

# 225-245 Martin Road, Bradfield SSDA-97688711

## Project Maverick – Internal Works Groundwater Assessment Report

06/05/2026



## 225-245 Martin Road, Bradfield

### Project Maverick – Internal Works (SSD-97688711) – Groundwater Assessment Report

06/05/2026

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MAR-AAP-DA-INT-RPT-GW-0001



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#### Version Control

| Revision No. | Date Issued | Description         | Author       | Approver  |
|--------------|-------------|---------------------|--------------|-----------|
| A            | 19/03/2026  | Issued for Approval | Callum Bates | Paul Goff |
| B            | 06/05/2026  | Issued for Approval | Callum Bates | Paul Goff |

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## Executive Summary

This Groundwater Assessment Report has been prepared by Arcadis to address the site-specific Secretary's Environmental Assessment Requirements (SEARs) and associated agency requirements (DCCEEW and NSW EPA) for the proposed State Significant Development Application (SSDA) No. 97688711. The proposed development is being undertaken by Goodman Property Services (Aust) Pty Ltd (Applicant) on behalf of Goodman Western Sydney Pty Limited as trustee for the Goodman Western Sydney Trust (Owner). The development is located at 225 – 245 Martin Road, Bradfield, 2556 (the Site).

The Internal Works comprise the construction, fit-out and operation of 14 warehouse buildings, an Active Open Space and amenities precinct, and associated internal infrastructure. This assessment evaluates potential groundwater interactions and associated impacts on aquifers, watercourses, water resources and groundwater users arising from changes to groundwater levels during construction and operation of the Internal Works.

For the purpose of the assessment, Bulk Finished Surface Levels (BFSs) have been adopted. BFSs represent the underside of pavements, slabs, topsoil and verge material, retaining-wall backfill, and on-site detention tanks. Where practicable through civil design, BFSs have been raised to avoid or minimise interaction with the unconfined Bringelly Shale aquifer. However, localised groundwater interaction remains unavoidable in several areas due to shallow groundwater levels, including Lots 7 and 10, riparian channels, trunk drainage channels (Developer and Sydney Water assets), and subsurface drainage systems along the Collector Road.

Representative groundwater take associated with seepage to the BFSs during construction is estimated to be less than 1.0 ML/year. Over the construction period, BFSs will be progressively raised through placement of pavements, slabs and topsoil to achieve the Finished Surface Levels that represent operational conditions. However, operational groundwater take is expected to remain of a similar order of magnitude (< 1.0 ML/year), noting that permanent groundwater control and drainage measures will likely be required in the operational case, although will be subject to confirmation at detailed design stage and the estimate refined accordingly.

Estimated groundwater take volumes for Internal Works package are below the 3 ML/year threshold that would trigger the requirement for a Water Access Licence (WAL) for dewatering activities. Groundwater take estimates have been derived using representative hydraulic parameters consistent with the geological conditions encountered at the Site. While actual groundwater take volumes may vary due to spatial variability in ground conditions, it is considered more likely than not that groundwater volumes encountered during excavation will be of a similar order of magnitude to those estimated. Notwithstanding this, the Site holds an existing WAL (10WA109463) for Lot 2 DP 1278780 and Lot 3 DP 1278780, which authorises a share component of 25 units (equivalent to 25 ML/year). This allocation would be sufficient to cover any dewatering licensing requirements should groundwater take exceed the 3 ML/year threshold under NSW regulatory provisions and/or would remain within the existing WAL allocation.

Assessment against the NSW Aquifer Interference Policy (2012) Minimal Impact Considerations indicates that the proposed Internal Works are unlikely to exceed minimal impact thresholds for groundwater level, pressure, or quality. Overall, the assessment concludes that the proposed Internal Works can be undertaken with minimal groundwater impact as defined by the NSW Aquifer Interference Policy, provided appropriate licensing, monitoring and mitigation measures are implemented where required.

## 1 Introduction

This Groundwater Assessment Report has been prepared by Arcadis to address the site-specific Secretary's Environmental Assessment Requirements (SEARs) received in respect of the proposed State Significant Development Application (SSDA) No. 97688711. The proposed development is being undertaken by Goodman Property Services (Aust) Pty Ltd (Applicant) on behalf of Goodman Western Sydney Pty Limited as trustee for the Goodman Western Sydney Trust (Owner). The development is located at 225 – 245 Martin Road, Bradfield, 2556 (the Site).

The SSDA seeks approval for the construction, fit-out (including office and warehouse racking) and operation of 14 warehouse buildings, Active Open Space & amenities precinct (including a café) and internal site infrastructure works. Specifically, this includes:

### Warehouses and Distribution Buildings

- 24/7 use of the Warehouse and distribution use for all warehouse buildings.
- A total developable site area of approximately 1,124,286 sqm (or 112.4 Ha), comprising construction, fit-out and operation of approximately 597,610 sqm of warehouse and office GLA space across 14 small, medium and large format warehouses, ancillary offices and onsite parking. Warehouses range between 10,000sqm to 100,000sqm with heights of either 14.6m or 16.8m (excluding rooftop plant and solar).
  - The above Warehouse and Distribution buildings will also include guardhouses, dock offices loading bays, landscaping, electric vehicle charging, solar panels and signage.

### Active Open Space & Amenities Precinct

- Active open space & public amenities precinct (including a café) totalling approximately 708 sqm of GLA within the western Enterprise zone to align with Connecting with Country outcomes.

### Internal Estate Infrastructure

- Construction of the following roads, and associated services infrastructure (being electricity, potable, recycled & wastewater and telecommunications network):
  - Internal estate council roads.
  - Internal estate collector roads as identified on the Precinct Plan.
  - Internal estate retaining walls (including importation of engineered fill for backfill of walls)
  - Corridor reservation, design and partial construction of the following primary arterial roads located within the site:
    - Corridor reservation for the Eastern Ring Road (ERR) between the northern site boundary and southern site boundary.
    - Corridor reservation, design and construction (50%) of 'H-Road' being the east-west connection between the proposed ERR intersection and eastern collector road intersection within the site.
- Reservation of the remaining 'H-Road' arterial road corridor to the east of the proposed eastern collector road (N.B. this corridor will ultimately form part of a future arterial regional road connection between Devonshire Road and the ERR identified in Schedule 3 – List of Infrastructure in the Aerotropolis Special Infrastructure Contribution)
- Regional stormwater and drainage infrastructure (on behalf of Sydney Water) identified within the ENZ land. This will include:
  - Stormwater Basins per the Sydney Water Integrated Stormwater Management Scheme
  - Sediment Basin
  - Bio retention Basin
  - Wetland Basin
  - Pond

- Trunk Drainage channels as identified per the Integrated Stormwater Management Scheme

#### **Other**

- Landscaping across the Site in accordance with Precinct Plan, Connecting with Country and airport safeguarding requirements.
- Vegetation Management Plan (VMP).
- 3 x 12m Estate Identification Pylon Signs on Lots 6, 7 and 8 (excludes individual Warehouse wayfinding signage).
- Public art within the western active open space & amenity precinct.
- Subdivision of the estate.

### **Related Applications/Activities**

#### **Part 5 Activity – External Works Lead in Roads and Services**

The Applicant is proposing access to the Site via the following route which will be upgraded to be in accordance with the Precinct Plan

##### **Part 1 - Martin Road / Elizabeth Drive intersection upgrades**

- It is expected that these works will be undertaken by Transport for New South Wales (TfNSW) via an amendment to the existing Part 5 Activity Approval issued by TfNSW for the Elizabeth Drive Upgrade.
- It is understood that TfNSW will undertake these works with a target completion date of December 2029 (being prior to target date of operations for the first warehouse building at the site);

##### **Part 2 -4 - Martin Road / East West Collector Road / Lawson Road Upgrades**

- Further to Part 1, access to the site is proposed to be constructed concurrently as follows:
  - Part 2 – access from the Martin Road / Elizabeth Drive intersection will continue down Martin Road and join the future east / west collector road identified within the Precinct Plan through Lot 36 DP 3050.
    - o The portion of road between the Elizabeth Drive intersection and future east / west collector road will be upgraded with a temporary access strategy to be agreed with Council consistent with Part 3.2, Requirement DS5 of the Precinct Plan.
  - Part 3 – The east / west collector road through Lot 36 DP 3050 will be delivered in ultimate form to connect Martin Road with Lawson Road consistent with its designation under the Precinct Plan and relevant cross section within the Aerotropolis DCP
  - Part 4 – From the east / west collector road connection on Lawson Road, the portion of Lawson Road south through to the Site will be upgraded in ultimate form consistent with its designation under the Precinct Plan and relevant cross section within the Aerotropolis DCP.
- Goodman have discussed the approach outlined within Parts 2-4 with Liverpool City Council. The anticipated completion date for these upgrades is December 2029, based on a commencement date of June 2028. These works are expected to be completed by Council prior to operation of the first warehouse building at the site.

#### **Rehabilitation, Quarrying and Bulk Earthworks SSDA 97711727**

Further to this, a separate SSDA No. SSD-97711727 has been proposed by the Applicant for site preparation works only (i.e no buildings, retaining walls or other infrastructure works), including the rehabilitation of areas disturbed by historic mining and brick-making operations, as well as remediation and bulk earthworks across other areas of the site to make the site suitable for intended future land use. The proposed application also seeks approval for demolition of any remaining structures on the Site.

Cumulatively, these three applications together, seek to facilitate the development of a new industrial estate at the Site.

## 2 SEARs and Other Agency Requirements

Secretary's Environmental Assessment Requirements (SEARs) for the project are outlined in Table 1, and other agency requirements from Department of Climate Change, Energy the Environment and Water (DCCEEW) and NSW EPA are provided in Table 2.

Table 1 Secretary's Environmental Assessment Requirements (SEARs)

| Condition/Item                                                                                                                                                                                                                                                                                                                                                                                                               | Response                                                                                   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| <b>Water Management</b> – including:                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                            |
| An assessment of potential surface and groundwater impacts (both quality and quantity) associated with the development, including potential impacts on watercourses, riparian areas, groundwater, and groundwater-dependent communities nearby in accordance with relevant water quality guidelines and the Department of Climate Change, Energy, the Environment and Water - Water Group (DCCEEW-Water) Groundwater Toolkit | Refer to Section 11 and 12<br>Refer to Surface Water Impact Assessment, provided by Engeny |
| A description of groundwater and surface water conditions and all works/activities that may intercept, extract, use, divert or receive surface water and/or groundwater (both temporary and permanent)                                                                                                                                                                                                                       | Refer to Section 12 and Surface Water Impact Assessment, provided by Engeny                |
| Details of any surface or groundwater mitigation, management and monitoring activities and methodologies.                                                                                                                                                                                                                                                                                                                    | Refer to Section 12                                                                        |

Table 2 Other Agency Requirements (DCCEEW)

| Item                                                                                                                                                         | Response                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>DCCEEW Requirements – Water and Soils</b>                                                                                                                 |                                                                                       |
| 17. The EIS must map the following features relevant to water and soils including:                                                                           |                                                                                       |
| Acid sulfate soils (Class 1, 2, 3 or 4 on the Acid Sulfate Soil Planning Map).                                                                               | Not included in the scope of this report. Refer to Contamination Report (JBS&G, 2025) |
| Rivers, streams, wetlands, estuaries (as described in s.4.2 of the BAM).                                                                                     | Refer to Section 8 and covered by Surface Water Assessment                            |
| Wetlands as described in s.4.2 of the BAM.                                                                                                                   | Refer to Surface Water Assessment                                                     |
| Groundwater.                                                                                                                                                 | Refer to Section 7 and Appendices                                                     |
| Groundwater dependent ecosystems.                                                                                                                            | Refer to Section 9 and Appendix E                                                     |
| Proposed intake and discharge locations.                                                                                                                     | Refer to Section 11                                                                   |
| 18. The EIS must describe background conditions for any water resource likely to be affected by the development, including existing surface and groundwater. | Refer to Section 7 and 8                                                              |
| 19. The EIS must assess the impact of the development on hydrology, including:                                                                               |                                                                                       |

| Item                                                                                                                                                                                                                                                                                                                                                                                                                                   | Response                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas.                                                                                                                                                                                                                                                                                                                                                 | Refer to Surface Water Impact Assessment, provided by Engeny                        |
| Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems.                                                                                                                                                                                                                                                                                                                                      | Refer to Surface Water Impact Assessment, provided by Engeny                        |
| <b>DCCEEW Requirements – Water Take and Licencing</b>                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                     |
| A detailed and consolidated site water balance.                                                                                                                                                                                                                                                                                                                                                                                        | Refer to Surface Water Impact Assessment, provided by Engeny                        |
| Description of all works/activities that may intercept, extract, use, divert or receive surface water and/or groundwater. This includes the description of any development, activities or structures that will intercept, interfere with or remove groundwater, both temporary and permanent.                                                                                                                                          | Refer to Section 11<br>Refer to Surface Water Impact Assessment, provided by Engeny |
| Details of all water take for the life of the project and post closure where applicable. This is to include water taken directly and indirectly, and the relevant water source where water entitlements are required to account for the water take. If the water is to be taken from an alternative source confirmation should be provided by the supplier that the appropriate volumes can be obtained.                               | Refer to Section 11                                                                 |
| Details of Water Access Licences (WALs) held to account for any take of water where required, or demonstration that WALs can be obtained prior to take of water occurring. This should include an assessment of the current market depth where water entitlement is required to be purchased. Any exemptions or exclusions to requiring approvals or licenses under the Water Management Act 2000 should be detailed by the proponent. | Refer to Section 11                                                                 |
| <b>DCCEEW Requirements - Water Impacts</b>                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |
| A description of groundwater conditions that provides an understanding of groundwater level across the site under a range of wet and dry conditions.                                                                                                                                                                                                                                                                                   | Refer to Section 7                                                                  |
| Assessment of impacts on surface and groundwater sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian land, groundwater dependent ecosystems, and ground water levels; including measures proposed to reduce and mitigate these impacts.                                                                                                        | Refer to Section 12                                                                 |
| Proposed surface and groundwater monitoring activities and methodologies.                                                                                                                                                                                                                                                                                                                                                              | Refer to Surface Water Impact Assessment, provided by Engeny                        |



## 3 Objectives and Scope of Works

### 3.1 Objectives

The primary objectives of this assessment are to identify and describe groundwater conditions within the project site boundary, and to identify and describe any groundwater interactions or interference activities resulting from the Internal Works associated with SSD-97688711, as described in Section 1. This includes the following, in accordance with the SEARS:

- An assessment of the likely impacts on the quality and quantity of existing groundwater resources
- An assessment of the likely impacts of the development on aquifers, watercourses, riparian land, water-related infrastructure, and other groundwater users
- Consideration of any impacts to land adjoining the site, including in relation to groundwater quality
- A detailed description of the proposed groundwater management system, groundwater monitoring program and other measures to mitigate groundwater impacts

This assessment focuses specifically on the potential impacts on aquifers, watercourses, water resource, and groundwater users arising from changes to groundwater levels. Assessment of potential groundwater quality impacts has been undertaken as a separate assessment (JBS&G, 2025) and is not covered in this report.

### 3.2 Scope of Works

The scope of works undertaken to address the project objectives have included a desktop assessment and several groundwater monitoring events to identify groundwater levels across the site and determine potential impacts as a result of Internal Works (as described in Section 1).

## 4 Site Description

The Site is identified as 225-245 Martin Road Bradfield. The key features of the Site are outlined in Table 3 and the site map is provided in Figure 1.

