-XX-DR-C-0511</b>                                  |  |   |       |          |                 |    |    |    |          |                        |    |    |     |      |             |       |       |   |   |  |  |                    |              |                     |             |                    |               |             |  |

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## A.2 APPENDIX B: SYDNEY WATER CORRESPONDENCE



**RE: [External] Request for On-site Detention and Discharge Information at 68-80 Beauchamp Road, Hillsdale**

**From** Stormwater <Stormwater@sydneywater.com.au>  
**Date** Thu 25/09/2025 8:00 AM  
**To** Saeika Saiara <Saeika.Saiara@mottmac.com>  
**Cc** Aladdin Tarshan <Aladdin.Tarshan@mottmac.com>; Daniel Fettell <Daniel.Fettell@mottmac.com>

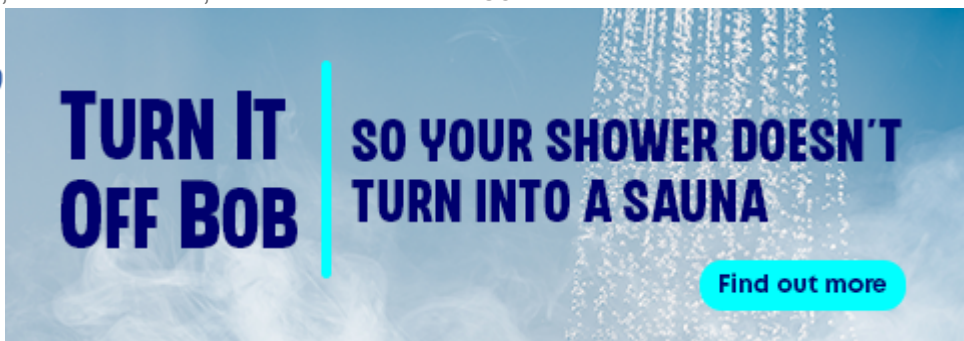
Some people who received this message don't often get email from stormwater@sydneywater.com.au. [Learn why this is important](#)

Saeika,

Further to our previous email, you should not bypass On-Site Detention more than 15% of the total site area.

Best Regards

Planning and Technical  
Water and Environment Services  
Sydney Water, Level 13, 1 Smith Street, Parramatta NSW 2150



**From:** Stormwater

<Stormwater@sydneywater.com.au>  
**Sent:** Wednesday, 24 September 2025 3:51 PM  
**To:** Saeika Saiara <Saeika.Saiara@mottmac.com>  
**Cc:** Aladdin Tarshan <Aladdin.Tarshan@mottmac.com>; Daniel Fettell <Daniel.Fettell@mottmac.com>  
**Subject:** RE: [External] Request for On-site Detention and Discharge Information at 68-80 Beauchamp Road, Hillsdale

Saeika,

The On-Site Detention requirements for the 7,854 square meters site at 68-80 Beauchamp Road, Hillsdale, are as follows:

- On Site Detention 120 cubic meters
- Permissible Site Discharge 277 L/s

If more than one stormwater connection is required, then the above values are to be distributed on a pro-rata basis according to the site area which drains through each connection.

The approval for the On-Site Detention would only be given as part of the stormwater connections approval which is part of the Section 73 application for this development. The On-Site Detention is to be designed according to the above values and submitted with your stormwater connection design. The following details are to be included in your submission for On Site Detention approval:

- Location of the On-Site Detention in relation to the development
- Location of the On-Site Detention in relation to overall stormwater network of the property
- Plan and Elevation of the On-Site Detention tank with all dimensions
- Orifice plate calculation

If a portion of the site area does not drain into the On-Site Detention (OSD) system, the discharge rate from the OSD storage must be restricted to ensure that the total flow from the site—including both the OSD discharge and any free runoff—does not exceed the specified Permissible Site Discharge (PSD) for a 1-in-100-year stormwater event. Stormwater designers must carry out the necessary calculations in this situation and clearly specify the values for the revised On-Site Detention (OSD) storage and Permissible Site Discharge (PSD) in the OSD design drawings. You may use the Time of Concentration of 6 minutes for this calculation.

Best Regards

#### Planning and Technical

Water and Environment Services

Sydney Water, Level 13, 1 Smith Street, Parramatta NSW 2150

**Sydney**  
**WATER**

**TURN IT  
OFF BOB**

**SO YOUR SHOWER DOESN'T  
TURN INTO A SAUNA**

[Find out more](#)



**From:** Saeika Saiara <[Saeika.Saiara@mottmac.com](mailto:Saeika.Saiara@mottmac.com)>

**Sent:** Wednesday, 24 September 2025 11:19 AM

**To:** Stormwater <[Stormwater@sydneywater.com.au](mailto:Stormwater@sydneywater.com.au)>

**Cc:** Aladdin Tarshan <[Aladdin.Tarshan@mottmac.com](mailto:Aladdin.Tarshan@mottmac.com)>; Daniel Fettell <[Daniel.Fettell@mottmac.com](mailto:Daniel.Fettell@mottmac.com)>

**Subject:** Re: [External] Request for On-site Detention and Discharge Information at 68-80 Beauchamp Road, Hillsdale

Hi,

Please find below the breakdown of impervious and pervious areas for both the **pre-development** and **post-development** scenarios of the site:

**Total Site Area : 7854 sq.m**

- **Pre-Development Pervious Area : 1018sq.m (13%)**

- **Pre-Development Impervious Area: 6836sq.m (87%)**
- **Post-Development Pervious Area: 2480sq.m (32%)**
- **Post-Development Impervious Area: 5374sq.m (68%)**

Please feel free to reach out if you require any further information.

Kind regards,

**Saeika Saiara**

Pronunciation: Sa-ei-ka

Pronouns: she, her, hers

Civil Engineer

D +61280904004

[saeika.saiara@mottmac.com](mailto:saeika.saiara@mottmac.com)

Available from Monday - Wednesday

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**From:** Stormwater <[Stormwater@sydneywater.com.au](mailto:Stormwater@sydneywater.com.au)>

**Sent:** 24 September 2025 07:46

**To:** Saeika Saiara <[Saeika.Saiara@mottmac.com](mailto:Saeika.Saiara@mottmac.com)>

**Cc:** Aladdin Tarshan <[Aladdin.Tarshan@mottmac.com](mailto:Aladdin.Tarshan@mottmac.com)>; Daniel Fettell <[Daniel.Fettell@mottmac.com](mailto:Daniel.Fettell@mottmac.com)>

**Subject:** RE: [External] Request for On-site Detention and Discharge Information at 68-80 Beauchamp Road, Hillsdale

Saeika,

You need to provide us the following information for us to progress further:

- Pre-development impervious area.
- Post-development impervious area.

