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Salinity Management Plan

135 Badgerys Creek Road, Bradfield NSW

E26733.G17_Rev0
25 September 2025

Document Control

Report Title: Salinity Management Plan, 135 Badgerys Creek Road, Bradfield NSW

Report No: E26733.G17_Rev0

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Revision	Details	Date	Amended By
0	Original	25 September 2025	

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1. Introduction

1.1 Background

At the request of Creative Vision on behalf of Bradfield Corporation Pty Ltd (the Client), EI Australia (EI) has carried out a Salinity Management Plan (SMP) for the proposed development at 135 Badgerys Creek Road, Bradfield NSW (the site).

This SMP has been prepared to provide saline and sodic soil assessment and management for the site in support of a State Significant Development Application (SSDA) to the Department of Planning, Housing and Infrastructure (DPHI), and for during excavation and construction for the proposed development.

An intrusive investigation including soil salinity sampling and testing has been carried out at the site in accordance with the agreed scope of works outlined in EI's proposal referenced P23065.5, dated 1 April 2025.

1.2 Proposed Development

The following relevant documents, supplied by the Client, were used to assist with the preparation of this GI report:

- Plus Architecture (2025) *Architectural Plans*, Job No. 20799, Drawing Nos. DA-10B1 to 10B3, and DA-1000 to 1012, 110, 120, 200 to 204, dated 6 March 2025;
- SDG (2024) *Site Survey Plan,* Reference: 9165, revision B 94, dated 8 August 2024.

The proposed development will seek consent for the redevelopment of the site, comprising:

- Enabling works including vegetation removal and earthworks;
- The construction of three buildings, comprising:
  - Residential use, including approximately 400 apartment units;
  - Hotel use, including approximately 450 hotel rooms;
  - Commercial use, including supermarket, food and drink and other commercial uses;
  - Medical centre use;
  - Childcare centre use;
- Construction of two basement structures, including approximately 800 carparking spaces;
- Public domain upgrades, including:
  - Construction of an internal road;
  - A public plaza;
- Rehabilitation and augmentation of the existing riparian corridor;
- Landscaping embellishments on the ground level and within the built form; and
- Services augmentation as required.

Refer to the Environmental Impact Statement for a detailed summary of the proposed development.

Based on the provided documents, EI understands that the proposed development involves:

- The construction of a mixed use residential and commercial development comprising four, mixed commercial (retail) and residential (apartment) buildings, and one hotel building with associated childcare.
- Excavation is planned for three detached two-level basements, comprising:

  - Stage 1 basement underlying the hotel and childcare towards the eastern boundary;
  - Stage 2 basement underlying commercial and residential buildings towards the centre of the site; and
  - Stage 3 underlying further commercial and residential buildings towards the western boundary.
  - Stage 1 and Stage 2 basements are shown to have a shared wall with Stage 2 and Stage 3 separated by a riparian corridor with water course and a proposed local street.
- The lowest basement levels of each stage are proposed to have a Finished Floor Level (FFL) of between RL 68.8m and 70.0mAustralian Height Datum (AHD).
- A Bulk Excavation Level (BEL) ranging between RL 69.7 m and 70.7 m is assumed, which includes allowance for the construction of the basement slab.
- To achieve the BEL, excavation depths from 5.5m to 11.5m Below Existing Ground Level (BEGL) have been estimated. Locally deeper excavations may be required for footings, lift overrun pits, crane pads, and service trenches.
- The basement extends up to the northern and eastern site boundaries for the Stage 1 and Stage 2 basements, and is set back from the southern boundary by about 3 m.
- The Stage 3 basement is set back also about 3 m from the southern site boundary, and about 10 m from the western boundary, and a minimum of 6 m from the northern site boundary.

1.3 Objectives

The main objective of this plan is to present the findings of onsite sampling for salinity and sodicity, and to provide procedures for the management of saline soils during the bulk excavation and construction phases of the proposed development.

In accordance with section 4.39 of the Environmental Planning & Assessment Act 1979 (EP&A Act), Secretary's Environmental Assessment Requirements (SEARs) for SSD-77458970 were issued on 30 January 2025. This SMP has been prepared to respond to the relevant issued Secretary's Environmental Assessment Requirements (SEARS), specifically the requirements set out in **Table 1-1** below.