Table 3 SSD-97688711 Site description

| Description                 | Site Detail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Land Configuration</b>   | <ul style="list-style-type: none"> <li>• Lot 1 DP 1278780</li> <li>• Lot 2 DP 1278780</li> <li>• Lot 3 DP 1278780</li> <li>• Lot 55 DP 3050</li> <li>• Lot 56 DP 3050</li> </ul> <p><i>Note (1) – The above lots do not include the works proposed to be included under External Lead In works.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Existing Land Use(s)</b> | <p>The Site is Quarry and Brick Making Facility. The structures and hardstand areas used for the quarry operations are located in the central portion of the Site, connected by an internal road network. In addition, three pits are located along the southern and southeast portion of the Site.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Surrounding Land Use</b> | <p>Surrounding land uses include:</p> <ul style="list-style-type: none"> <li>• <b>North:</b> Land to the north is predominantly characterised by a mix of rural, agricultural, landscape industries and, residential properties accessed by Lawson and Martin Roads. It is noted that several sites are subject to existing SSDAs for industrial / warehouse developments. Both Martin and Lawson Roads intersect with Elizabeth Drive, a major Arterial Road that provides access to the WSI site and the broader regional road network including the M7, Northern Road and the future M12.</li> <li>• <b>South:</b> The land to the south is currently rural however is subject to the IPG Master Plan which was approved on 11 July 2025. The approved Master Plan covers 184 hectares and aims to support over 12,400 jobs. Inghams Property Group has allocated around 625,467 sqm for employment space, focusing on advanced manufacturing, logistics, and community services. The plan includes a mix of industrial and commercial zones, a local centre, and accessible public green spaces near the Western Sydney International Airport.</li> <li>• Further to the south-west of the site, is Bradfield City Centre, a 114-hectare planned urban development adjacent to Western Sydney International Airport. Designed to be a hub for innovation, advanced industries, and economic growth, it has the potential to create 20,000 jobs and provide 10,000 homes, including affordable housing. The Bradfield City Master Plan prioritises sustainability, integrating green spaces, climate-resilient infrastructure, and a commitment to achieving net-zero emissions.</li> <li>• <b>East:</b> Further east of the Wianamatta-South Creek which bounds the site, is the suburb of Kemps Creek. This land is characterised by a mix of open space, rural, agricultural, emerging urban development, and residential properties that are non-initial precincts under the WSAP but intended for employment generating uses</li> </ul> |

| Description                         | Site Detail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                     | <ul style="list-style-type: none"> <li><b>West:</b> To the immediate west of the Site, bound by Badgerys Creek, is Western Sydney International Airport (WSI). Located in Badgerys Creek, WSI is a major federal infrastructure project designed to accommodate Sydney's future aviation needs. Set to commence operations in 2026, WSI will initially handle 10 million passengers annually and operate 24/7. Badgerys Creek Road also travels in a north-south direction to the west of the site. It provides a north-south connection between Elizabeth Drive and the Northern Road.</li> </ul> |
| <b>Site Access and Road Network</b> | The Site is currently accessible from Martin Road which is located at the north-eastern boundary. The ultimate access to the site is in accordance with the proposed design via separate Part 5 Approvals with Transport for New South Wales and Liverpool City Council                                                                                                                                                                                                                                                                                                                            |



Figure 1 Aerial Photo [Source: Urbis]

## 5 Proposed Development – Internal Works

As outlined in the introduction, the Internal Works SSD 97688711 is seeking approval for the construction, fit-out (including office and standard warehouse racking) and operation of 14 warehouse buildings, Active Open Space & amenities precinct (including a café) and internal site infrastructure works.

The latest Masterplan Delivered by Goodman is presented in Appendix A.



## 6 Regulatory and Approvals Frameworks – SSDs – Groundwater

### 6.1 Water Management Act

This is the foundational legislation for water resource management in NSW, providing for the sustainable and integrated management of the State's water sources, including groundwater, for the benefit of present and future generations.

For SSD projects, this Act requires water access licences (WALs) to account for any incidental or consumptive water take from a water source, including groundwater. While some specific approvals (like Water Supply Work or Water Use Approvals) are typically not required for approved SSD where impacts were assessed in the Environmental Impact Statement (EIS), a WAL is mandatory for any water extracted or removed (whether for use or incidentally, such as from dewatering during construction or ongoing mine/void inflow during operation); this includes:

- Dewatering: Pumping water out of an excavation or mine pit during construction or operation to keep the work area dry.
- Inflows/Seepage: Ongoing seepage or inflow into underground works (e.g., tunnels, basements, or mine voids) after construction.

The WAL secures a legal entitlement to a share of water from the specific groundwater source (known as the Water Sharing Plan area), ensuring the total extraction remains within the resource limits set by the relevant Water Sharing Plan (WSP). The volume of water that needs to be licensed must be predicted and justified in the Environmental Impact Statement (EIS).

### 6.2 New South Wales Aquifer Interference Policy

The New South Wales Aquifer Interference Policy (AIP) is a state-wide policy established under the Water Management Act 2000 to ensure the equitable sharing of water and the proper assessment and licensing of water taken by "aquifer interference activities."

An aquifer interference activity is broadly defined to include the penetration of an aquifer, interference with its water or flow, or the taking of water in the course of mining, extraction, or other large projects (like dewatering for construction).

For SSD projects, the AIP is crucial as it establishes "minimal impact considerations" for both groundwater quantity (availability for other users and ecosystems) and quality. Proponents must demonstrate, through their EIS, that both the construction and operation of the project will meet these minimal impact criteria on water-dependent assets and other water users.

The policy also mandates the required licensing for any water take (incidental or consumptive) that occurs during the whole life of the project, including post-closure (e.g., perpetual void inflow).

### 6.3 Major Projects Groundwater Toolkit and Guidelines

This toolkit, provided by the NSW Government (often Department of Climate Change, Energy, the Environment and Water), is a set of overarching and technical guidelines specifically designed to help proponents of SSD and State Significant Infrastructure (SSI) prepare comprehensive and compliant groundwater assessments. The toolkit's purpose is to ensure that proposed activities comply with the Water Management Act 2000 and the NSW Aquifer Interference Policy. It includes:

- **Guideline for Groundwater Documentation for SSD/SSI Projects:** Outlining the necessary content and structure for the groundwater impact assessment section of the EIS. Key requirements of this guideline include:
  - Defining the geological units and groundwater sources (aquifers)
  - Identifying all Water Dependent Ecosystems (WDEs), including rivers, wetlands, and vegetation, that rely on the groundwater source
  - Mapping all existing groundwater users (bores, wells) within the area of influence, and
  - Determining the predicted maximum volume of water take and the required Water Access Licence (WAL) volume.
- **Minimum Groundwater Modelling Requirements for SSD/SSI Projects:** Setting the technical standards for groundwater modelling used to predict impacts during both construction and operation, ensuring the models are robust and scientifically defensible. Key requirements of this guideline include:
  - Model Conceptualisation: Defining the system and its boundaries accurately
  - Model Calibration and Validation: Demonstrating that the model accurately reflects real-world groundwater behaviour
  - Predictive Scenarios: Running scenarios for both construction (dewatering) and long-term operation/closure to forecast the extent and magnitude of groundwater drawdown and water quality changes
- **Cumulative Groundwater Impact Assessment Approaches:** Guiding the proponent on how to assess the combined effect of their project with other existing and future developments, a critical requirement for projects with long construction or operational phases. Key requirements of this guideline include:
  - Quantifying the total impact of all major activities on the groundwater resource, ensuring the cumulative impact does not breach the long-term limits established by the Water Sharing Plans (WSPs).

## 6.4 Minimum Requirements for Building Site Groundwater Investigations and Reporting

While covering all building sites, this guideline is relevant for SSD urban construction projects involving deep excavations that intersect groundwater. This document sets the minimum standards for site investigation, reporting, and monitoring bore installation to properly characterise the groundwater system. The key requirements of this guideline include:

- Establishing baseline conditions:
  - Installing monitoring bores
  - Collecting baseline data on groundwater level and quality
- Defining and quantifying impacts:
  - Developing a conceptual hydrogeological model
  - Quantifying water take
- Assessing and managing risks:
  - Completing an Impact assessment
  - Compliance with AIP criteria
  - Preparing a dewatering management plan
- Post construction:
  - Completion report

This guideline is designed to ensure all necessary hydrogeological data is collected and reported accurately for projects involving excavation below the water table.



## 7 Groundwater Conditions

### 7.1 Hydrogeology

#### 7.1.1 Soil and Geology

The Site is located in the Upper South Creek (Sydney Basin Sediments) Hydrogeological Landscape (HGL). This HGL is characterised by low hills on Triassic shale and sandstone within the Sydney Basin at Badgerys Creek and Catherine Field. It is an area of moderate to high rainfall (~800 mm) located in the centre of the Western Sydney region.

The HGL is underlain by Triassic sedimentary rocks from the Wianamatta Group. The major unit is the Bringelly Shale, with minor Ashfield Shale and Minchinbury Sandstone. These are primarily composed of shale, carbonaceous claystone, laminite, lithic sandstone, and rare coal. A shallow weathered zone of Bringelly Shale is typically present up to 4 m below ground surface. Weathered material is described to be silty CLAY and CLAY.

Soils across the landscape are complex, forming part of the Blacktown, Second Ponds Creek, and South Creek Soil Landscapes. Common soils on the low hills and rises (Blacktown SL) are Sodic Red and Yellow Kurosols (Red/Yellow Podzolics). The footslopes and plains (Second Ponds Creek SL) have Brown and Yellow Sodosols (Soloths) and Chromosols, while the floodplains (South Creek SL) consist of deep layered alluvial sediments. A map of the site geology is presented in Figure 2.

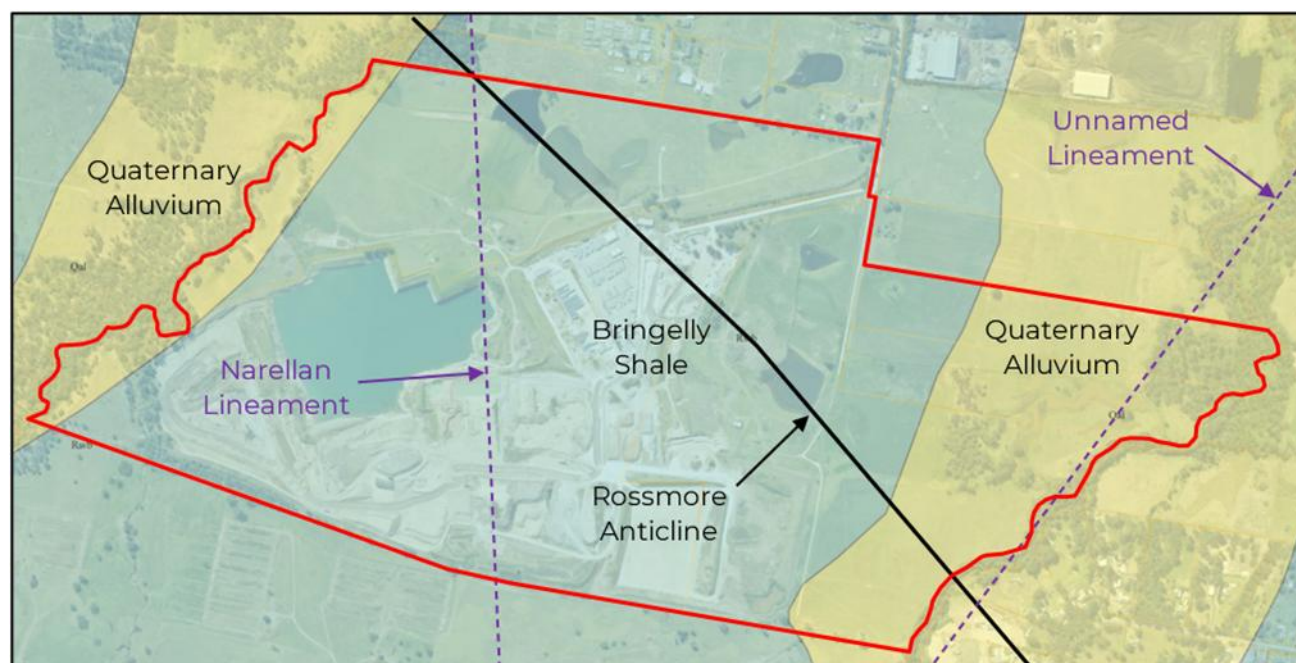


Figure 2 Geological Map

#### 7.1.2 Aquifer Units

Groundwater occurs in two distinct systems: an unconfined fractured rock aquifer within the Wianamatta Group bedrock (Bringelly Shale) and a shallow unconfined alluvial aquifer in the sediments along creek lines. While the Wianamatta Group shales are generally considered leaky aquitards due to their fine-grained nature, they contain "scattered zones" of fracture porosity and perched aquifers within the weathered profile. The

alluvial aquifer consists of unconsolidated sands, silts, and clays deposited along current streams, which can allow for lateral groundwater flow.

The Minchinbury Sandstone is present at significant depths beneath the Wianamatta Shale. Where the Bringelly Shale cap is thickest, the sandstone may be encountered at depths of 20 m to 60 m below ground level. The Minchinbury Sandstone is considered a minor aquifer with yields typically <1 L/s and is commonly used for stock watering. It's high salinity generally limits its use for irrigation and domestic water supply.

### 7.1.3 Groundwater Recharge

Groundwater recharge is estimated to be moderate within this HGL, driven by the interaction between vegetation water use and soil properties. Recharge is generally "diffuse" (occurring over broad areas) but is limited by the low permeability of the heavy clay soils. Studies suggest that recharge into these Permian-Triassic shale units can be as low as <1% to 5% of long-term rainfall. However, land use changes, such as the clearing of deep-rooted vegetation or the creation of urban impervious surfaces that channel water into leaking pipes or trenches, can significantly alter this balance, causing water tables to rise and mobilising stored salts.

### 7.1.4 Hydraulic Conductivity

The hydraulic conductivity of the aquifer units is classified as moderate, with the HGL report citing a range of  $10^{-2}$  m/day to 10 m/day. This range accounts for the secondary porosity (fractures) and alluvial materials. In contrast, the intrinsic permeability of the fresh, unfractured Wianamatta Bringelly shale matrix is extremely low, often reported in the range of  $10^{-9}$  m/s to  $10^{-7}$  m/s ( $10^{-4}$  m/day), effectively acting as an aquiclude. Consequently, significant groundwater yields are rare and restricted to fractured zones.