Best Regards

Planning and Technical

Water and Environment Services

Sydney Water, Level 13, 1 Smith Street, Parramatta NSW 2150

**Sydney**  
**WATER**



**TURN IT  
OFF BOB**

**SO YOUR SHOWER DOESN'T  
TURN INTO A SAUNA**

**Find out more**



From: Saeika Saiara

<[Saeika.Saiara@mottmac.com](mailto:Saeika.Saiara@mottmac.com)>

Sent: Tuesday, 23 September 2025 4:52 PM

To: Stormwater <[Stormwater@sydneywater.com.au](mailto:Stormwater@sydneywater.com.au)>

Cc: Aladdin Tarshan <[Aladdin.Tarshan@mottmac.com](mailto:Aladdin.Tarshan@mottmac.com)>; Daniel Fettell <[Daniel.Fettell@mottmac.com](mailto:Daniel.Fettell@mottmac.com)>

Subject: [External] Request for On-site Detention and Discharge Information at 68-80 Beauchamp Road, Hillsdale

**CAUTION:** This email originated from outside the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Hi Sydney Water Team,

Hope this email finds you well.

We are currently working on a project for our client, Homes NSW, located at **68-80 Beauchamp Road, Hillsdale** within the **Bayside Council LGA**. The site has a **Total Area of: 7854sq.m**

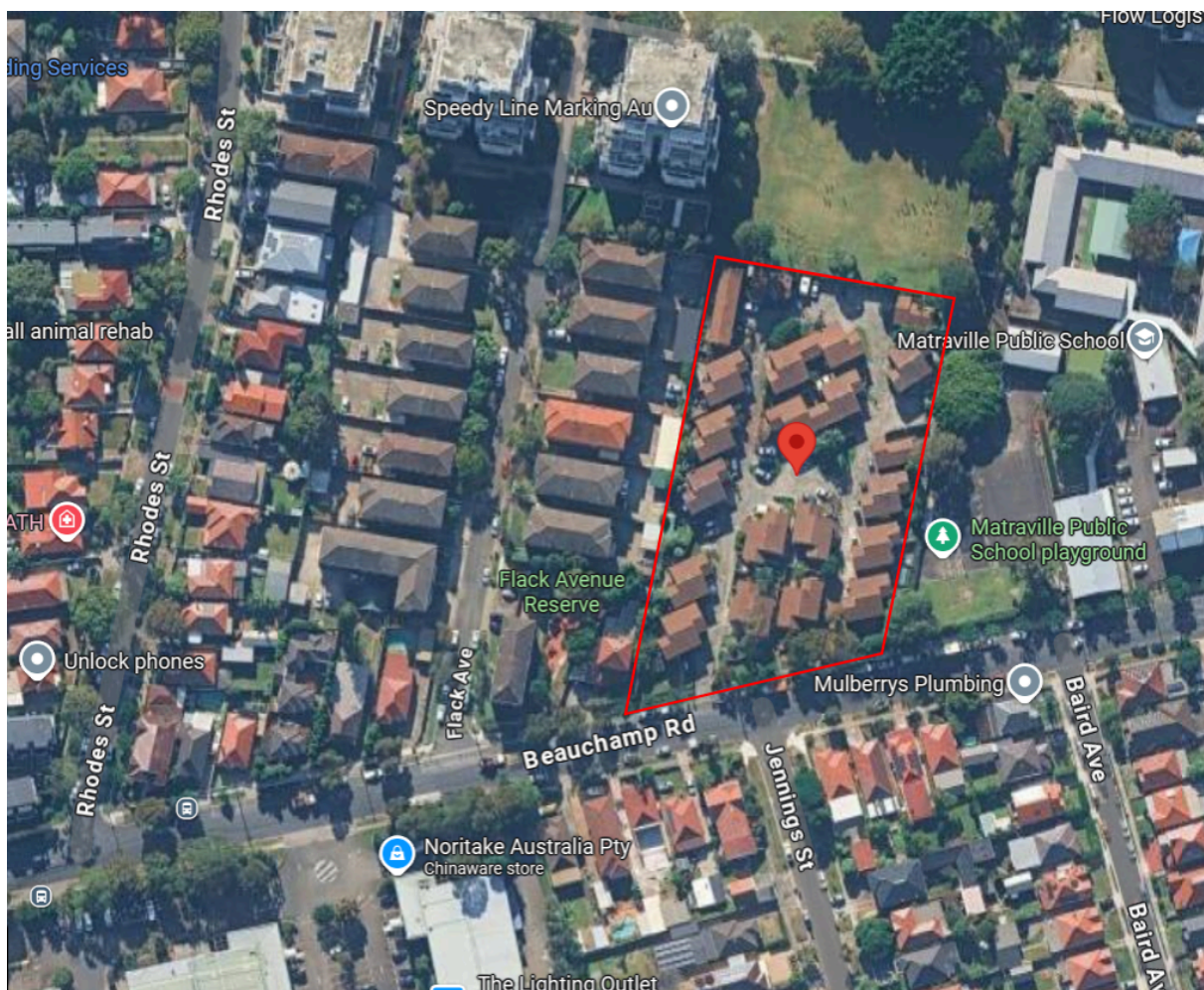
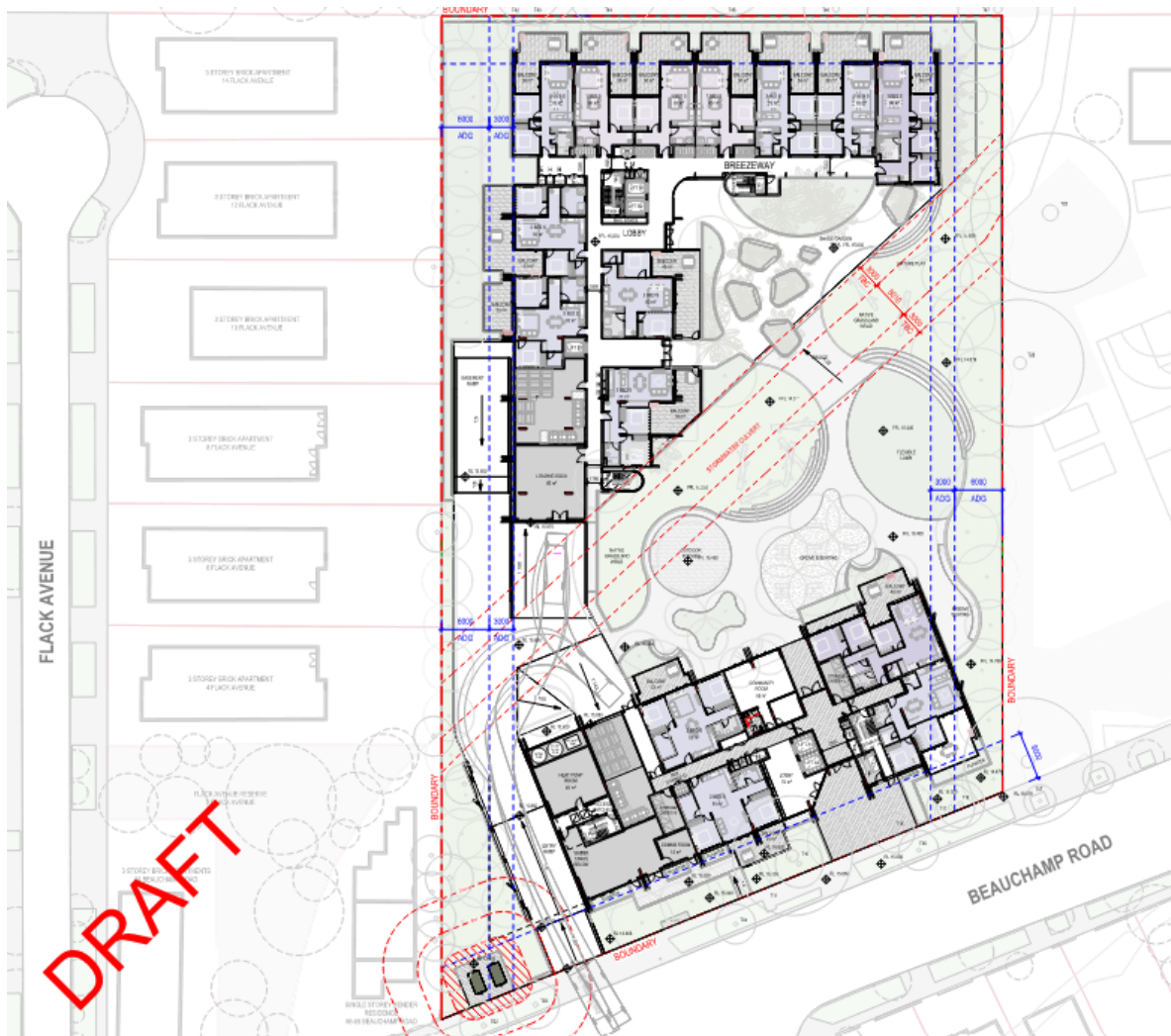


Figure 1: Existing Site Locality



**Figure 2: Proposed Development**

We understand that Sydney Water will determine the required **on-site detention volume**, **permissible site discharge**, and **allowable bypass** for the site.

Could you please advise on the following:

- Required on-site detention volume
- Permissible site discharge
- Allowable bypass

Additionally, if the site presents challenges and the bypass exceeds the allowable maximum, should we reach out to Sydney Water again to obtain a revised on-site detention volume?

Thank you for your assistance, and please let us know if any further information is required.

Kind Regards

**Saeika Saiara**

Pronunciation: Sa-ei-ka

Pronouns: she, her, hers

Bachelor of Civil Engineering

Civil Engineer

D +61280904004

[saeika.saiara@mottmac.com](mailto:saeika.saiara@mottmac.com)

Available from Monday - Wednesday



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383 Kent Street  
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NSW 2000  
PO Box Q1678  
QVB Sydney NSW 1230  
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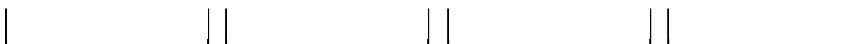
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## A.3 APPENDIX C: Sydney Water Corporation – Advice Letter

October 16, 2025

Homes NSW

c/ - MOTT MACDONALD AUSTRALIA

## Feasibility Letter

**Developer:** Homes NSW  
**Your WSC's reference:** 703103419-009  
**Development:** Lot 12 DP736905 76-80 BEAUCHAMP RD, Matraville  
**Development Description:** Located within 500m of the Matraville local centre, approximately 1.7km south of Westfield Eastgardens, the subject site has outlined the potential to realise a total of 16,368m<sup>2</sup> residential gross floor area (GFA), equating to approximately 200 social and market dwellings within two 6-8 storey residential flat buildings.  
**Your application date:** September 4, 2025

Dear Applicant

Thank you for your enquiry about the water-related servicing requirements for your proposed development.

This feasibility letter (letter) is a guide only. It provides general information about how your proposed development may be serviced. We have not allocated any system capacity, and where there is system capacity as at today, it may have been fully utilised by the time you obtain development consent. The requirements applied to any approved development proposal may differ in the future since the issuing of this letter. **The information is accurate at the date of this letter only.**

Sydney Water has assessed your application and provides the following advice.

## Servicing requirements for your development

### Water

The development is supplied by the Maroubra Water Supply Zone. Based on the estimated flow requirements, the proposed development can be serviced. However, local reticulation amplification may be required. The specific amplification requirements will be confirmed during the Section 73 application stage.



**Figure 1 – Drinking Water Location Map**

### Sewer

The proposed development is located within the Botany catchment of the Malabar System.

The site is currently serviced by:

- DN150 reticulation in Beauchamp Road, and
- DN225 reticulation through 4, 6, and Lot 14 Flack Avenue.

The downstream DN225 reticulation discharges to the Perry Street Carrier, which connects to SWSOOS2.

Based on the proposed flow rates, the existing system has adequate capacity to service the development.

- a) The northern portion of the site (north of the existing stormwater culvert) can connect to the DN225 reticulation via 4–6 Flack Avenue.
- b) The southern portion of the site can connect to the DN150 reticulation in Beauchamp Road.
- c) Detailed information on proposed connection points for all stages of the development, including internal reticulation and lead-ins, will be required at the Section 73 application stage.
- d) All works must comply with the WSA Code.