Figure 3 is an extract of suggested guidelines for attaching ranges of hydrogeological parameters for Shales in the Sydney Region (Pells, Mostyn, Bertuzzi, & Wong, 2019). The figure provides mass hydraulic conductivity ranges for weathering grades I (fresh rock) to V (extremely weathered). Typically, Class II and III shales have closer defect/fracture spacing, such that the hydraulic conductivity is fracture dominated, and greater than Class I. Whereas at the far end of the scale, Class V material contain zones of highly and extremely weathered rock with associated increase in clay content, and clays along bedding seams and in joints. The result is a decrease in hydraulic conductivity compared with Class II and III, and an increase in compressibility and decrease in drainable storage (specific yield).

| Class | Mass Young's Modulus | Mass Hydraulic Conductivity | Mass Poisson's Ratio | Total Porosity | Drainable Storage |
|-------|----------------------|-----------------------------|----------------------|----------------|-------------------|
|       | MPa                  | $10^{-7}$ m/sec             |                      | %              | %                 |
| I     | 2000 to 3000         | 0.01 to 0.1                 | 0.15 to 0.2          | 4 to 8         | 1 to 3            |
| II    | 700 to 2000          | 0.1 to 0.5                  | 0.15 to 0.2          | 5 to 10        | 2 to 4            |
| III   | 200 to 1200          | 0.5 to 1                    | 0.2 to 0.25          | 10 to 15       | 3 to 6            |
| IV    | 100 to 500           | 0.05 to 0.5                 | 0.2 to 0.3           | 10 to 20       | 2 to 4            |
| V     | 50 to 300            | 0.01 to 0.08                | 0.2 to 0.3           | 15 to 25       | 2 to 4            |

Figure 3 Representative values of hydraulic conductivity for Shales (Wianamatta Group) in the Sydney region (Pells, Mostyn, Bertuzzi, & Wong, 2019)

## 7.2 Groundwater Levels and Flow

### 7.2.1 Groundwater Levels

The depth to the water table is classified as intermediate, typically ranging between 2 m and 6 m below ground level (bgl). Groundwater levels are responsive to annual rainfall and seasonal variations, often rising following wet periods. In lower-lying areas of the landscape, the water table can be close to the surface, creating a high hazard for waterlogging and dryland salinity.

Recent groundwater level monitoring has been undertaken by Arcadis, which includes up to four rounds of manual gauging data and 12 weeks of continuous logger data (1 hour time intervals). The recent groundwater level monitoring has been undertaken to inform design considerations and assess potential risks associated with works intersecting groundwater on site. Historic groundwater monitoring data is also available from previous investigations but has not been included in this assessment.

Borehole logs are provided in Appendix B, and the groundwater monitoring network is shown in Appendix C. A summary of the groundwater level gauging data from Arcadis' monitoring is provided in Table 4, and a hydrograph presenting both logger and manual gauging data is provided in Figure 4.

Table 4 Groundwater Level Summary Data

| ID   | Easting    | Northing    | Surface Elevation | Depth (m) | Response Interval (m) | Gauging Date | GW Depth (m bgl) | GW Level (m AHD) |
|------|------------|-------------|-------------------|-----------|-----------------------|--------------|------------------|------------------|
| BH01 | 292792.669 | 6247309.540 | 60.316            | 5.8       | 1.0 - 5.8             | 03.11.25     | 1.5              | 58.9             |
|      |            |             |                   |           |                       | 19.11.25     | 1.5              | 58.8             |
|      |            |             |                   |           |                       | 28.11.25     | 1.6              | 58.7             |
|      |            |             |                   |           |                       | 22.01.26     | 1.7              | 58.6             |
| BH02 | 292415.627 | 6246578.150 | 64.891            | 6.6       | 1.0 - 6.5             | 03.11.25     | 5.8              | 59.1             |
|      |            |             |                   |           |                       | 19.11.25     | 5.7              | 59.2             |
|      |            |             |                   |           |                       | 28.11.25     | 5.7              | 59.2             |
|      |            |             |                   |           |                       | 22.01.26     | 5.7              | 59.2             |
| BH03 | 292648.841 | 6247089.520 | 64.654            | 9.1       | 2.3 - 9.0             | 03.11.25     | 4.8              | 59.9             |
|      |            |             |                   |           |                       | 19.11.25     | 4.9              | 59.8             |
|      |            |             |                   |           |                       | 28.11.25     | 4.9              | 59.8             |
|      |            |             |                   |           |                       | 22.01.26     | 5.0              | 59.7             |
| BH04 | 292926.132 | 6246696.303 | 56.114            | 5.5       | 1.0 - 5.4             | 03.11.25     | 4.3              | 51.8             |
|      |            |             |                   |           |                       | 19.11.25     | 3.7              | 52.4             |
|      |            |             |                   |           |                       | 28.11.25     | 3.7              | 52.4             |
|      |            |             |                   |           |                       | 22.01.26     | 3.1              | 53.0             |
| BH05 | 292456.445 | 6247524.516 | 62.644            | 5.5       | 3.0 - 6.3             | 03.11.25     | 3.0              | 59.6             |

| ID   | Easting    | Northing    | Surface Elevation | Depth (m) | Response Interval (m) | Gauging Date | GW Depth (m bgl) | GW Level (m AHD) |
|------|------------|-------------|-------------------|-----------|-----------------------|--------------|------------------|------------------|
|      |            |             |                   |           |                       | 19.11.25     | 2.9              | 59.7             |
|      |            |             |                   |           |                       | 28.11.25     | 2.9              | 59.8             |
|      |            |             |                   |           |                       | 22.01.26     | 2.6              | 60.1             |
| BH06 | 291878.362 | 6246672.710 | 67.743            | 6.1       | 1.0 - 6.0             | 03.11.25     | Dry              | -                |
|      |            |             |                   |           |                       | 19.11.25     | Dry              | -                |
|      |            |             |                   |           |                       | 28.11.25     | Dry              | -                |
| BH07 | 291674.927 | 6246772.005 | 69.422            | 6.5       | 1.0 - 6.5             | 03.11.25     | Dry              | -                |
|      |            |             |                   |           |                       | 19.11.25     | Dry              | -                |
|      |            |             |                   |           |                       | 28.11.25     | Dry              | -                |
| BH08 | 292121.36  | 6247263.304 | 64.492            | 4.5       | 0.5 - 5.0             | 03.11.25     | Dry              | -                |
|      |            |             |                   |           |                       | 19.11.25     | 3.4              | 61.1             |
|      |            |             |                   |           |                       | 28.11.25     | 3.5              | 61.0             |
|      |            |             |                   |           |                       | 22.01.26     | 2.3              | 62.2             |
| BH09 | 293354.754 | 6247102.896 | 47.179            | 5.0       | 1.0 - 5.1             | 03.11.25     | 1.0              | 46.2             |
|      |            |             |                   |           |                       | 19.11.25     | 1.3              | 45.9             |
|      |            |             |                   |           |                       | 28.11.25     | 1.4              | 45.8             |
|      |            |             |                   |           |                       | 22.01.26     | 1.8              | 45.3             |
| BW1  | 291741     | 6247174     | 56.06             | 6.3       | 5.0 - 8.0             | 19.11.25     | 2.6              | 53.4             |
|      |            |             |                   |           |                       | 28.11.25     | 2.7              | 53.4             |
| BW5A | 293098     | 6246559     | 45.56             | 8.1       | 4.0 - 7.0             | 28.11.25     | 3.8              | 41.8             |
|      |            |             |                   |           |                       | 22.01.26     | 3.7              | 41.9             |
| BW5B | 293098     | 6246561     | 46.51             | 16.8      | 27.0 – 33.0           | 28.11.25     | 2.4              | 44.1             |
| BW2A | 291911     | 6247442     | 56.29             | 7.8       | 5.0 - 8.0             | 17.12.25     | 2.1              | 54.2             |
|      |            |             |                   |           |                       | 22.01.26     | 2.2              | 54.1             |
| BW2B | 291914     | 6247440     | 56.40             | 33.8      | 27.0 – 33.0           | 17.12.25     | 8.2              | 48.2             |

The available groundwater monitoring data shows that groundwater is typically encountered at shallow depths between 1.0 m and 4.0 m from the surface across the site within the unconfined upper Wianamatta Bringelly Shale aquifer. Groundwater elevations (m AHD) approximately follow the topographic levels and as such groundwater level gradients closely correspond to topographic gradients.

Anomalous data in response to a significant wet weather event in Mid-January (>150 mm rainfall over 4 days) at BH04 and BH08, where water levels spiked rapidly up to near ground surface level, have been discounted

because the data is thought to be caused by flooding of the borehole standpipe from poorly constructed boreholes. During earlier wet weather vents, the response to rainfall recharge is very small.

Groundwater levels from 01/01/2026 have been contoured to represent typical groundwater conditions observed across the site during the monitoring period. The contours are shown in Appendix D.

During the monitoring period the average variation in groundwater elevation was around (0.46 m when removing anomalous data spikes) for most wells. It is likely that groundwater levels in deep soils across the site will respond to annual and longer-term climate cycles rather than shorter term (e.g., <6 month) climate conditions in response to the low permeability affecting both recharge and discharge rates causing a lag effect.

In the context of long-term climatic cycles, recent groundwater monitoring data has been plotted alongside the cumulative deviation from mean rainfall (CDMR) to contextualise the observed climate conditions during monitoring (Figure 5). The CDMR trend has remained relatively stable since 2024, indicating that rainfall conditions have been broadly average during this timeframe. Under sustained negative or positive CDMR conditions, groundwater levels would typically be expected to fall or rise, respectively, in response to changes in rainfall-driven recharge.

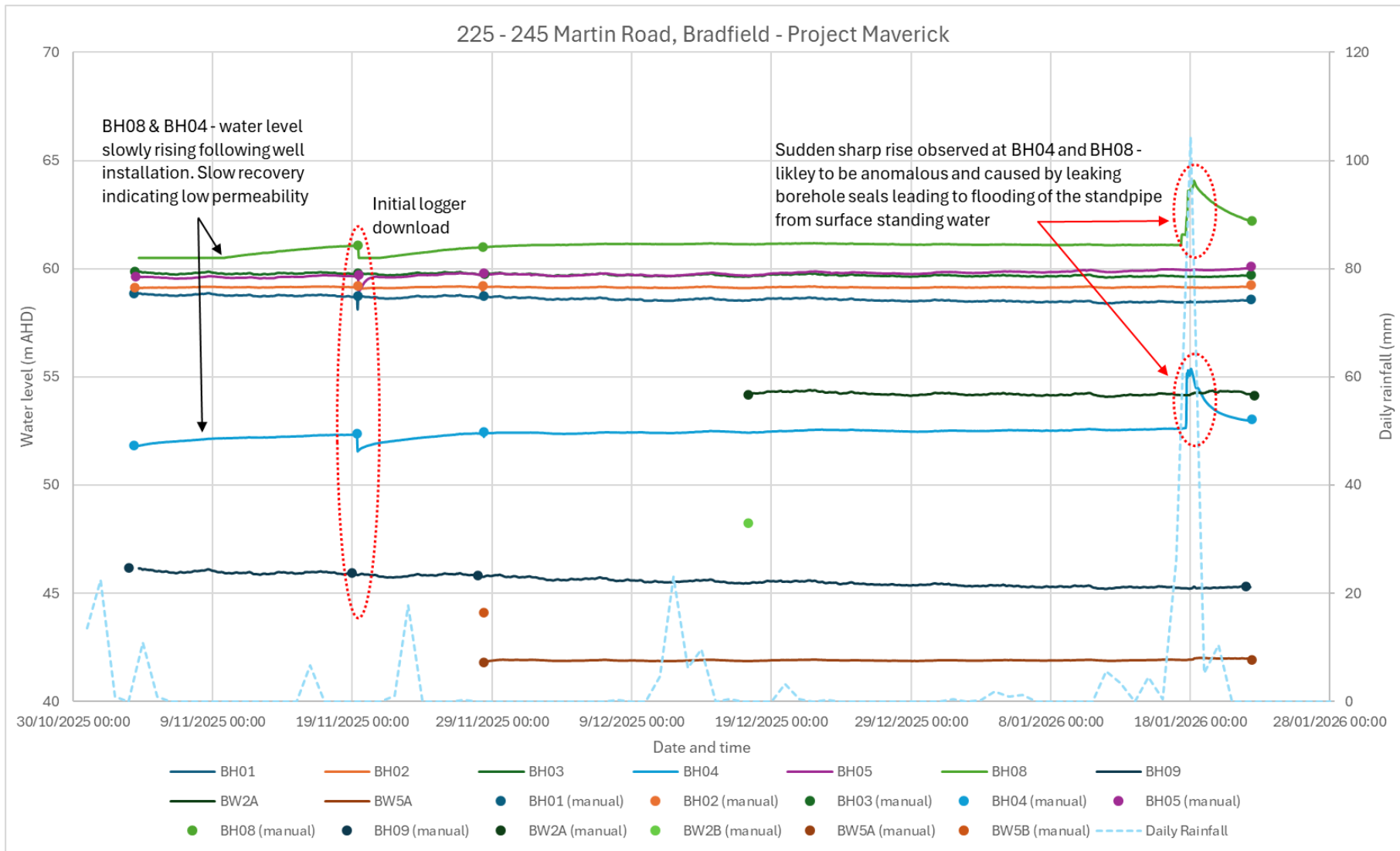


Figure 4 Hydrograph of groundwater monitoring data



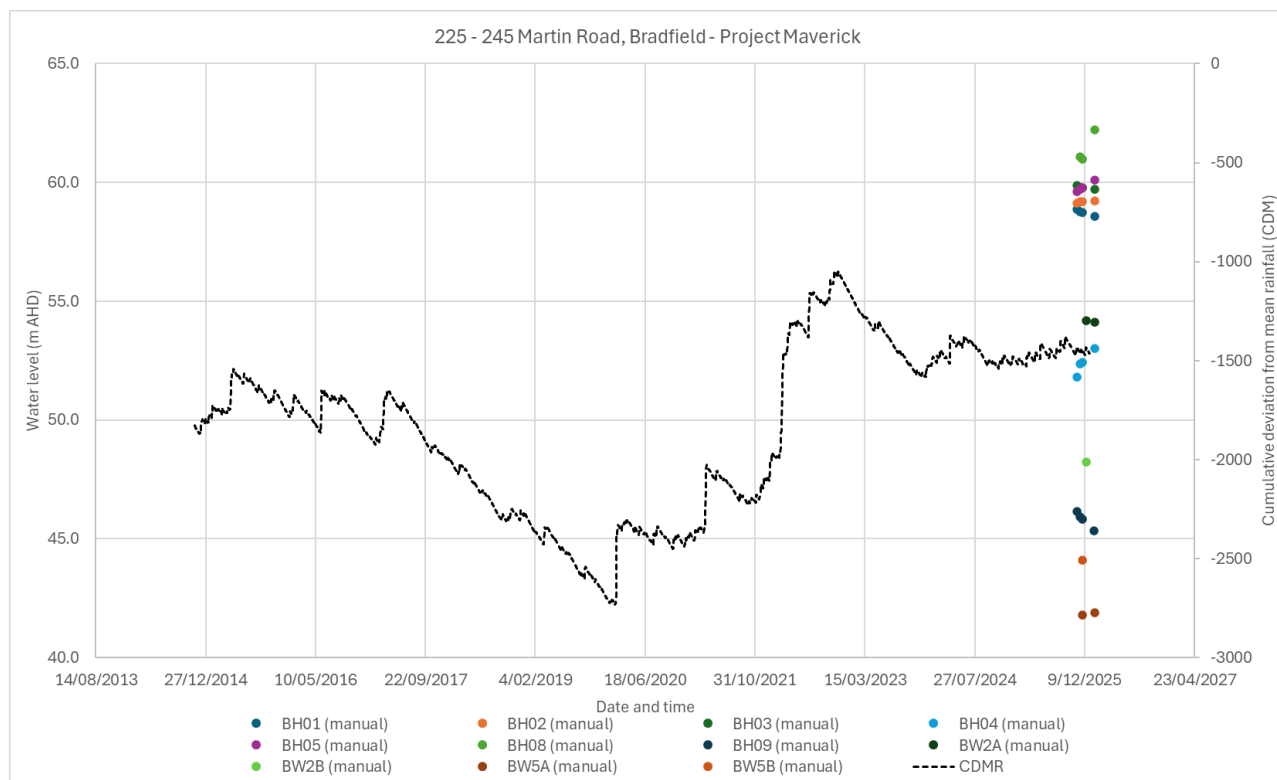


Figure 5 CDMR vs recent observed groundwater levels

## 7.2.2 Groundwater Flow

Groundwater flow systems are local, with relatively short flow lengths of generally less than 5km. The flow is unconfined and driven by gravity, moving from hill crests towards drainage lines. Water moves laterally through the shale bedding planes and alluvial sediments, and vertically through fractures in the sandstone units. Considerable lateral flow is noted to occur at the interface between shale layers and sandstone units (such as the sandstone-shale interface), which can act as preferential flow paths in an otherwise tight formation.