**Figure 2 – Wastewater Location Map**

## Stormwater

### Building over or adjacent to stormwater assets

- a) No buildings or permanent structures are permitted over the stormwater channel, within the Sydney Water easement, or within 1.5 metres from the outside wall of the channel—whichever is greater. This applies regardless of depth or height.
- b) Permanent structures include (but are not limited to): basement car parks, hanging balconies, roof eaves, hanging stairs, stormwater pits and pipes, elevated driveways, basement access, or similar.

- c) The applicant must submit elevation drawings showing the stormwater channel to confirm that all proposed buildings and structures are at least 1 metre away from the outside face of the channel and outside the easement.
- d) Additional clearance requirements may apply under the Specialist Engineering Assessment Procedure, depending on the size of Sydney Water's asset. These must be confirmed with your Water Servicing Coordinator.

**Existing Cover/Bridge over the stormwater channel**

- a) There are no available records confirming that the existing cover or driveway over Sydney Water's stormwater channel was constructed with Sydney Water's approval.
- b) Historical records indicate that only a bridge—approximately 3 to 4 metres wide—was approved in 1940–1941.
- c) No detailed specifications or design information for the approved bridge are available.

**Ground Level Modification Restriction at the Vicinity of the Stormwater Channel**

- a) Sydney Water will not grant permission to alter the existing ground level over the stormwater channel, within the easement, or within 1.5 metres from the outside face of the stormwater channel.
- b) You are required to revise your development proposal to comply with this requirement.

**Proposed Removal of Existing Cover and Driveway**

- a) Sydney Water has noted that the proponent intends to remove the existing cover and driveway over the stormwater channel.
- b) The proponent must undertake a detailed investigation of the existing structures and assess their potential impact on Sydney Water's stormwater channel due to their proximity.
- c) Approval for removal of the existing cover is subject to review of this investigation.

**No permission for new elevated slab cover and limit on new bridge width**

- a) Sydney Water will not grant permission for the installation of a new elevated slab cover once the existing cover or driveway is removed.
- b) Generally, Sydney Water may permit a driveway over an open stormwater channel only if there is no other legal access to a portion of the land, and crossing the stormwater channel is the only feasible option. The maximum bridge width must not exceed 3 metres, unless a wider bridge is justified solely for access purposes.

**Locating the Exact Position of the Stormwater Channel**

- a) Exact position of the stormwater pipe/ channel is to be identified using potholing or another acceptable survey method.

- b) The location of the easement must not be used as a substitute for identifying the actual position of the stormwater pipe, channel, or asset.

### **Fence Along the Sydney Water's Stormwater Channel**

- a) The proponent is required to provide the fencing arrangement along Sydney Water's stormwater assets. Any fence other than 1.2 m high pool fencing, 1.8 m high Colourbond fencing, or equivalent must be located at least 1 m away from the outside face of the stormwater channel/asset and supported on piers. These piers must extend at least 1 m below the invert level of the stormwater channel or 1 m below the zone of influence of the channel.
- b) Fencing along or across the stormwater channel/pipe/asset must allow floodwater and stormwater overland flow to pass freely in both directions.
- c) Brick, masonry, or similar fences that obstruct or alter the natural floodway will not be permitted along Sydney Water's stormwater assets.
- d) Fences must not redirect or concentrate stormwater onto neighbouring properties or obstruct the natural floodway.

### **Dilapidation Survey Report**

- a) The proponent is required to undertake a dilapidation/CCTV survey of Sydney Water's stormwater channel prior to commencement of any site works. This survey must extend at least 5 metres upstream and downstream from the property boundary, and a copy must be provided to Sydney Water.
- b) Upon completion of all construction work, the dilapidation/CCTV survey must be repeated. An assessment report must be prepared comparing the pre-construction and post-construction surveys, confirming that no damage has occurred to Sydney Water's stormwater pipe, channel, or assets during construction.

### **Bond Money**

- a) A bond of \$250,000 must be lodged with Sydney Water for any proposed works over or adjacent to Sydney Water's stormwater channel, pipe, or asset.
- b) Refund of the bond is subject to the following conditions:
  - Review of the final dilapidation survey report/ CCTV Report of Sydney Water's stormwater channel, pipe or asset, undertaken upon completion of construction.
  - Submission of the Project Completion Package in accordance with the building plan approval process.
  - Acceptance of the 'work as constructed' drawings for any stormwater connections if applicable.

### **Constructing an access bridge over stormwater assets**

- a) The proposed bridge over the stormwater channel is to be constructed according to the guide "Building bridges over our open stormwater channels".
- b) The guide is available on Sydney Water's website and must be referenced during planning and design.

#### **Positive Covenant for bridge**

- a) You are required to create a Positive Covenant for building bridges over Sydney Water's open stormwater channels.
- b) The Positive Covenant must comply with the requirements outlined in Sydney Water's Policy and Guidelines on the "Documentation Standards for Building bridges over Sydney Water's open Stormwater channels guide".
- c) You should contact Sydney Water's Group Property to get the specific details via email [acquisitions@sydneywater.com.au](mailto:acquisitions@sydneywater.com.au) or Ph: 02 8849 6223 or 02 8849 4532

#### **Stormwater connections to Sydney Water's Stormwater Channel**

- a) Design of the stormwater work on Sydney Water's stormwater assets are to be carried out by Sydney Water accredited providers for stormwater design. Construction of the stormwater work is to be carried out by Sydney Water accredited providers for construction for sewer or water with the capability of S2, W2 or W3.
- b) The proposed stormwater connections are to be carried out according to the Asset Adjustment and Protection Manual. Further details regarding this process can be obtained from your Water Servicing Coordinator.
- c) The applicant is advised of the following:
  - For pipes with a diameter 300mm or more the connection angle is to be no greater than 30 degrees in the direction of the channel flow.
  - Proposed connections that are 300mm or more in diameter require a qualified structural engineer to design and another qualified structural engineer to verify the connection details.
  - A structural engineer's certificate is to be attached with the design drawings with the details of designer and verifier. Qualifications of the structural engineers are to be according to current Engineering Competency Standard.
  - All structural details are to be drawn in the design drawing.
  - Connection details are to be complied with connection principles as per the Deem to Comply drawing for sewer DTC-2200. That is stub at the connection point, followed by rocker pipe. Rocker pipe lengths are available on the table in the same drawing.
  - Proposed connections that are less than 300mm in diameter can use Sydney Water's standard drawings to design the connection details.