Groundwater contours are shown in Appendix D and indicate that groundwater flow in the western portion of the site is towards the west and north (towards Badgerys Creek), while groundwater flow in the eastern portion of the site is to the east and north (towards South Creek). This groundwater catchment divide corresponds with the topographic divide for the site.

## 7.3 Groundwater Quality

### 7.3.1 Salinity

Groundwater quality is a defining and critical feature of this landscape, characterised as brackish to saline. Electrical Conductivity (EC) typically exceeds 4.8 dS/m (approx. 3,000 mg/L TDS), and in some Wianamatta shale areas, salinity can reach 50,000 mg/L. The salts are predominantly sodium chloride (NaCl) and are derived from a combination of connate salts (trapped in the marine sediments during deposition) and the accumulation of cyclic salts (aerosols) over millennia.

### 7.3.2 Pollutants

Assessment of potential groundwater quality impacts has been undertaken as a separate assessment and is not covered in this report.

## 8 Environmental Conditions

### 8.1 Drainage and Watercourses

#### 8.1.1 Catchment Context and Hydrology

The Site is located within the Wianamatta - South Creek Catchment, which covers an area of approximately 682 km<sup>2</sup>. It is one of the hottest and driest catchments in the Greater Sydney Region.

South Creek is the primary arterial watercourse for the catchment. Historic natural conditions in South Creek comprised a chain of interconnected ponds with an ephemeral flow regime. Today, the flow is effectively perennial (continuous) in many sections, but this is artificial. It is driven by urban stormwater runoff, agricultural return flows, and significant upstream discharges from Sewage Treatment Plants (STPs). Due to the extremely low gradient of the Cumberland Plain, water moves very slowly. This low energy environment promotes the deposition of fine sediments (silts and clays). Despite the slow base velocity, the creek is "flashy" during storms.

The impermeable clay catchment sheds water rapidly, causing sharp peaks in discharge following rain. South Creek is susceptible to "backwater flooding." During major regional floods, the Hawkesbury-Nepean River can back up into the South Creek channel, stalling outflow and causing water levels to rise significantly even without local heavy rain. The creek receives baseflow from the adjacent shale aquifers. This groundwater discharge is naturally saline (often >4.8 dS/m). During dry periods, when surface runoff is low, the proportion of saline groundwater increases, raising the salinity of the creek pools.

Badgerys Creek has retained much of its natural intermittent flow regime. It typically ceases to flow during dry periods, retreating to isolated pools. It is fed by numerous small, ephemeral overland flow paths. The headwaters and mid-reaches of Badgerys Creek are currently undergoing massive transformation due to the Western Sydney Airport construction. The levelling of the site and creation of artificial drainage channels is altering the time of concentration, potentially increasing the speed of runoff reaching the lower creek sections around the site. As it drains the "low hills" of the Bringelly Shale, Badgerys Creek naturally transports high loads of fine clay sediment. This makes the water naturally turbid (cloudy).

The banks of both creeks are composed of dispersive (sodic) clays. They are highly unstable when wet and prone to slumping or erosion if vegetation is removed or if rapid water level changes occur (drawdown). Both creeks act as "salt drains" for the landscape. The HGL report assesses the Salt Export hazard as High. This means both creeks actively transport large volumes of salt washed off the clay soils and discharged from the groundwater.

#### 8.1.2 Local Drainage and Hydrology

The Site sits between Badgerys Creek (located to the west of the Site) and South Creek (located to the east of the Site). The Site topography and drainage in the western portion of the falls towards Badgerys Creek, while Site topography and drainage in the eastern portion of the Site falls towards South Creek. Drainage depressions, waterbodies, and watercourses are shown in Appendix C.

Within the Site boundary drainage occurs as both sheet flows and concentrated flows through ephemeral depressions and first order (Strahler) watercourses. Some local storages are present in the form of farm dams. Badgerys Creek and South Creek are both perennial watercourses along the reaches that run adjacent to the Site.

Hydrology across the Site (Badgerys Creek to South Creek) is heavily influenced by the Triassic Wianamatta Group geology and the Blacktown Soil Landscape. Clay soils in this area are highly reactive and may swell significantly in response to rainfall events leading to impermeable surface conditions. Subsequently, the Site produces a rapid runoff response to rainfall resulting in high volumes of overland flow including sheet flows and concentrated flows in drainage depressions. Overland flow from hills and slopes will have prevalence to pond in depressions and foot slopes leading to swampy conditions.

The heavy clay subsoil creates a barrier that prevents water from draining vertically. This leads to "local perching" of water above clay layers, creating ephemeral waterlogged zones that persist long after the rain stops.

## 8.2 Groundwater-Surface Water Interactions

The landscape provides important base flow to local streams such as South Creek. However, this interaction is a major driver of catchment salinity, as the discharging groundwater carries a high salt load. The streams are often "gaining" streams, receiving saline groundwater discharge particularly along footslopes and drainage depressions. This mechanism creates a high likelihood of salinity occurrence and a Severe potential impact on surface water quality and infrastructure.

The contribution of groundwater from the site to receiving waterways comprising South Creek and Badgerys Creek is undefined at this stage. Further investigation is considered necessary to quantify the effect of groundwater discharge from the site on flow and water quality in these receiving waterways.

## 9 Groundwater Stakeholders

### 9.1 Groundwater Dependent Ecosystems

Review of the Australian Government Bureau of Meteorology (BoM) Groundwater Dependent Ecosystem Atlas has been carried out to identify any potential or actual groundwater dependent ecosystems (GDEs) within the site boundary. GDE Mapping (Appendix E) shows the presence of high potential GDEs in the eastern and western portions of the site along the alignments of Badgerys Creek and South Creek, which are described as "Cumberland River Flat Forest".

### 9.2 Groundwater Users

A review of the Australian Government BoM Groundwater Atlas has been carried out to identify registered groundwater bores within a 1 km radius of the site. The registered boreholes and their use identified through this search are summarized in Table 5, and shown in Appendix E.

*Table 5 Summary of Registered Groundwater Bores within 1km Radius of the Site*

| Bore ID             | Direction | Distance (m) | Aquifer               | Registered Use                              |
|---------------------|-----------|--------------|-----------------------|---------------------------------------------|
| GW103739 – GW103744 | On Site   | On Site      | Bringelly Shale       | Monitoring Bores (6 bores of varying depth) |
| GW106636            | On Site   | On Site      | No Details            | Monitoring Bore                             |
| GW106735            | On Site   | On Site      | No Details            | Industrial Bore                             |
| GW112650            | SW        | 500          | Minchinbury Sandstone | Monitoring Bore                             |
| GW112649            | SW        | 700          | Minchinbury Sandstone | Monitoring Bore                             |
| GW10516             | NE        | 1,000        | Minchinbury Sandstone | Domestic Stock                              |

## 10 Conceptual Hydrogeological Model

Based on the information presented above for baseline groundwater and environmental considerations, and groundwater stakeholders, the hydrogeological conceptual model is summarised below:

- The Site geology is located in the Upper South Creek Hydrogeological Landscape, where the underlying geology is characterised by Triassic sedimentary rocks from the Wiannamatta Group, with the major unit being the Bringelly Shale. Quaternary alluvial soils are present along creek floodplains located to the east and west of the site.
- Bringelly Shale (Wianamatta Group) is the main groundwater bearing unit at the Site, and groundwater is predominantly unconfined. The shale is generally considered to be a leaky aquitard due to the fine-grained nature, however "scattered zones" of fracture porosity and perched aquifers within the weathered profile can be found.
- Groundwater recharge is generally diffuse but is limited by low permeability of the heavy clay soils. Studies suggest that recharge into these Permian-Triassic shale units can be as low as <1% to 5% of long-term rainfall.
- Recent groundwater monitoring shows groundwater is typically encountered at shallow depths between 1.0 m and 4.0 m from the surface across the site within the unconfined upper Bringelly Shale aquifer. Groundwater elevations typically follow topographic elevations, creating a subdued replica of the land surface.
- The Site is located on a groundwater divide with highest groundwater elevations in the centre of the Site. As such, groundwater flow in the western portion of the site is towards the west and north (towards Badgerys Creek), while groundwater flow in the eastern portion of the site is to the east (towards South Creek).
- High potential groundwater dependent ecosystems (GDEs) are present in the eastern and western portions of the site along the alignments of Badgerys Creek and South Creek, which are described as "Cumberland River Flat Forest".
- Multiple farm dams located at the site appear to be connected to groundwater when comparing topography data and interpolated groundwater contours. The underlying Bringelly Shale aquifer likely provides base flow to the dams.

A pre-development hydrogeological cross section is provided in Figure 6. Section line A-A' runs through the centre of the Site, parallel to groundwater flow (see Appendix D).

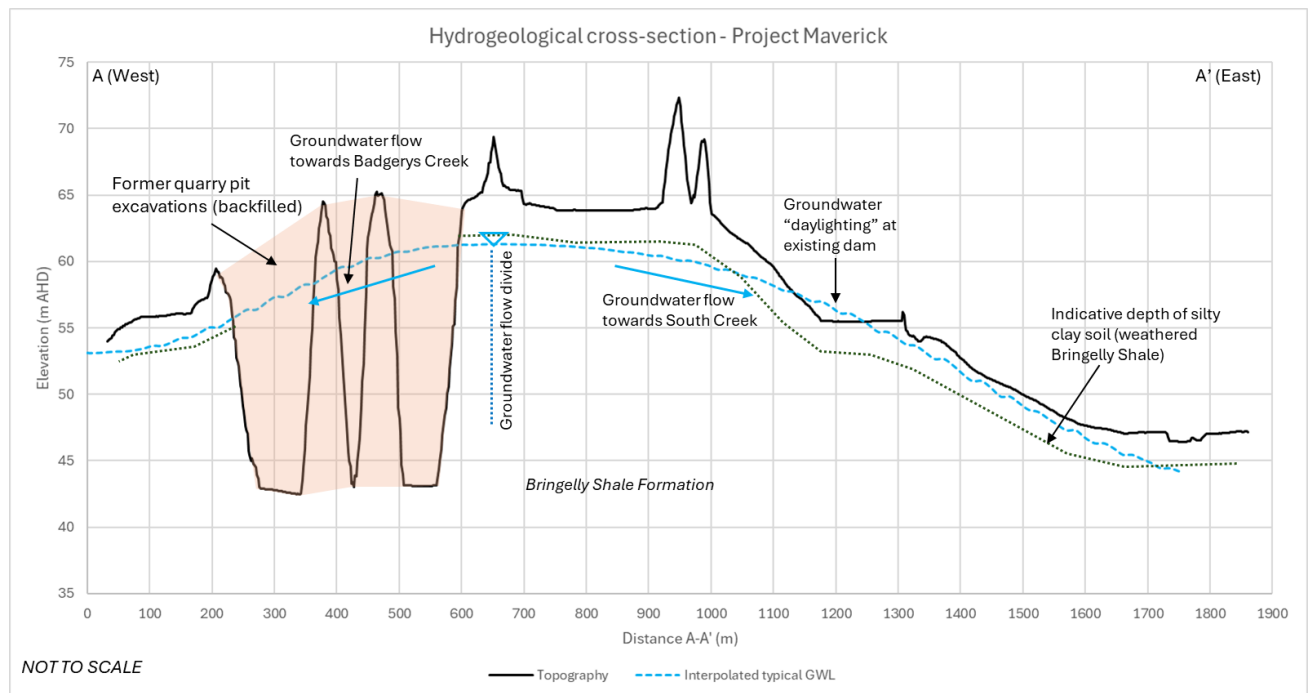


Figure 6 Pre-development hydrogeological cross section



## 11 Groundwater Interference Activities

The bulk earthworks design for the Internal Works package consists of developing the existing levels designed and documented as part of the Bulk Earthworks, Rehabilitation and Quarrying package (assessed as part of separate State Significant DA SSD-97711727), to the Bulk Finished Surface levels (BFSL). The BFSL are made up of the underside of pavements, slabs, topsoil and verge material, retaining wall backfilling and on-site detention tanks.

Where possible, through civil design the BFSL have been raised where possible to avoid or limit any interaction with groundwater present in the unconfined portions of the Bringelly Shale Aquifer present on site. However, where groundwater interactions cannot be avoided, appropriate management and mitigation measures will be implemented to address the minimal impact considerations under the NSW Aquifer Interference Policy. Specific considerations for the site are identified in Section 12.

Appendix F presents where unavoidable interactions with shallow groundwater in the unconfined Bringelly Shale aquifer is expected to occur based on the latest BFSL (as of 18/03/2026). Groundwater is encountered predominantly in the northeast and northwest of the Site around Lots 7 and 10, as shown by the hydrogeological cross sections in Figure 7 (refer to Appendix F for section lines). Passive groundwater seepage (and its associated drainage) to the BFSL will need to be managed at the following locations:

- **Lot 7 and Lot 10** finished surface level is below typical groundwater level by up to 1.6 m. Passive subsoil drainage is expected to be required to remove excess porewater pressure or to prevent dampness from building up below constructed concrete pads.
- **Riparian channels** are proposed between Lots 7 and 10, and Lots 8 and 9A. Typical groundwater level is up to 4.9 m above the channel bottom but varies along the length of the features. It is expected that passive groundwater seepage into these channels will occur unless lined to prevent groundwater ingress.
- **Trunk drainage channels** between Lots 2 and 6a, and Lots 3 and 4. Typical groundwater level is up to 3.0 m above the drainage channel invert level. As above, passive groundwater seepage into these channels will occur unless lined.
- **Collector Roads** – road pavements are up to 1.9 m below groundwater level. It is expected that subsoil drainage included in the pavement design will control groundwater levels to be below the base of the pavement level and collect passive groundwater seepage.

Four Sydney Water regional stormwater basins are proposed to be located around the perimeter of the Site as part of the Sydney Water Corporation's draft Aerotropolis Integrated Stormwater Scheme Plans for Wianamatta-Badgerys and Cosgroves catchments. These basins are expected to be lined (as per Sydney Water request) to prevent groundwater seepage; therefore, they have not been included in groundwater interference activities. It should be noted, however, that the basin liners will need to be designed to withstand uplift forces resulting from hydrostatic pressure acting on the basin invert, and that groundwater risks and appropriate measures to manage those risks are to be considered within the design.

Short and long-term groundwater management measures will likely need to be designed at the detailed design stage of the project, considering groundwater take volumes estimated in Section 11.1.



Figure 7 Post-development hydrogeological cross-sections A-A' and B-B' (see Appendix D for section lines)

## 11.1 Groundwater Take

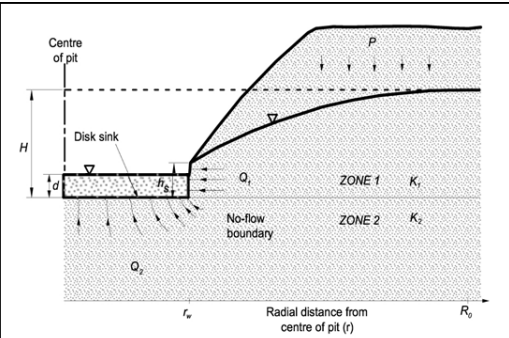
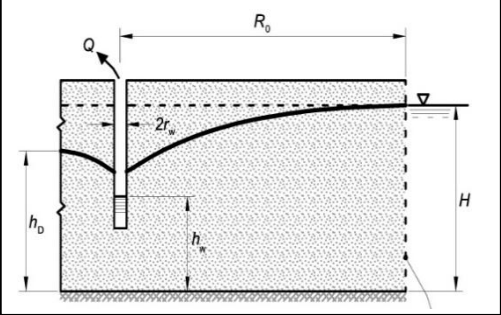
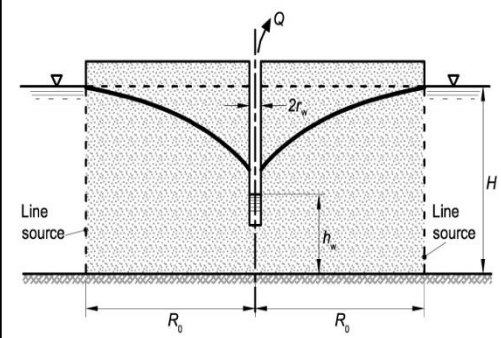
A Water Access Licence (WAL) for groundwater take is required where it exceeds 3 ML/year. However, an existing Water Access Licence (WAL) 10WA109463 for Lot 2 DP 1278780 and Lot 3 DP 1278780 was transferred to Goodman Western Sydney Pty Ltd on 19 December 2025. This WAL authorises a share component of up to 25 units (25 ML/year) from the Sydney Basin Central Groundwater Source. An

assessment of groundwater take is therefore presented to establish compliance with either an exemption or the WAL.

Groundwater take has been estimated using analytical models for inflows to excavations, as summarised in Table 6. To account for variations in finished surface level and hydrogeological conditions (including geology, groundwater levels, and flow directions), the site was divided into eight drainage areas listed below and shown in Appendix F:

- Lot 7
- Lot 10
- Riparian Street 1
- Riparian Street 2
- Collector Road 1 (north-south and east-west alignment)
- Collector Road 2
- Developer Trunk drainage
- Sydney Water Trunk drainage

Table 6 Analytical models adopted for estimating groundwater take

| Analytical model                                                                                                                                                                                                                                                                  | Assumptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| $Q_1 = P\pi(R_0^2 - r_w^2)$ $Q = 4\left(\frac{K_{h2}}{m_2}\right)r_w(H-d)$  $H = \sqrt{h_s^2 + \frac{P}{K_{h1}} \left[ R_0^2 \ln\left(\frac{R_0}{r_w}\right) - \frac{R_0^2 - r_w^2}{2} \right]}$ | <p>Flow to a radial pit (Marinelli and Niccoli, 1998):</p> <ul style="list-style-type: none"> <li>There is no groundwater flow between zones 1 and 2</li> <li>Zone 1                         <ul style="list-style-type: none"> <li>Steady stage, unconfined, horizontal radial flow</li> <li>Pit walls are approximated as a right circular cylinder</li> <li>Initial water table and groundwater flow are both horizontal</li> <li>Groundwater flow to the pit is axially symmetric</li> </ul> </li> <li>Zone 2                         <ul style="list-style-type: none"> <li>Steady stage flow to one side of a circular disk sink of constant and uniform drawdown</li> <li>Hydraulic head is initially uniform throughout Zone 2</li> <li>Initial head is equal to the elevation of the initial water table in Zone 1</li> <li>Disk sink has a constant hydraulic head equal to the elevation</li> <li>Flow to the disk sink is three-dimensional and axially symmetric</li> </ul> </li> <li>Materials are anisotropic, principal directions for K are horizontal and vertical</li> </ul> |
| $Q = \left[ \left( 0.73 + 0.27 \frac{(H - h_w)}{H} \right) \frac{Kx}{2R_0} (H^2 - h_w^2) \right]$                                                                                              | <p>Mansur &amp; Kaufman (1962) flow to a trench/slot from one side:</p> <ul style="list-style-type: none"> <li>The slot is infinite in length</li> <li><math>R_0/H</math> greater than or equal to 3</li> <li>Aquifer is unconfined</li> <li>Aquifer is homogenous, isotropic and of uniform thickness</li> <li>The Dupuit-Forcheimer assumption is valid</li> <li>The aquifer has reached steady state conditions</li> <li>The initial water table is horizontal</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| $Q = \left[ \left( 0.73 + 0.27 \frac{(H - h_w)}{H} \right) \frac{Kx}{R_0} (H^2 - h_w^2) \right]$                                                                                               | <p>Mansur &amp; Kaufman (1962) flow to a trench/slot from two sides:</p> <ul style="list-style-type: none"> <li>The slot is infinite in length</li> <li><math>R_0/H</math> greater than or equal to 3</li> <li>Aquifer is unconfined</li> <li>Aquifer is homogenous, isotropic and of uniform thickness</li> <li>The Dupuit-Forcheimer assumption is valid</li> <li>The aquifer has reached steady state conditions</li> <li>The initial water table is horizontal</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

Parameter definitions:

- H, height of water table at radius of influence (m)
- $h_w$ , height of water table at slot /  $h_s$  = saturated thickness at seepage face (m)
- $K_{h1}$  and  $K_{h2}$ , horizontal hydraulic conductivity in Zones 1 & 2 (m/s)
- $K_{v2}$ , vertical hydraulic conductivity beneath the pit (m/s) (assumed isotropic = 1.0)
- P, effective recharge to the water table in Zone 1 (m/s)
- A, wet area of excavation ( $m^2$ )
- $r_p$ , circular equivalent radius of excavation ( $r_p = \sqrt{A/\pi}$ )
- $R_0$ , radius of influence (m) (calculated using Niccoli et al, 1998)
- $h_s$ , pre-mining (excavation) saturated thickness above the Zone 1 base at the far radius (m).
- D, depth of ponded area (m)
- x, length of slot/trench (m)

### 11.1.1 Input parameters and assumptions

The following input parameter assumption were used in the analytical modelling of groundwater:

No site-specific hydraulic testing has been completed at the site, therefore hydraulic conductivities derived from available literature values and commensurate with the encountered geology have been used, as reported in Table 7.

- Aquifer is conservatively assumed to be isotropic, therefore  $K_h = K_v$ .
- Uniform groundwater recharge (P) is estimated to be between 1% to 5% of average annual rainfall (As documented in the Upper South Creek Hydrogeological Landscape).
  - For characteristic estimates of groundwater take = recharge was assumed to be 1% of annual rainfall (8.6 mm/year)
- Initial saturated aquifer thickness ( $h_w$ ) for the Bringelly Shale aquifer is assumed to be 10 m, and a maximum of 3 m for the overlying extremely weathered material (silty CLAY and CLAY).
- To satisfy the assumptions of the Mansur & Kaufman (1962) flow to a trench/slot model, the radius of influence was assumed to be three times the initial saturated thickness.
- Maximum height of water table above the IW Finished Surface Level has been adopted across each drainage area, to provide conservative estimates of groundwater seepage. In reality the height of groundwater above the Finished Surface Level varies.
- Groundwater seepage is assumed to be continuous to estimate groundwater take on an annual basis under operational conditions at the site.

Table 7 Adopted hydraulic conductivity values for groundwater inflow assessment

| Hydrogeological Layer                              | Adopted hydraulic conductivity (K)     | Literature source                                            |
|----------------------------------------------------|----------------------------------------|--------------------------------------------------------------|
| FILL material (predominantly cohesive)             | Characteristic: $1 \times 10^{-8}$ m/s | Assumed values based on material descriptions for bulk fill. |
| Extremely weathered material (silty CLAY and CLAY) | Characteristic: $1 \times 10^{-9}$ m/s | (Hiscock, 2005)<br>(Pells, Mostyn, Bertuzzi, & Wong, 2019)   |
| Wianamatta Bringelly Shale (Class II to III)       | Characteristic: $1 \times 10^{-8}$ m/s | (Hiscock, 2005)<br>(Pells, Mostyn, Bertuzzi, & Wong, 2019)   |
| Wianamatta Bringelly Shale (Class I)               | Characteristic: $1 \times 10^{-9}$ m/s | (Hiscock, 2005)<br>(Pells, Mostyn, Bertuzzi, & Wong, 2019)   |

### 11.1.2 Results

Following the approach outlined above, passive groundwater inflow to FBSL where they are below groundwater has been estimated to be 0.95 ML/year as presented in Table 8, which is below the 3 ML/year threshold that would trigger the requirement for a WAL for dewatering requirements.

In the absence of site-specific hydraulic testing data this value represents an estimate of groundwater take from passive groundwater seepage. Should localised areas of higher hydraulic conductivity be encountered (e.g. fractured zones within the shale bedrock), the overall groundwater inflow volume could be higher than the estimate; however we would not expect that any such contribution would lead to a groundwater take that exceeded the allocation provided under the existing WAL (up to 25 ML/year). For example, assuming an order of magnitude increase in hydraulic conductivity across the entire site would result in an approximate order of magnitude increase in groundwater take volume.

Table 8 Estimated groundwater take

| Groundwater seepage areas               | Analytical model                            | Characteristic inflow volume (ML/year) |
|-----------------------------------------|---------------------------------------------|----------------------------------------|
| Lot 7                                   | Flow to a radial pit                        | 0.02                                   |
| Lot 10                                  |                                             | 0.24                                   |
| Riparian Streets (drainage channels)    | Flow to a trench/slot from two side         | 0.39                                   |
| Trunk drainage channels                 | Flow to a trench/slot from two sides        | 1.35                                   |
| Collector Road                          | Flow to a trench/slot from one or two sides | 0.16                                   |
| <b>Total estimated groundwater take</b> |                                             | <b>0.95</b>                            |

The estimated groundwater take is representative of conditions during the construction phase, where groundwater seepage occurs to the BFSL. Over the construction period, BFSLs will be progressively raised through placement of pavements, slabs and topsoil to achieve the Finished Surface Levels that represent operational conditions. Permanent groundwater control and drainage measures will then be implemented to manage groundwater levels beneath the Finished Surface Level. The operational groundwater take is expected to be of a similar order of magnitude to that reported above (<1.0 ML/year). However, the permanent



groundwater control and drainage measures will not be defined until the detailed design stage; consequently, further assessment may be required at that time to refine estimates of operational groundwater take.

## 11.2 Groundwater Recharge

The emplacement of impervious surfaces across much of the Site as part of the Internal Works package is expected to substantially reduce rainfall infiltration into the soil profile. This reduction in infiltration is anticipated to locally decrease diffuse recharge to the underlying Bringelly Shale aquifer. Given the Site's position on a local groundwater divide between South Creek and Badgerys Creek, groundwater levels beneath the Site may decline slightly in the long term due to reduced recharge inputs. Additional assessment, including hydrological and groundwater modelling, may be required to better quantify potential changes in recharge and to determine whether any resulting reductions in groundwater availability could influence baseflows in South Creek or Badgerys Creek. Any such assessment should consider seasonal variability, climate change projections, and interactions with proposed stormwater infrastructure.

Consideration of the proposal within the context of the Upper South Creek Hydrogeological Landscape (HGL) indicates that the development may provide beneficial groundwater quality outcomes. The HGL identifies minimising localised recharge to shallow groundwater as an effective salinity-management measure, particularly in areas underlain by saline Bringelly Shale. Increasing the proportion of impervious surfaces is therefore consistent with recommended salinity mitigation practices for the region. However, pervious landscape features (such as grassed swales and riparian corridors) may require subsurface lining and controlled drainage to stormwater outlets to prevent point-source infiltration into saline or sodic soils. Without such controls, localised infiltration could mobilise salts and contribute to soil degradation or shallow groundwater salinity impacts.

## 12 Minimal Impact Considerations

### 12.1 Aquifer Classification

The Wianamatta Bringelly Shale is considered a 'less productive' aquifer under the NSW Aquifer Interference Policy. This classification accounts for both the high salinity of groundwater within the shale aquifer (typically >1,500 µs/cm) and the low yields (typically <1 L/s).

For a "Less Productive Porous Rock Water Source," the AIP sets out specific thresholds to determine if a project's impact is acceptable (Level 1). If a project exceeds these, it is considered a Level 2 impact and requires further detailed assessment and potential "make good" provisions.

### 12.2 Water Levels

Minimal impact considerations for less productive aquifers such as the Wianamatta Bringelly Shale require the following with respect to drawdown of water levels:

- **Impact Limit:** The project must not cause a cumulative decline in the water table of more than 2 metres at any privately owned water supply work (bore).
- **GDEs & Cultural Sites:** If the drawdown exceeds 10% of the water table's natural seasonal variation at a distance of 40 m from a High Priority Groundwater Dependent Ecosystem (GDE) or culturally significant site, further studies are required to demonstrate that the long-term viability of that asset will not be affected.

The low permeability of the HGL limits the maximum radius of influence / cone of depression at the Site to be less than 100 m. The closest privately owned water supply bore is over 1,000 m from the Site, therefore no impacts from groundwater inflow is anticipated.

It is noted for the Upper South Creek HGL that base flow to Creeks typically carries a high salt load, and as such reduction in baseflow from groundwater from the site may provide beneficial outcomes for GDEs located adjacent within the riparian corridors of South Creek and Badgerys Creek. Further studies may be required to determine whether changes to recharge from bulk earthworks activities will exceed minimal impact thresholds and whether GDEs would be affected by any significant change to the seasonal variability in water levels.

### 12.3 Water Pressure

Minimal impact considerations for less productive aquifers such as the Wianamatta Bringelly Shale require the following with respect to Water Pressure (Artesian/Confined Systems):

- **Impact Limit:** The cumulative decline in pressure head must not exceed 2 metres (or 40% of the pressure head if that is lower) at any water supply work.

It is considered unlikely that this minimal impact consideration threshold will be exceeded as the planned development is not proposing to intersect or interfere with any confined aquifers. Subsequently, it is considered that no further work is required.

### 12.4 Water Quality

The aquifer interference policy mandates that the development must not degrade the water quality to a point where its "beneficial use class" changes, specifically the thresholds are as follows:

- **Salinity Increase:** Any increase in the total dissolved solids (salinity) of the groundwater source must not exceed 1% per activity in the long term, unless the increase is within the natural variation.
- **Beneficial Use:** The activity must not lower the beneficial use category of the groundwater source (e.g., changing it from "Stock Supply" to "Industrial Use Only"). Since the Wianamatta Shale is already saline, the focus is typically on preventing it from becoming hyper-saline or mobilising salts into fresher surface waters.

The planned development is not expected to impact the beneficial use category of the groundwater source or trigger an increase in salinity of the groundwater source as minimal interaction is expected during both construction and operation of the site.

Hard surfacing of the site may contribute to improved groundwater quality outcomes as maximizing the size of impervious surfaces to prevent recharge of groundwater is a recommended salinity management measures for the Upper South Creek HGL. Pervious surfaces (like grass swales) may need to be lined and subsequently drained to stormwater outlets to prevent infiltration into the saline soils.