**Flood impact assessment (FIA)**

- a) The applicant is required to submit a Flood Impact Assessment report based on a current flood model for the proposed development and identify flood hazards.
- b) The FIA must:
  - demonstrate that there are no potential adverse flood impacts offsite due to the development; and
  - evaluate the impacts of flooding on the proposed development.
- c) Sydney Water must ensure that developments do not adversely impact people, properties, or infrastructure.

**On-site Stormwater Detention (OSD)**

- a) The proposed development will require an OSD system to offset stormwater run-off.
- b) To determine the required On-Site Detention and Permissible Site Discharge (PSD), the following site-specific information is required to be submitted:
  - Total site area (m<sup>2</sup>)
  - Existing pre-development impervious area (m<sup>2</sup>)
  - Proposed post-development impervious area (m<sup>2</sup>)
- c) If a percentage of the site area does not drain into the OSD system, the rate of discharge from the OSD storage must be restricted so that the total flow from the site (from the OSD storage and free runoff) does not exceed the specified PSD.
- d) On-Site Detention is to be designed according to the Sydney Water's values and the details of the On-Site Detention are to be submitted to Sydney Water for review and approval.
- e) The following details are to be included in your submission for On Site Detention approval:
  - Location of the On-Site Detention in relation to the development.
  - Location of the On-Site Detention in relation to overall stormwater network of the property.
  - Plan and Elevation of the On-Site Detention tank with all dimensions.
  - Orifice plate calculation.

**Positive Covenant for On-site Stormwater detention**

- a) You are required to create a Positive Covenant over the On-site Stormwater Detention. The Positive Covenant must follow the requirements outlined in Sydney Water's Policy and Guidelines on the "Documentation Standards for On-site stormwater detention guide".
- b) You should contact Sydney Water's Group Property to get the specific details via email [acquisitions@sydneywater.com.au](mailto:acquisitions@sydneywater.com.au) or Ph: 02 8849 6223 or 02 8849 4532

**Infrastructure contributions**

You will need to pay an infrastructure contribution towards the cost of each Sydney Water system that will serve your development.

The infrastructure contributions are calculated in accordance with the Development Servicing Plans registered with the Independent Pricing and Regulatory Tribunal (IPART) under the *Independent Pricing and Regulatory Tribunal Act*.

An estimate of your infrastructure contributions is shown in the table below. These amounts have the NSW Government-directed cap applied for the current financial year. **These amounts are subject to the NSW Government transition pathway and other factors and will change** – see Section 1 Price Changes for full details.

No payments can be accepted for these estimates. Should you obtain Development Approval for this proposal and apply for a Section 73 Certificate in the future, then we'll advise you of the applicable charges to your Development.

| <b>Development Servicing Plan (DSP)</b> | <b>Basis of Calculation</b>  | <b>Charge (\$) for Applicable Period</b><br><b>(9/25/25-6/30/26)</b> |
|---|--|--|
| Malabar Wastewater                      | Residential Development Density > 141 lots/dwellings per ha band<br>180 lots/dwellings @ \$239.06 = \$43030.8<br>less Credit of \$0.0 for previous use | \$43,030.80  |
| Potts Hill Drinking Water               | Residential Development Density > 141 lots/dwellings per ha band<br>180 lots/dwellings @ \$0 = \$0<br>less Credit of \$0.0 for previous use            | \$0.00   |
| <b>DEVELOPER CHARGES TOTAL:</b>         |  | <b>\$43,030.80</b>   |

- The charges in the table are based on your development needing an average day water demand of 75.6 kl and an average day sewer discharge of 67.5 kl.

- If the development generates a greater demand, you may have to pay more in charges. If you are going to sell the development, you have to explain the situation to prospective buyers as part of the requirements of Vendor Disclosure.

## 1. Price changes

The infrastructure contribution you must pay may also change due to:

- Changes to the Consumer Price Index (CPI). Our prices increase by CPI each financial year. CPI is the weighted average of the capital cities CPI for the 12 months to the end of the previous March.
- The NSW Government-directed transition pathway for infrastructure contributions for drinking water and wastewater infrastructure:

| Financial Year payment is made | Percentage of infrastructure contribution payable           |
|--------------------------------|---|
| 1 July 2023 to 30 June 2024    | Infrastructure contribution capped at 0% of the full price  |
| 1 July 2024 to 30 June 2025    | Infrastructure contribution capped at 25% of the full price |
| 1 July 2025 to 30 June 2026    | Infrastructure contribution capped at 50% of the full price |
| 1 July 2026 onwards            | Full price payable  |

No transition pathway applies to your recycled water infrastructure contribution.

- Any updates to our Development Servicing Plans (including prices). Our Development Servicing Plans must be updated every five years. The next updates will be introduced by 31 December 2028.

Your infrastructure contributions become payable once your WSC has submitted all Project Completion Packages under each Developer Works Deed to us confirming that the works required under the Notice are complete.

## Approval of your Building Plans

Your WSC can tell you about the approval process including:

- Your provision, if required, of a “Services Protection Report” (also known as a “pegout”). This is needed to check whether the building and engineering plans show accurately where our assets are located in relation to your proposed building work. Your WSC will then either approve the plans or make requirements to protect those assets before approving the plans.
- Specialist Engineering Assessment requirements
- Possible requirements

- d) Costs
- e) Timeframes.

You can also find information about this process (including technical specifications) if you either:

- Visit [Plumbing, building & developing](#). Here you can find our *technical guidelines - Building over and adjacent to pipe assets*  
or
- Call 13 20 92.

**Notes:**

- The Certificate will not be issued until the plans have been approved and, if required, our assets are altered or deviated
- You can only remove, deviate, or replace any of our pipes using temporary pipework if you have written approval from us. You must engage your WSC to arrange this approval
- You must obtain our written approval before you do any work on our systems. We'll take action to have work stopped on the site if you do not have that approval. We'll apply Section 44 of the Sydney Water Act 1994.