## 13 Conclusions

This Groundwater Assessment Report has been prepared by Arcadis to address the site-specific Secretary's Environmental Assessment Requirements (SEARs) and associated agency requirements (DCCEEW and NSW EPA) for the proposed State Significant Development Application (SSDA) No. 97688711 (Internal Works). The assessment focuses on groundwater interactions and potential impacts to aquifers, watercourses, water resources, and groundwater users arising from changes to groundwater levels during the project. The Internal Works involves construction, fit-out (including office and standard warehouse racking) and operation of 14 warehouse buildings, Active Open Space & amenities precinct (including a café) and internal site infrastructure works.

For assessment of groundwater take and minimal impact considerations, the BFSL has been adopted, representing the underside of pavements, slabs, topsoil and verge material, retaining wall backfilling and on-site detention tanks. Where practical, the BFSL of the works have been raised to avoid or minimise interaction with groundwater within the unconfined Bringelly Shale aquifer. However, unavoidable groundwater interaction is expected at the following areas:

- Lot 7 and Lot 10
- Riparian channels
- Trunk drainage channels (Developer and Sydney Water)
- Collector Road subsoil drainage systems

Representative groundwater take associated with seepage to the BFSL is estimated at less than 1.0 ML/year, which is below the 3 ML/year threshold that would trigger the requirement for a WAL for dewatering activities. Over the construction period, BFSLS will be progressively raised through placement of pavements, slabs and topsoil to achieve the Finished Surface Levels that represent operational conditions. Permanent groundwater control and drainage measures will then be implemented to manage groundwater levels beneath the Finished Surface Level. The operational groundwater take is expected to be of a similar order of magnitude to that reported above (<1.0 ML/year). However, the permanent groundwater control and drainage measures will not be defined until the detailed design stage; consequently, further assessment may be required at that time to refine estimates of operational groundwater take.

Groundwater take estimates are calculated based on characteristic hydraulic parameters commensurate with the geological conditions encountered at the site. Although actual groundwater take volumes could be greater than estimated owing to variability in ground conditions, it is considered more likely than not that the groundwater volume captured during excavation works will be of a similar order of magnitude to that proposed. Where this is the case however, the Site holds an existing Water Access Licence (WAL) 10WA109463 for Lot 2 DP 1278780 and Lot 3 DP 1278780, which authorises a share component of 25 units (25 ML/year). This allocation is deemed sufficient to cover dewatering licensing requirements should groundwater take exceed the 3 ML/year threshold requiring a WAL under NSW regulatory provisions.

Assessment against the NSW Aquifer Interference Policy (2012) Minimal Impact Considerations indicates that minimal impact thresholds for groundwater level, pressure, and quality are unlikely to be exceeded as a result of the proposed Internal Works.

## 14 Limitations

The findings of this report are based on the Scope of Work described in this report. Arcadis performed the services in a manner consistent with the level of care and expertise exercised by members of the environmental profession.

No warranties, express or implied, are made. Subject to the Scope of Work, Arcadis' assessment is limited strictly to identifying typical environmental conditions associated with the subject property.

While normal assessments of data reliability have been made, Arcadis assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements from sources outside of Arcadis, or developments resulting from situations outside the scope of this project

Arcadis prepared this report for the sole and exclusive benefit and use of the client. Notwithstanding delivery of this report by Arcadis or the client to any third party, any copy of this report provided to a third party is provided for informational purposes only, without the right to rely.

Information from samples collected by Arcadis personnel relating to soil, groundwater, waste, air or other matrix conditions in this document is considered to be accurate at the date of issue. Surface, subsurface and atmospheric conditions can vary across a particular site or region, which cannot be wholly defined by investigation. As a result, it is unlikely that the results and estimations presented in this report will represent the extremes of conditions within the site that may exist. Subsurface conditions including contaminant concentrations can change in a limited period of time and typically have a high level of spatial heterogeneity.

From a technical perspective, there is a high degree of uncertainty associated with the assessment of subsurface, aquatic and atmospheric environments. They are prone to be heterogeneous, complex environments, in which small subsurface features or changes in geologic conditions or other environmental anomalies can have substantial impact on water, air and chemical movement.

Arcadis' professional opinions are based upon its professional judgment, experience, and training. These opinions are also based upon data derived from the limited testing and analysis described in this report. It is possible that additional testing and analysis might produce different results and/or different opinions. Arcadis has limited its investigation(s) to the scope agreed upon with its client.

That standard of care may change and new methods and practices of exploration, testing and analysis may develop in the future, which might produce different results.

## 15 References

Cumulative Impact Assessment Guidelines for State Significant Projects (NSW Department of Planning, Industry and Environment, 2021).

NSW Department of Primary Industries, Office of Water (2012). NSW Aquifer Interference Policy: NSW Government policy for the licensing and assessment of aquifer interference activities.

NSW Department of Planning and Environment (2022). Guidelines for Groundwater Documentation for SSD/SSI Projects: Technical Guideline.

SW Department of Planning and Environment (2022). Minimum Groundwater Modelling Requirements for SSD/SSI Projects: Technical Guideline.

NSW Department of Planning, Industry and Environment (2021). Minimum requirements for building site groundwater investigations and reporting: Information for developers and consultants.

Hiscock, K. M. (2005). Hydrogeology: Principals and Practice. Blackwell Publishing.

Pells, P. J., Mostyn, G., Bertuzzi, R., & Wong, P. K. (2019). Classification of sandstones and shales in the Sydney region: A forty year review. Australian Geomechanics Journal, Volume 54, Number 2.



# Appendices

## **Appendix A – Masterplan – Delivered by Goodman (MP02.1 P3)**







## **Appendix B – Borehole Logs**

|                                                   |                                                  |                                           |
|---------------------------------------------------|--------------------------------------------------|-------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 28/10/2025                  | <b>COORDINATES</b> 292792.669, 6247309.54 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 6 m                           | <b>COORD SYS</b> GDA 2020 Z56             |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                            | <b>COMPLETION</b> Monument                |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 2.8 m (uPVC)                   | <b>SURFACE ELEVATION</b> 60.32 m AHD      |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 2.8 - 5.8 m (uPVC Factory Slotted) | <b>WELL TOC</b> 61.206m AHD               |

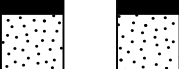
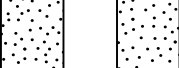
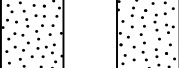
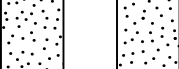
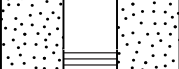
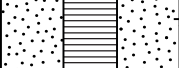
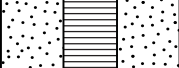
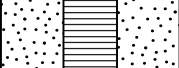
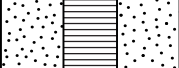
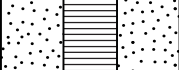
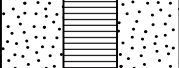
|                 |                                             |
|-----------------|---------------------------------------------|
| <b>COMMENTS</b> | <b>LOGGED BY</b> EB<br><b>CHECKED BY</b> DH |
|-----------------|---------------------------------------------|

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log | Moisture | Material Description                                                           | Well Diagram                       | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------|----------|--------------------------------------------------------------------------------|------------------------------------|-------------------|
|     |         |          |            | 0.5       |             | SM       | TOPSOIL                                                                        |                                    | 60                |
|     |         |          |            | 1         |             | D        | CLAY; white-yellow-orange mottled, stiff, with rate ironstone inclusions 1-2mm | concrete cement grout<br>Bentonite | 59.5              |
|     |         |          |            | 1.5       |             |          | SILTSTONE; pale brown, ironstone inclusions                                    |                                    | 59                |
|     |         |          |            | 2         |             |          |                                                                                |                                    | 58.5              |
|     |         |          |            | 2.5       |             |          |                                                                                |                                    | 58                |
|     |         |          |            | 3         |             |          | SHALE; pale brown                                                              |                                    | 57.5              |
|     |         |          |            | 3.5       |             |          | SILTSTONE; pale brown to grey, with gravel inclusions                          | filter pack                        | 57                |
|     |         |          |            | 4         |             |          |                                                                                |                                    | 56.5              |
|     |         |          |            | 4.5       |             |          |                                                                                |                                    | 56                |
|     |         |          |            | 5         |             | SM       | SILTSTONE; brown to grey, with gravel inclusions                               |                                    | 55.5              |
|     |         |          |            | 5.5       |             | M        |                                                                                |                                    | 55                |
|     |         |          |            | 6         |             |          | Termination Depth at: 6 m                                                      | backfill                           | 54.5              |
|     |         |          |            | 6.5       |             |          |                                                                                |                                    | 54                |
|     |         |          |            | 7         |             |          |                                                                                |                                    | 53.5              |
|     |         |          |            | 7.5       |             |          |                                                                                |                                    | 53                |
|     |         |          |            | 8         |             |          |                                                                                |                                    | 52.5              |
|     |         |          |            | 8.5       |             |          |                                                                                |                                    | 52                |
|     |         |          |            | 9         |             |          |                                                                                |                                    | 51.5              |
|     |         |          |            | 9.5       |             |          |                                                                                |                                    | 51                |
|     |         |          |            |           |             |          |                                                                                |                                    | 50.5              |

|                                                   |                                                  |                                           |
|---------------------------------------------------|--------------------------------------------------|-------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 28/10/2025                  | <b>COORDINATES</b> 292792,669, 6247309,54 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 7 m                           | <b>COORD SYS</b> GDA 2020 Z56             |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                            | <b>COMPLETION</b> Monument                |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 3.5 m (uPVC)                   | <b>SURFACE ELEVATION</b> 64.89 m AHD      |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 3.5 - 6.5 m (uPVC Factory Slotted) | <b>WELL TOC</b> 65.72 m AHD               |

**COMMENTS**

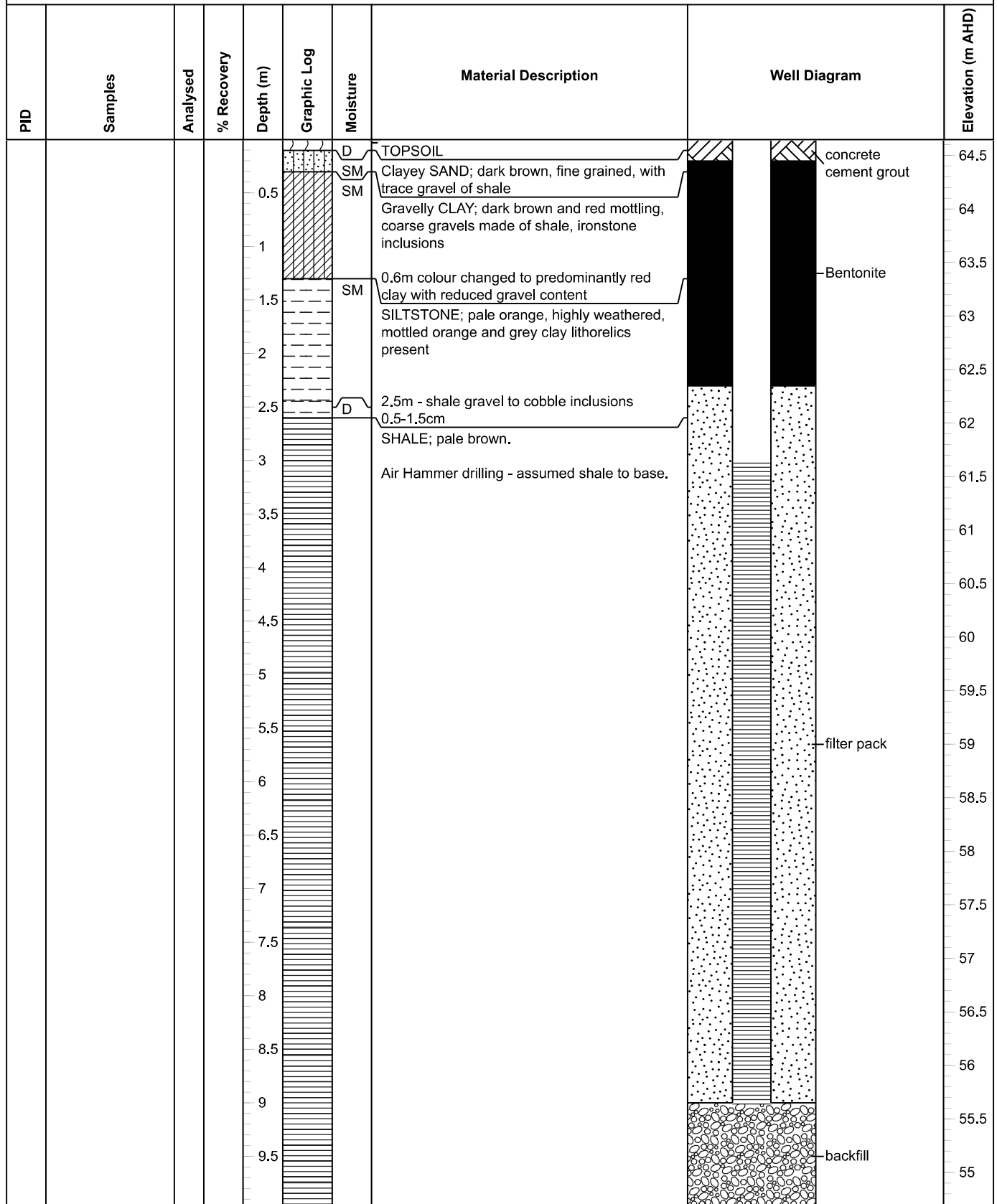
**LOGGED BY** EB  
**CHECKED BY** DH

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log                                                                         | Moisture | Material Description                                                                    | Well Diagram                                                                          | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------|
|     |         |          |            | 0.5       |    | D        | TOPSOIL                                                                                 |    | 64.5              |
|     |         |          |            | 1         |    | SM       | Silty CLAY; pale brown<br>CLAY; dark grey mottled orange, ironstone inclusions 1-2mm    |    | 64                |
|     |         |          |            | 1.5       |    | SM       | Silty CLAY; dark brown to mottled orange<br>Reduced silt content with depth (1.5 - 3.6) |    | 63.5              |
|     |         |          |            | 2         |    |          |                                                                                         |    | 63                |
|     |         |          |            | 2.5       |    |          |                                                                                         |    | 62.5              |
|     |         |          |            | 3         |    |          |                                                                                         |   | 62                |
|     |         |          |            | 3.5       |   |          |                                                                                         |  | 61.5              |
|     |         |          |            | 4         |  | SM       | Clayey SILT; mottled orange to yellow, slightly moist                                   |  | 61                |
|     |         |          |            | 4.5       |  |          | Increased clay content and siltstone inclusions                                         |  | 60.5              |
|     |         |          |            | 5         |  |          | colour change to pale brown (5.0 to 5.3)                                                |  | 60                |
|     |         |          |            | 5.5       |  |          |                                                                                         |  | 59.5              |
|     |         |          |            | 6         |  | SM       | SILT; dark brown, mottled orange, with siltstone inclusions                             |  | 59                |
|     |         |          |            | 6.5       |  |          |                                                                                         |  | 58.5              |
|     |         |          |            | 7         |  |          | Termination Depth at: 7 m<br>Collapsed 6.5 - 7.0 m                                      |  | 58                |
|     |         |          |            | 7.5       |                                                                                     |          |                                                                                         |  | 57.5              |
|     |         |          |            | 8         |                                                                                     |          |                                                                                         |  | 57                |
|     |         |          |            | 8.5       |                                                                                     |          |                                                                                         |  | 56.5              |
|     |         |          |            | 9         |                                                                                     |          |                                                                                         |  | 56                |
|     |         |          |            | 9.5       |                                                                                     |          |                                                                                         |  | 55.5              |
|     |         |          |            |           |                                                                                     |          |                                                                                         |  | 55                |

|                                                   |                                              |                                            |
|---------------------------------------------------|----------------------------------------------|--------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 30/10/2025              | <b>COORDINATES</b> 292648,841, 6247089,520 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 10.2                      | <b>COORD SYS</b> GDA 2020 Z56              |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                        | <b>COMPLETION</b> Monument                 |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 3 m (uPVC)                 | <b>SURFACE ELEVATION</b> 64.65 m AHD       |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 3 - 9 m (uPVC Factory Slotted) | <b>WELL TOC</b> 65.57 m AHD                |