## Special Requirements

### Multi-level individual metering requirements

Your development must either allow for or provide individual metering. This means that you must:

- a) comply at all times and in all respects with the requirements of our "*Multi-level Individual Metering Guide*". You can find this in the [Meters & metered standpipes](#) page on our website
- b) provide and install plumbing and space for individual metering in accordance with our "*Multi-level Individual Metering Guide*".
- c) if and when you implement a strata/ stratum plan (or strata/ stratum subdivide) you must:
  - engage an Accredited Metering Supplier ("AMS") to provide individual metering in accordance with the "*Multi-level Individual Metering Guide*" and meet the cost of the meters and metering system.
  - transfer the meters and metering system to us once the Testing Certificate has been issued by us to the AMS and the AMS has confirmed that payment for the meters and metering system has been paid in full.

**Before the Section 73 Certificate can be issued**, you will be required to sign an undertaking to show that you understand and accept these metering requirements and associated costs.

Visit [Meters & metered standpipes](#) to see the *Multi-level individual metering guide* and find out more.

## What You Must Do To Get A Section 73 Certificate In The Future

If you obtain development consent for a subdivision from your consent authority (this is usually your local council), they will require you to apply to us for a Section 73 (s73) Certificate. You will need to submit a new application (and pay another application fee) to us for that Certificate by using your current or another Water Servicing Coordinator (WSC).

You will find a list of WSCs on our website. The WSC will be your point of contact with us. They can answer most questions that you might have about the s73 process and developer charges and can give you a quote or information about costs for services and works (including our costs).

You can also find out about this process by visiting the [Plumbing, building & developing](#) page on Sydney Water's website.

## Developments where Sydney Water does not have capacity or future servicing plans

For areas not listed on the NSW Government's program, Council strategic plans or on Sydney Water's **Growth Servicing Plan** (available on our website), there may not be capacity or plans to extend or amplify our systems. This may be the case where the area has not been rezoned for urban development or subject to assessment through a planning proposal or State Significant Development Application.

In these circumstances, to progress servicing of your site, the developer would need to carry out an investigation to assess the servicing options to connect to Sydney Water's network. Completion of this work would ultimately deliver a preferred servicing report for the entire development area.

If you choose to proceed with Sydney Water as the water related service provider for your development, we may work with you and your service providers under an appropriate agreement to complete the following steps to our requirements:

- Planning including hydraulic modelling
- Concept design

- Delivery (detailed design and construction)
- Handover of assets to Sydney Water including compliance testing.

**No warranties or assurances can be given about the suitability of this feasibility letter or any of its provisions for any specific transaction. This feasibility letter does not constitute an approval from us and to the extent that it is able, we limit its liability to the reissue of this letter or the return of your application fee. You should rely on your own independent professional advice.**

**END OF LETTER**

## A.4 Appendix D: Minor Drainage System DRAINS Results for the Design 5 minute 5% AEP event

DRAINS results prepared from Version 2025.01.9147.24925

| PIT / NODE DETAILS |         |              |                                    |                        |                   |                   | Version 8      |
|--------------------|---------|--------------|------------------------------------|------------------------|-------------------|-------------------|----------------|
| Name               | Max HGL | Max Pond HGL | Max Surface Flow Arriving (cu.m/s) | Max Pond Volume (cu.m) | Min Freeboard (m) | Overflow (cu.m/s) | Constraint     |
| N13899             | 14.32   |              | 0                                  |                        |                   |                   |                |
| PitG002            | 14.31   | 15.92        | 0.003                              | 0.4                    | 1.59              | 0                 | Inlet Capacity |
| PitG001            | 14.22   | 15.92        | 0.001                              | 0                      | 1.7               | 0                 | Inlet Capacity |
| Syd Wat            | 11.66   |              | 0                                  |                        |                   |                   |                |
| N13900             | 14.41   |              | 0                                  |                        |                   |                   |                |
| PitG003            | 14.41   | 15.92        | 0.003                              | 0.4                    | 1.49              | 0                 | Inlet Capacity |
| N13901             | 14.41   |              | 0.001                              |                        |                   |                   |                |
| N13902             | 14.41   |              | 0.001                              |                        |                   |                   |                |
| N13903             | 14.41   |              | 0.001                              |                        |                   |                   |                |
| N13904             | 14.49   |              | 0.001                              |                        |                   |                   |                |
| PitG004            | 14.49   | 15.96        | 0.018                              | 1.7                    | 1.41              | 0                 | Inlet Capacity |
| N13905             | 14.49   |              | 0.003                              |                        |                   |                   |                |
| N13966             | 13.78   |              | 0.086                              |                        |                   |                   |                |
| PitB005            | 13.63   | 15.3         | 0.005                              | 0.2                    | 1.65              | 0                 | Inlet Capacity |
| PitB004            | 13.53   | 13.54        | 0.001                              | 0.1                    | 0                 | 0                 | Outlet System  |
| PitB003            | 13.34   | 13.67        | 0.007                              | 0.2                    | 0.31              | 0                 | Inlet Capacity |
| PitB002            | 13.26   |              | 0.018                              |                        | 0.44              | 0.007             | Inlet Capacity |
| PitB001            | 13.15   | 14.04        | 0.012                              | 1.3                    | 0.85              | 0                 | Inlet Capacity |
| N13960             | 13.05   |              | 0                                  |                        |                   |                   |                |
| N20539             | 16.02   |              | 0.068                              |                        |                   |                   |                |
| PitB007            | 13.7    | 14.18        | 0.006                              | 0.2                    | 0.46              | 0                 | Inlet Capacity |
| PitB006            | 13.66   |              | 0                                  |                        | 1.62              |                   | None           |
| PitB104            | 14.41   | 15.05        | 0.004                              | 0.2                    | 0.63              | 0                 | Inlet Capacity |
| PitB103            | 14.28   | 15.04        | 0.001                              | 0.1                    | 0.76              | 0                 | Inlet Capacity |
| PitB102            | 13.92   | 14.49        | 0.006                              | 0.6                    | 0.54              | 0                 | Inlet Capacity |
| N102551            | 13.81   |              | 0.007                              |                        |                   |                   |                |
| PitR001            | 14.15   | 15.89        | 0.027                              | 1.4                    | 1.7               | 0                 | Inlet Capacity |
| PitG402            | 14.51   | 14.53        | 0.008                              | 0.3                    | 0                 | 0                 | Outlet System  |
| N108725            | 15.32   |              | 0                                  |                        |                   |                   |                |
| PitG005            | 15.26   | 15.99        | 0.018                              | 1                      | 0.69              | 0                 | Inlet Capacity |

### SUB-CATCHMENT DETAILS

| Name | Max Flow Q (cu.m/s) | Paved Max Q (cu.m/s) | Grassed Max Q (cu.m/s) | Paved Tc (min) | Grassed Tc (min) | Supp. Tc (min) | Due to Storm |
|------|---------------------|----------------------|------------------------|----------------|------------------|----------------|--------------|
|------|---------------------|----------------------|------------------------|----------------|------------------|----------------|--------------|

|            |       |       |       |   |   |   |   |                            |
|------------|-------|-------|-------|---|---|---|---|----------------------------|
| G201       | 0     | 0     | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G002       | 0.007 | 0.007 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G001       | 0.001 | 0     | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G304       | 0     | 0     | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G003       | 0.007 | 0.007 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G303       | 0.001 | 0     | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G302       | 0.001 | 0     | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G301       | 0.001 | 0     | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G403       | 0.001 | 0     | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G004       | 0.036 | 0.036 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G401       | 0.003 | 0     | 0.003 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| RWT02      | 0.086 | 0.086 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B005       | 0.005 | 0     | 0.005 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B004       | 0.003 | 0     | 0.003 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B003       | 0     | 0     | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B001       | 0.024 | 0.005 | 0.019 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| RWT01      | 0.068 | 0.068 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| Pre-dev    |       |       |       |   |   |   |   | 5% AEP, 5 min burst, Storm |
| Greenfield | 0.16  | 0     | 0.16  | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B007       | 0.006 | 0.001 | 0.005 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B104       | 0.004 | 0.003 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B103       | 0.001 | 0     | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B102       | 0.012 | 0.011 | 0.001 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| B101       | 0.007 | 0.002 | 0.006 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| R001       | 0.027 | 0.027 | 0     | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |
| G402       | 0.008 | 0     | 0.008 | 5 | 7 | 2 | 1 | 5% AEP, 5 min burst, Storm |

5% AEP, 5 min burst, Storm

G005                    0.018      0.013      0.005            5            7            2    1

PIPE DETAILS

| Name      | Max Q<br>(cu.m/s) | Max V<br>(m/s) | Max U/S<br>HGL (m) | Max<br>D/S<br>HGL<br>(m) | Due to Storm                 |
|-----------|-------------------|----------------|--------------------|--------------------------|------------------------------|
| pG201     | 0                 | 0              | 14.315             | 14.315                   | 5% AEP, 5 min burst, Storm 1 |
| pG002     | 0.064             | 1.03           | 14.258             | 14.217                   | 5% AEP, 5 min burst, Storm 1 |
| pG001     | 0.065             | 1.51           | 14.125             | 14.118                   | 5% AEP, 5 min burst, Storm 1 |
| P4894     | 0.06              | 5.55           | 13.473             | 11.663                   | 5% AEP, 5 min burst, Storm 1 |
| pG304     | 0                 | 0              | 14.407             | 14.407                   | 5% AEP, 5 min burst, Storm 1 |
| pG003     | 0.059             | 0.85           | 14.376             | 14.315                   | 5% AEP, 5 min burst, Storm 1 |
| pG303     | 0.001             | 0.08           | 14.412             | 14.407                   | 5% AEP, 5 min burst, Storm 1 |
| pG302     | 0.001             | 0.07           | 14.407             | 14.407                   | 5% AEP, 5 min burst, Storm 1 |
| pG301     | 0.001             | 0.04           | 14.405             | 14.407                   | 5% AEP, 5 min burst, Storm 1 |
| pG403     | 0.001             | 0.05           | 14.49              | 14.487                   | 5% AEP, 5 min burst, Storm 1 |
| pG004     | 0.051             | 0.75           | 14.455             | 14.407                   | 5% AEP, 5 min burst, Storm 1 |
| pG401     | 0.003             | 0.16           | 14.489             | 14.487                   | 5% AEP, 5 min burst, Storm 1 |
| pRWT02    | 0.088             | 1.25           | 13.783             | 13.633                   | 5% AEP, 5 min burst, Storm 1 |
| pB005     | 0.079             | 1.11           | 13.538             | 13.532                   | 5% AEP, 5 min burst, Storm 1 |
| pB004     | 0.081             | 1.2            | 13.431             | 13.342                   | 5% AEP, 5 min burst, Storm 1 |
| pB003     | 0.081             | 1.11           | 13.283             | 13.264                   | 5% AEP, 5 min burst, Storm 1 |
| pB002     | 0.08              | 1.27           | 13.199             | 13.15                    | 5% AEP, 5 min burst, Storm 1 |
| pB001     | 0.093             | 1.62           | 13.073             | 13.049                   | 5% AEP, 5 min burst, Storm 1 |
| Pipe11135 | 0.068             | 1.78           | 16.018             | 15.958                   | 5% AEP, 5 min burst, Storm 1 |
| pB007     | 0.007             | 0.45           | 13.693             | 13.663                   | 5% AEP, 5 min burst, Storm 1 |
| pB006     | 0.013             | 0.19           | 13.663             | 13.633                   | 5% AEP, 5 min burst, Storm 1 |
| pB104     | 0.003             | 0.83           | 14.391             | 14.282                   | 5% AEP, 5 min burst, Storm 1 |
| pB103     | 0.004             | 0.84           | 14.261             | 14.194                   | 5% AEP, 5 min burst, Storm 1 |
| pB102     | 0.014             | 1.02           | 13.895             | 13.824                   | 5% AEP, 5 min burst, Storm 1 |
| pR001     | 0.02              | 1.16           | 14.135             | 14.015                   | 5% AEP, 5 min burst, Storm 1 |
| pG402     | 0.008             | 0.46           | 14.5               | 14.487                   | 5% AEP, 5 min burst, Storm 1 |
| Pipe85307 | 0                 | 0              | 15.32              | 15.259                   | 5% AEP, 5 min burst, Storm 1 |
| pG005     | 0.015             | 1.01           | 15.249             | 15.074                   | 5% AEP, 5 min burst, Storm 1 |

CHANNEL DETAILS

| Name | Max Q<br>(cu.m/s) | Max V<br>(m/s) | Due to Storm |
|------|-------------------|----------------|--------------|
|------|-------------------|----------------|--------------|