## COMMENTS

LOGGED BY EB  
CHECKED BY DH

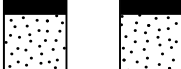
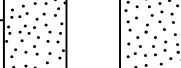
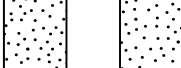
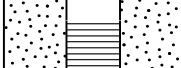
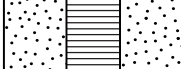
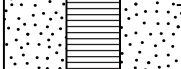
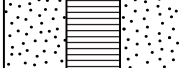
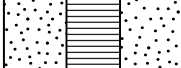


| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log | Moisture | Material Description         | Well Diagram | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------|----------|------------------------------|--------------|-------------------|
|     |         |          |            | 9.5       |             |          |                              |              | 54.5              |
|     |         |          |            | 10.0      |             |          | Termination Depth at: 10.2 m | backfill     | 54                |
|     |         |          |            | 10.5      |             |          |                              |              | 53.5              |
|     |         |          |            | 11.0      |             |          |                              |              | 53                |
|     |         |          |            | 11.5      |             |          |                              |              | 52.5              |
|     |         |          |            | 12.0      |             |          |                              |              | 52                |
|     |         |          |            | 12.5      |             |          |                              |              | 51.5              |
|     |         |          |            | 13.0      |             |          |                              |              | 51                |
|     |         |          |            | 13.5      |             |          |                              |              | 50.5              |
|     |         |          |            | 14.0      |             |          |                              |              | 50                |
|     |         |          |            | 14.5      |             |          |                              |              | 49.5              |
|     |         |          |            | 15.0      |             |          |                              |              | 49                |
|     |         |          |            | 15.5      |             |          |                              |              | 48.5              |
|     |         |          |            | 16.0      |             |          |                              |              | 48                |
|     |         |          |            | 16.5      |             |          |                              |              | 47.5              |
|     |         |          |            | 17.0      |             |          |                              |              | 47                |
|     |         |          |            | 17.5      |             |          |                              |              | 46.5              |
|     |         |          |            | 18.0      |             |          |                              |              | 46                |
|     |         |          |            | 18.5      |             |          |                              |              | 45.5              |
|     |         |          |            | 19.0      |             |          |                              |              | 45                |
|     |         |          |            | 19.5      |             |          |                              |              | 44.5              |
|     |         |          |            | 20.0      |             |          |                              |              | 44                |
|     |         |          |            | 20.5      |             |          |                              |              | 43.5              |
|     |         |          |            | 21.0      |             |          |                              |              | 43                |
|     |         |          |            | 21.5      |             |          |                              |              |                   |



|                                                   |                                                |                                            |
|---------------------------------------------------|------------------------------------------------|--------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 28/10/2025                | <b>COORDINATES</b> 292926.132, 6246696.303 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 6 m                         | <b>COORD SYS</b> GDA 2020 Z56              |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                          | <b>COMPLETION</b> Monument                 |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 1 m (uPVC)                   | <b>SURFACE ELEVATION</b> 56.11 m AHD       |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 1 - 5.4 m (uPVC Factory Slotted) | <b>WELL TOC</b> 56.99 m AHD                |

|                 |                                             |
|-----------------|---------------------------------------------|
| <b>COMMENTS</b> | <b>LOGGED BY</b> EB<br><b>CHECKED BY</b> DH |
|-----------------|---------------------------------------------|

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log                                                                         | Moisture | Material Description                                                         | Well Diagram                                                                          | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------------------------------------------------------------------------------|----------|------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------|
|     |         |          |            | 0.5       |    | D        | TOPSOIL                                                                      |    | 56                |
|     |         |          |            | 1         |    | D        | Silty CLAY; pale brown, fine grained silt, soft                              |    | 55.5              |
|     |         |          |            | 1.5       |    | D        | CLAY; mottled red and grey, trace ironstone inclusions                       |    | 55                |
|     |         |          |            | 2         |    | D        | SILTSTONE; pale brown, highly weathered, coarse gravel siltstone lithorelics |    | 54.5              |
|     |         |          |            | 2.5       |    |          | 2.5m - pale brown colour                                                     |    | 54                |
|     |         |          |            | 3         |   |          |                                                                              |   | 53.5              |
|     |         |          |            | 3.5       |  |          |                                                                              |  | 53                |
|     |         |          |            | 4         |  |          | 4.0m - dark grey to brown, trace gravels                                     |  | 52.5              |
|     |         |          |            | 4.5       |  |          | 4.5m - increase in sand content                                              |  | 52                |
|     |         |          |            | 5         |  |          |                                                                              |  | 51.5              |
|     |         |          |            | 5.5       |  |          |                                                                              |  | 51                |
|     |         |          |            | 6         |  |          |                                                                              |  | 50.5              |
|     |         |          |            | 6         |                                                                                     |          | Termination Depth at: 6 m                                                    |                                                                                       | 50                |
|     |         |          |            | 6.5       |                                                                                     |          |                                                                              |                                                                                       | 49.5              |
|     |         |          |            | 7         |                                                                                     |          |                                                                              |                                                                                       | 49                |
|     |         |          |            | 7.5       |                                                                                     |          |                                                                              |                                                                                       | 48.5              |
|     |         |          |            | 8         |                                                                                     |          |                                                                              |                                                                                       | 48                |
|     |         |          |            | 8.5       |                                                                                     |          |                                                                              |                                                                                       | 47.5              |
|     |         |          |            | 9         |                                                                                     |          |                                                                              |                                                                                       | 47                |
|     |         |          |            | 9.5       |                                                                                     |          |                                                                              |                                                                                       | 46.5              |

|                                                   |                                                |                                            |
|---------------------------------------------------|------------------------------------------------|--------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 29/10/2025                | <b>COORDINATES</b> 292456.445, 6247524.516 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 7 m                         | <b>COORD SYS</b> GDA 2020 Z56              |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                          | <b>COMPLETION</b> Monument                 |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 3.3 m (uPVC)                 | <b>SURFACE ELEVATION</b> 62.64 m AHD       |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 3 - 6.3 m (uPVC Factory Slotted) | <b>WELL TOC</b> 63.43 m AHD                |

## COMMENTS

LOGGED BY EB  
CHECKED BY DH

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log | Moisture | Material Description                                                             | Well Diagram          | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------|----------|----------------------------------------------------------------------------------|-----------------------|-------------------|
|     |         |          |            | 0.5       |             | D        | TOPSOIL                                                                          |                       | 62.5              |
|     |         |          |            | 0.5       |             | D        | CLAY; mottled pale red dark orange and pale grey, ironstone inclusions           | concrete cement grout | 62                |
|     |         |          |            | 1         |             | SM       |                                                                                  |                       | 61.5              |
|     |         |          |            | 1.5       |             |          |                                                                                  | Bentonite             | 61                |
|     |         |          |            | 2         |             |          |                                                                                  |                       | 60.5              |
|     |         |          |            | 2.5       |             | D        | SILTSTONE; pale reddish brown, highly weathered, trace red and grey clay nodules |                       | 60                |
|     |         |          |            | 3         |             |          | 3.0m - colour darkens to brown                                                   |                       | 59.5              |
|     |         |          |            | 3.5       |             |          |                                                                                  |                       | 59                |
|     |         |          |            | 4         |             |          | 4.0m - increased clay nodules                                                    |                       | 58.5              |
|     |         |          |            | 4.5       |             |          |                                                                                  | filter pack           | 58                |
|     |         |          |            | 5         |             |          |                                                                                  |                       | 57.5              |
|     |         |          |            | 5.5       |             |          |                                                                                  |                       | 57                |
|     |         |          |            | 6         |             |          |                                                                                  |                       | 56.5              |
|     |         |          |            | 6.5       |             |          |                                                                                  | collapse              | 56                |
|     |         |          |            | 7         |             |          | Termination Depth at: 7 m<br>Collapsed to 6.3 m                                  |                       | 55.5              |
|     |         |          |            | 7.5       |             |          |                                                                                  |                       | 55                |
|     |         |          |            | 8         |             |          |                                                                                  |                       | 54.5              |
|     |         |          |            | 8.5       |             |          |                                                                                  |                       | 54                |
|     |         |          |            | 9         |             |          |                                                                                  |                       | 53.5              |
|     |         |          |            | 9.5       |             |          |                                                                                  |                       | 53                |

|                                                   |                                              |                                            |
|---------------------------------------------------|----------------------------------------------|--------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 29/10/2025              | <b>COORDINATES</b> 291878,362, 6246672,710 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 6.4 m                     | <b>COORD SYS</b> GDA 2020 Z56              |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                        | <b>COMPLETION</b> Monument                 |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 3 m (uPVC)                 | <b>SURFACE ELEVATION</b> 67.74 m AHD       |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 3 - 6 m (uPVC Factory Slotted) | <b>WELL TOC</b> 68.57 m AHD                |

**COMMENTS**

**LOGGED BY** EB  
**CHECKED BY** DH

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log                                                                         | Moisture | Material Description                                                                | Well Diagram                                                                          | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------------------------------------------------------------------------------|----------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------|
|     |         |          |            | 0.5       |    | D        | TOPSOIL                                                                             |    | 67.5              |
|     |         |          |            | 1         |    | SM       | FILL CLAY; mottled grey and pale red, ironstone inclusions 1-2mm                    |    | 67                |
|     |         |          |            | 1.5       |    |          |                                                                                     |    | 66.5              |
|     |         |          |            | 2         |    |          |                                                                                     |    | 66                |
|     |         |          |            | 2.5       |   |          |                                                                                     |    | 65.5              |
|     |         |          |            | 3         |  | D        | Silty CLAY; mottled red-grey, fine silt                                             |    | 65                |
|     |         |          |            | 3.5       |  |          |                                                                                     |    | 64.5              |
|     |         |          |            | 4         |  |          |                                                                                     |    | 64                |
|     |         |          |            | 4.5       |  | D        | SILTSTONE; pale orange brown, highly weathered, coarse gravel siltstone lithorelics |    | 63.5              |
|     |         |          |            | 5         |  |          | 4.5m - colour pales to orangish yellow                                              |    | 63                |
|     |         |          |            | 5.5       |  |          | 5.5m - colour pales to yellowish brown                                              |   | 62.5              |
|     |         |          |            | 6         |  |          | 6.0m - pale brown                                                                   |  | 62                |
|     |         |          |            | 6.5       |  |          |                                                                                     |  | 61.5              |
|     |         |          |            | 6.5       |                                                                                     |          | Termination Depth at: 6.4 m (refusal)                                               |  | 61                |
|     |         |          |            | 7         |                                                                                     |          |                                                                                     |  | 60.5              |
|     |         |          |            | 7.5       |                                                                                     |          |                                                                                     |  | 60                |
|     |         |          |            | 8         |                                                                                     |          |                                                                                     |  | 59.5              |
|     |         |          |            | 8.5       |                                                                                     |          |                                                                                     |  | 59                |
|     |         |          |            | 9         |                                                                                     |          |                                                                                     |  | 58.5              |
|     |         |          |            | 9.5       |                                                                                     |          |                                                                                     |  | 58                |

|                                                   |                                                  |                                            |
|---------------------------------------------------|--------------------------------------------------|--------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 29/10/2025                  | <b>COORDINATES</b> 291674.927, 6246772.005 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 7 m                           | <b>COORD SYS</b> GDA 2020 Z56              |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                            | <b>COMPLETION</b> Monument                 |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 3.5 m (uPVC)                   | <b>SURFACE ELEVATION</b> 69.42 m AHD       |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 3.5 - 6.5 m (uPVC Factory Slotted) | <b>WELL TOC</b> 70.29 m AHD                |

**COMMENTS** Located on fill stockpile

**LOGGED BY** EB  
**CHECKED BY** DH

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log | Moisture | Material Description                                                     | Well Diagram          | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------|----------|--------------------------------------------------------------------------|-----------------------|-------------------|
|     |         |          |            | 0.5       |             | SM       | TOPSOIL                                                                  |                       | 69                |
|     |         |          |            | 1         |             |          | FILL CLAY; mottled dark orange and pale grey, ironstone inclusions 1-2mm | concrete cement grout | 68.5              |
|     |         |          |            | 1.5       |             |          |                                                                          | Bentonite             | 68                |
|     |         |          |            | 2         |             |          |                                                                          |                       | 67.5              |
|     |         |          |            | 2.5       |             | D        | 2.5m - colour change to dark brown and grey                              |                       | 67                |
|     |         |          |            | 3         |             |          |                                                                          |                       | 66.5              |
|     |         |          |            | 3.5       |             | SM       | 3.5m - increased moisture content, minor coarse gravels of siltstone     |                       | 66                |
|     |         |          |            | 4         |             |          |                                                                          | filter pack           | 65.5              |
|     |         |          |            | 4.5       |             |          | 4.5m - colour change to mottled dark orange pale red and pale grey       |                       | 65                |
|     |         |          |            | 5         |             |          |                                                                          |                       | 64.5              |
|     |         |          |            | 5.5       |             | SM       | CLAY; mottled red and grey                                               |                       | 64                |
|     |         |          |            | 6         |             |          |                                                                          |                       | 63.5              |
|     |         |          |            | 6.5       |             |          |                                                                          |                       | 63                |
|     |         |          |            | 7         |             |          |                                                                          | bentonite             | 62.5              |
|     |         |          |            | 7.5       |             |          | Termination Depth at: 7 m                                                |                       | 62                |
|     |         |          |            | 8         |             |          |                                                                          |                       | 61.5              |
|     |         |          |            | 8.5       |             |          |                                                                          |                       | 61                |
|     |         |          |            | 9         |             |          |                                                                          |                       | 60.5              |
|     |         |          |            | 9.5       |             |          |                                                                          |                       | 60                |
|     |         |          |            |           |             |          |                                                                          |                       | 59.5              |



|                                                   |                                                  |                                           |
|---------------------------------------------------|--------------------------------------------------|-------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 29/10/2025                  | <b>COORDINATES</b> 292121.36, 6247263.304 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 7 m                           | <b>COORD SYS</b> GDA 2020 Z56             |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                            | <b>COMPLETION</b> Monument                |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 1.5 m (uPVC)                   | <b>SURFACE ELEVATION</b> 64.49 m AHD      |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 1.5 - 4.5 m (uPVC Factory Slotted) | <b>WELL TOC</b> 65.39 m AHD               |

|                 |                                             |
|-----------------|---------------------------------------------|
| <b>COMMENTS</b> | <b>LOGGED BY</b> EB<br><b>CHECKED BY</b> DH |
|-----------------|---------------------------------------------|

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log | Moisture | Material Description                                                 | Well Diagram | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------|----------|----------------------------------------------------------------------|--------------|-------------------|
|     |         |          |            | 0.5       |             |          | TOPSOIL                                                              |              | 64                |
|     |         |          |            | 1         |             | SM       | CLAY; mottled pale orange and grey, trace ironstone inclusions 1-2mm |              | 63.5              |
|     |         |          |            | 1.5       |             |          |                                                                      |              | 63                |
|     |         |          |            | 2         |             |          |                                                                      |              | 62.5              |
|     |         |          |            | 2.5       |             |          |                                                                      |              | 62                |
|     |         |          |            | 3         |             | D        | SILTSTONE; pale grey, highly weathered                               |              | 61.5              |
|     |         |          |            | 3.5       |             |          |                                                                      |              | 61                |
|     |         |          |            | 4         |             |          | 4.0m - colour change to pale brown                                   |              | 60.5              |
|     |         |          |            | 4.5       |             |          |                                                                      |              | 60                |
|     |         |          |            | 5         |             |          |                                                                      |              | 59.5              |
|     |         |          |            | 5.5       |             |          |                                                                      |              | 59                |
|     |         |          |            | 6         |             |          | 6.0m - colour change to pale grey                                    |              | 58.5              |
|     |         |          |            | 6.5       |             |          |                                                                      |              | 58                |
|     |         |          |            | 7         |             |          | Termination Depth at: 7 m<br>Collapsed at 6.3 - 7 m                  |              | 57.5              |
|     |         |          |            | 7.5       |             |          |                                                                      |              | 57                |
|     |         |          |            | 8         |             |          |                                                                      |              | 56.5              |
|     |         |          |            | 8.5       |             |          |                                                                      |              | 56                |
|     |         |          |            | 9         |             |          |                                                                      |              | 55.5              |
|     |         |          |            | 9.5       |             |          |                                                                      |              | 55                |

|                                                   |                                                  |                                            |
|---------------------------------------------------|--------------------------------------------------|--------------------------------------------|
| <b>PROJECT NUMBER</b> 30297987                    | <b>DRILLING DATE</b> 28/10/2025                  | <b>COORDINATES</b> 293354.754, 6247102.896 |
| <b>PROJECT NAME</b> Project Maverick              | <b>TOTAL DEPTH</b> 5.1 m                         | <b>COORD SYS</b> GDA 2020 Z56              |
| <b>CLIENT</b> Goodman Property Services Australia | <b>DIAMETER</b> 50 mm                            | <b>COMPLETION</b> Monument                 |
| <b>ADDRESS</b> 265 Martin Road, NSW 2556          | <b>CASING</b> 0 - 2 m (uPVC)                     | <b>SURFACE ELEVATION</b> 47.18 m AHD       |
| <b>LICENCE NO.</b> -                              | <b>SCREEN</b> 2.0 - 5.0 m (uPVC Factory Slotted) | <b>WELL TOC</b> 48.03 m AHD                |

|                 |                                             |
|-----------------|---------------------------------------------|
| <b>COMMENTS</b> | <b>LOGGED BY</b> EB<br><b>CHECKED BY</b> DH |
|-----------------|---------------------------------------------|

| PID | Samples | Analysed | % Recovery | Depth (m) | Graphic Log | Moisture | Material Description                                   | Well Diagram             | Elevation (m AHD) |
|-----|---------|----------|------------|-----------|-------------|----------|--------------------------------------------------------|--------------------------|-------------------|
|     |         |          |            | 0.5       |             | SM       | TOPSOIL                                                |                          | 47                |
|     |         |          |            | 1         |             |          | CLAY; mottled pale orange and grey, trace silt         | concrete<br>cement grout | 46.5              |
|     |         |          |            | 1.5       |             |          |                                                        | bentonite                | 46                |
|     |         |          |            | 2         |             |          |                                                        |                          | 45.5              |
|     |         |          |            | 2.5       |             |          |                                                        |                          | 45                |
|     |         |          |            | 3         |             |          | 3.0m - increasing silt content, colour change to brown |                          | 44.5              |
|     |         |          |            | 3.5       |             | M        |                                                        |                          | 44                |
|     |         |          |            | 4         |             | W        | Silty gravelly CLAY; pale brown, coarse gravel         | filter pack              | 43.5              |
|     |         |          |            | 4.5       |             | W        |                                                        |                          | 43                |
|     |         |          |            | 5         |             |          | Gravelly CLAY; mottled orange and grey, coarse gravel  |                          | 42.5              |
|     |         |          |            | 5.5       |             |          | Termination Depth at: 5.1 m                            |                          | 42                |
|     |         |          |            | 6         |             |          |                                                        |                          | 41.5              |
|     |         |          |            | 6.5       |             |          |                                                        |                          | 41                |
|     |         |          |            | 7         |             |          |                                                        |                          | 40.5              |
|     |         |          |            | 7.5       |             |          |                                                        |                          | 40                |
|     |         |          |            | 8         |             |          |                                                        |                          | 39.5              |
|     |         |          |            | 8.5       |             |          |                                                        |                          | 39                |
|     |         |          |            | 9         |             |          |                                                        |                          | 38.5              |
|     |         |          |            | 9.5       |             |          |                                                        |                          | 38                |
|     |         |          |            |           |             |          |                                                        |                          | 37.5              |

## **Appendix C – Groundwater Monitoring Network and Hydrology Lines**





Site Boundary

Arcadis Groundwater Bores

JBSG Borehole Locations

Existing Groundwater Monitoring Bores

Included in GME

Excluded from GME

Named Watercourse

Unnamed Drainage Lines

ARCADIS

Rev: A

Author: CB

Checked: PG

Approved: PG

Date: 04/03/2026

Goodman

225-245 Martin Road, Bradfield

Groundwater Assessment

Appendix C

- Groundwater Monitoring

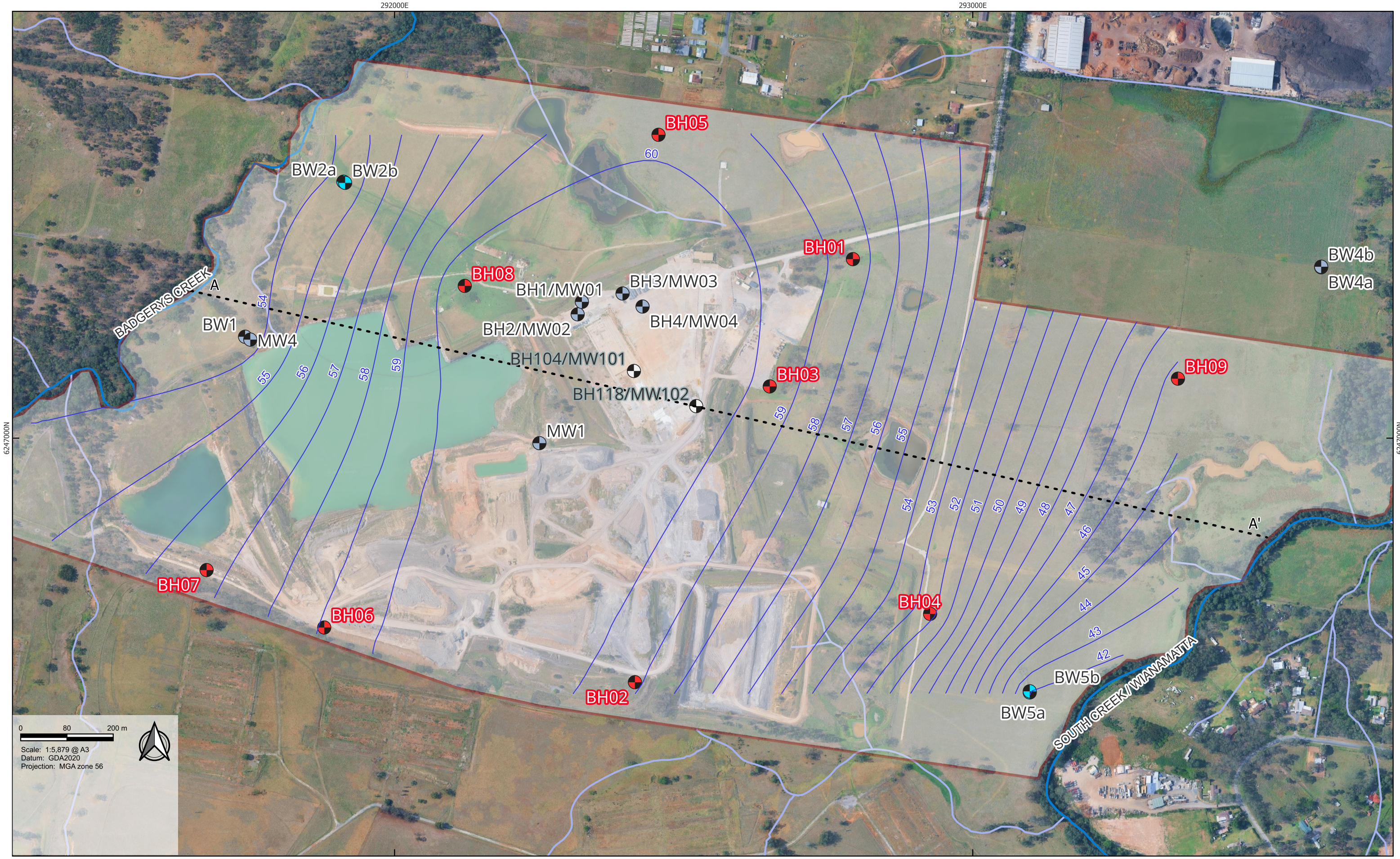
Network and Hydrology Lines

Badgerys Rev A 18/03/2026



## **Appendix D – Groundwater Contour Map**





**Legend**

- Site Boundary
- Arcadis Groundwater Bores
- JBSG Borehole Locations

**Existing Groundwater Monitoring Bores**

- Included in GME
- Excluded from GME
- Unnamed Drainage Lines

Named Watercourse

- Groundwater contours (m AHD)
- A-A' Section Line

Rev: A  
Author: CB  
Checked: PG  
Approved: PG  
Date: 18/03/2026

**Goodman**  
**225 -245 Martin Road, Bradfield**  
**Groundwater Assessment**

Appendix D -  
Groundwater Level  
Contours



## **Appendix E – Potential Groundwater Dependant Ecosystems and Groundwater Users**



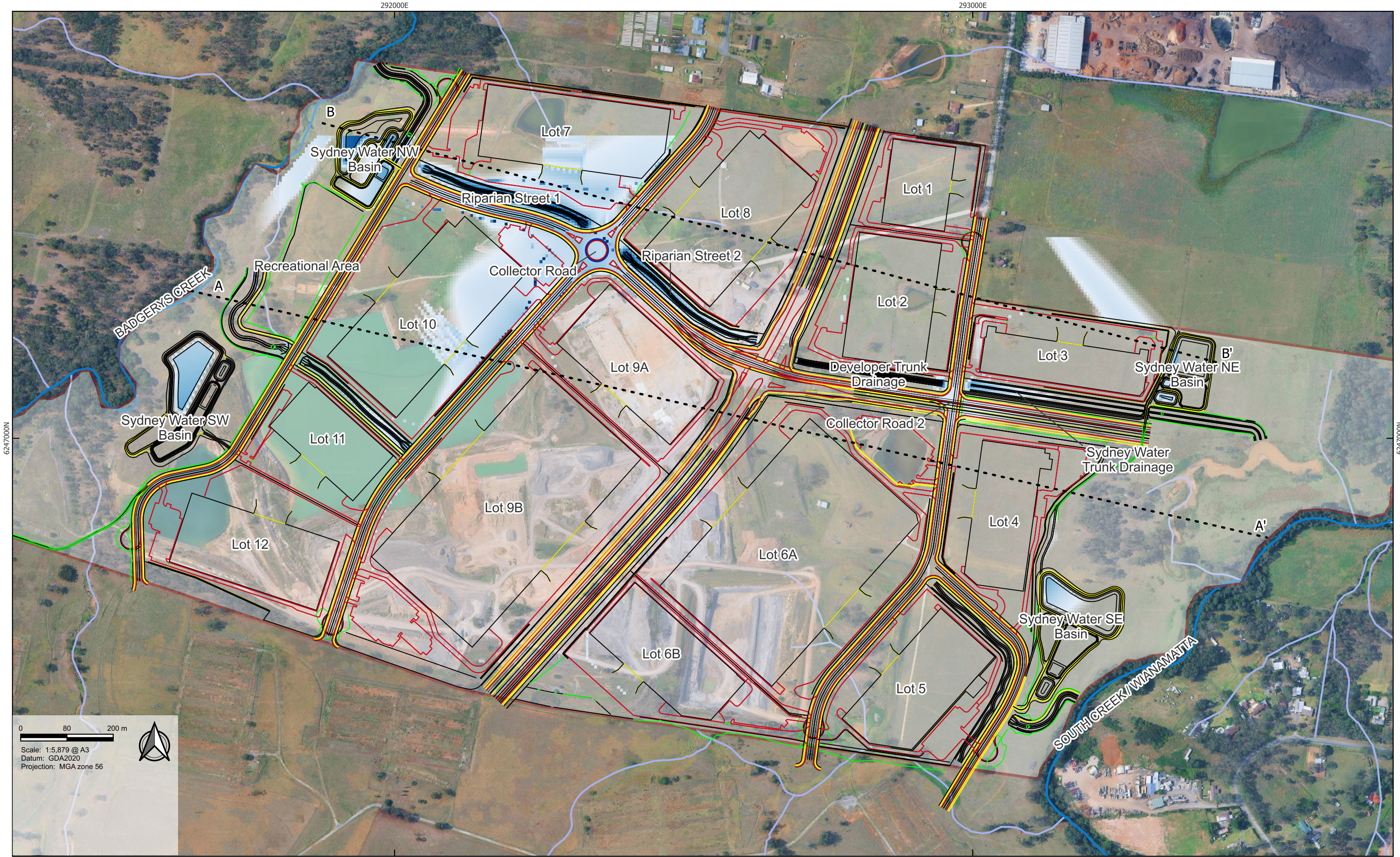


|                                                      |                                                                                                       |                                                                                                                                                    |             |                                                                                        |                                                                                                                                                                                                            |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Legend</b><br><div><div>Site Boundary</div></div> | <b>GDE HEVAE NSW</b><br><div><div>Very High</div><div>High</div><div>Medium</div><div>Low</div></div> | <b>BOM Groundwater Bore Types</b><br><div><div>Water Supply</div><div>Monitoring</div><div>Commercial and Industrial</div><div>Unknown</div></div> | <div></div> | <div>Rev: A<br/>Author: CB<br/>Checked: PG<br/>Approved: PG<br/>Date: 10/03/2026</div> | <div><b>Goodman</b><br/><b>225 - 245 Martin Road, Bradfield</b><br/><b>Groundwater Assessment</b><br/><br/>Appendix E<br/>- Potential Groundwater<br/>Dependant Ecosystems and<br/>Groundwater Users</div> |
|------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



## **Appendix F – Groundwater Interception with Internal Works**





|                                                                                                                                                                                                               |                       |                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Legend</b></p> <ul style="list-style-type: none"><li>Site Boundary</li><li>Named Watercourse</li><li>Unnamed Drainage Lines</li><li>Section Lines</li></ul> <p>Depth to GW (m)</p> <p>0</p> <p>-4.5</p> | <p><b>ARCADIS</b></p> | <p><b>Goodman</b><br/><b>225-245 Martin Road, Bradfield</b><br/><b>Groundwater Assessment</b></p> <p>Appendix F - Map showing where groundwater is intercepted by Finished Surface Level</p> <p>Rev: A<br/>Author: CB<br/>Checked: PG<br/>Approved: PG<br/>Date: 18/03/2026</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



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