OVERFLOW ROUTE DETAILS

| Name   | Max Q<br>U/S | Max Q<br>D/S | Safe Q | Max D | Max DxV | Max<br>Width | Max V | Due to Storm |
|--------|--------------|--------------|--------|-------|---------|--------------|-------|--------------|
| OF3338 | 0            | 0            | 0.469  | 0     | 0       | 0            | 0     | 0            |
| OF3350 | 0            | 0            | 0.469  | 0     | 0       | 0            | 0     | 0            |

|                          |       |       |       |       |      |      |      |                              |
|--------------------------|-------|-------|-------|-------|------|------|------|------------------------------|
| OF2603                   | 0     | 0.006 | 0.917 | 0     | 0    | 0    | 0    | 5% AEP, 5 min burst, Storm 1 |
| OF2223                   | 0     | 0.006 | 0.788 | 0     | 0    | 0    | 0    | 5% AEP, 5 min burst, Storm 1 |
| OF4633                   | 0     | 0.003 | 1.415 | 0.008 | 0.01 | 0.42 | 1.08 | 5% AEP, 5 min burst, Storm 1 |
| OF4629                   | 0     | 0     | 1.415 | 0     | 0    | 0    | 0    |                              |
| OF4627                   | 0     | 0     | 1.415 | 0     | 0    | 0    | 0    |                              |
| OF1212                   | 0.007 | 0.008 | 1.415 | 0.028 | 0.01 | 1.42 | 0.37 | 5% AEP, 5 min burst, Storm 1 |
| OF2606                   | 0     | 0     | 1.415 | 0     | 0    | 0    | 0    |                              |
| OF1399                   | 0     | 0     | 5.899 | 0     | 0    | 0    | 0    |                              |
| OF3346                   | 0     | 0     | 1.415 | 0     | 0    | 0    | 0    |                              |
| OF3348                   | 0     | 0     | 1.415 | 0     | 0    | 0    | 0    |                              |
| OF3344                   | 0     | 0     | 1.415 | 0     | 0    | 0    | 0    |                              |
| Overland flow gully B101 | 0.018 | 0.013 | 0.455 | 0.09  | 0.03 | 2.12 | 0.5  | 5% AEP, 5 min burst, Storm 1 |
| OF3342                   | 0     | 0.012 | 2.89  | 0.025 | 0.01 | 1.24 | 0.52 | 5% AEP, 5 min burst, Storm 1 |
| OF2597                   | 0     | 0.022 | 1.209 | 0.046 | 0.01 | 2.31 | 0.26 | 5% AEP, 5 min burst, Storm 1 |
| OF2590                   | 0     | 0.036 | 0.749 | 0     | 0    | 0    | 0    | 5% AEP, 5 min burst, Storm 1 |

DETENTION BASIN DETAILS

| Name      | Max WL | MaxVol | Max Q<br>Total | Max Q<br>Low<br>Level | Max Q<br>High<br>Level |
|-----------|--------|--------|----------------|-----------------------|------------------------|
| Basin1114 | 14.01  | 29.9   | 0.06           | 0.06                  | 0                      |

CONTINUITY CHECK for 5% AEP, 5 min burst, Storm 1

| Node      | Inflow<br>(cu.m) | Outflow<br>(cu.m) | Storage<br>Change<br>(cu.m) | Difference<br>% |
|-----------|------------------|-------------------|-----------------------------|-----------------|
| N13899    | 0.11             | 0.11              | 0                           | 0.1             |
| PitG002   | 28.15            | 28.19             | 0                           | -0.1            |
| PitG001   | 28.48            | 28.6              | 0                           | -0.4            |
| Basin1114 | 57.29            | 52.98             | 4.31                        | 0               |
| Syd Wat   | 52.98            | 52.98             | 0                           | 0               |
| N13900    | 0.09             | 0.06              | 0                           | 26              |
| PitG003   | 25.56            | 24.77             | 0                           | 3.1             |
| N13901    | 0.39             | 0.4               | 0                           | -4.3            |
| N13902    | 0.27             | 0.27              | 0                           | -3.3            |
| N13903    | 0.2              | 0.2               | 0                           | -0.5            |
| N13904    | 0.29             | 0.29              | 0                           | -1.3            |
| PitG004   | 22.48            | 21.17             | 0                           | 5.8             |
| N13905    | 1.02             | 1.02              | 0                           | -0.2            |

|         |       |       |   |       |
|---------|-------|-------|---|-------|
| N13966  | 25.84 | 24.82 | 0 | 3.9   |
| PitB005 | 28.89 | 29.22 | 0 | -1.2  |
| PitB004 | 30.95 | 30.46 | 0 | 1.6   |
| PitB003 | 35.05 | 35.21 | 0 | -0.4  |
| PitB002 | 43.09 | 42.59 | 0 | 1.2   |
| PitB001 | 48.64 | 49.19 | 0 | -1.1  |
| N13960  | 49.19 | 49.19 | 0 | 0     |
| N13971  | 0     | 0     | 0 | 0     |
| N20539  | 20.52 | 20.52 | 0 | 0     |
| N67553  | 56.4  | 56.4  | 0 | 0     |
| PitB007 | 1.96  | 1.92  | 0 | 2.1   |
| PitB006 | 1.92  | 2.14  | 0 | -11.6 |
| PitB104 | 1.13  | 1.07  | 0 | 5.7   |
| PitB103 | 1.56  | 1.64  | 0 | -4.9  |
| PitB102 | 5.59  | 5.6   | 0 | -0.2  |
| N102551 | 8.15  | 6.07  | 0 | 25.5  |
| PitR001 | 8.16  | 6.32  | 0 | 22.6  |
| PitG402 | 2.68  | -1.47 | 0 | 154.8 |
| N108725 | 0     | 0     | 0 | 0     |
| PitG005 | 5.66  | 0.25  | 0 | 95.6  |
| N111822 | 0     | 0     | 0 | 0     |
| N124569 | 0     | 0     | 0 | 0     |
| N127853 | 0     | 0     | 0 | 0     |
| N127855 | 0     | 0     | 0 | 0     |
| N127857 | 0     | 0     | 0 | 0     |
| N131408 | 0     | 0     | 0 | 0     |
| N131412 | 0     | 0     | 0 | 0     |

Run Log for DRAINS v2025.01.9147.24925 - 260223\_Drainage Plan

Run Log for DRAINS v2025.01.9147.24925 - 260223\_Drainage Plan.drn run at 09:49:40 on 2/3/2026.

No water upwelling from any pit.

Freeboard was less than 0.15m at PitG402, PitB004

Flows were safe in all overflow routes.