Table 1-1 Summary of SEARs addressed

SEARs Requirement	Response / Location in report
13 Ground and Groundwater Conditions (partial)	
▪ Assess potential impacts on soil resources and related infrastructure and riparian lands on and near the site and including soil erosion.	▪ Provided in Geotechnical Investigation report E26733.G03.

▪ Where required provide a Groundwater Impact Assessment in accordance with relevant Groundwater Guidelines. If the proposed development is on land identified as having high salinity or acid sulfate soil potential in an EPI provide a Salinity Management Plan or Acid Sulfate Soil Management Plan that includes appropriate management measures and strategies.	▪ Salinity management, this document, E26733.G17;
	▪ Further details provided separately:
	  ‣ Groundwater assessment in E26733.E16;
	  ‣ Acid sulfate soils management in E26733.E14.

Additionally, the salinity performance outcomes and benchmark solutions are addressed in accordance with the Western Sydney Aerotropolis DCP (2022), specifically those set out in **Table 1-2** below.

Table 1-2 Summary of Salinity Performance Outcomes and Benchmark Solutions

Performance Outcome	Benchmark Solution	Section of Report where response is provided
PO1 The extent and location of salinity in the landscape and hydrogeologic regimes are accurately identified.	1. Undertake salinity investigations prior to development and prepare a Salinity Management Plan. 2. Where required, the Salinity Management Plan considers water application rates, size of the block and timing and management of irrigation to ensure overwatering and salt movement is minimised. 3. A detailed salinity analysis, to be prepared by a qualified expert, will be required if: a. An initial investigation shows the site as saline or affected by salinity; or b. The site of the proposed development has been identified as being a moderately saline area on the Western Sydney Potential Salinity Map.	Section 2 and 3 of this document.
PO2 Development avoids disturbing high-risk saline soils to minimise the movement of salt in the landscape, increase soil health and prevent soil structural decline	1. Demonstrate that disturbance to the natural hydrological system is minimised by: a. Maintaining effective drainage, or where modification occurs, the modification provides effective drainage systems; b. Reducing waterlogging on the site and the potential for waterlogging via landscape-led design; c. Having minimal impact on the water table; and d. Having minimal impact on the hydrogeologic regime for sub soils, lateral flows, and deep groundwater systems.	Practices are set out in Section 4 of this document, for incorporation into design.
PO3 Salinity management and codes of practise are adhered to and based on NSW and local government guidelines.	1. Implement the following salinity management guidelines and codes of practise (or updates thereto) for land development (not limited to): a. Western Sydney Salinity Code of Practice (Western Sydney Regional Organisation of Councils, 2003). b. Western Sydney Hydrogeological Landscapes: May 2011 (First Edition) data package. c. Relevant Australian Standards, including AS 2159, AS 2870, AS 3600, AS 3700 and AS 2870; and d. Local Government salinity initiative documents, including: i. Site Investigations for Urban Salinity; ii. Land Use Planning and Urban Salinity; iii. Building in a Saline Environment; and iv. Roads and Salinity. 2. Where soil sampling is required to be undertaken as part of salinity investigations, provide the following details: a. Location of investigation soil samples and bores on plan;	Section 1, 2, and 4 of this document.

Performance Outcome	Benchmark Solution	Section of Report where response is provided
	b. Electrical conductivity (EC) and texture profiling down the soil profile; c. Density of sampling; d. Use of electromagnetic (EM) survey; and e. Preliminary block layout to allow for development plans to address salinity issues.	
PO4 Achieve healthy ecosystems by supporting soil ecology and support water retention in the clay landscape of the Cumberland Plain.	1. Retain undisturbed soil networks that occur in riparian corridors, parks, nominated streets and specially designed natural soil corridors.	Practices are set out in Section 4 of this document, for incorporation into design.

1.4 Regulatory Framework

The following legislation and guidelines were considered during the preparation of this Salinity Management Plan:

- DIPNR Indicators of Urban Salinity 2002;
- DIPNR Building in a Saline Environment 2003;
- DIPNR Salinity Indicator Plants 2005;
- DLWC Site Investigations for Urban Salinity 2002;
- DPI Salinity Training Manual 2014;
- Liverpool Development Control Plan 2008;
- Liverpool Local Environmental Plan 2008;
- NSW DPIE Urban salinity management in the Western Sydney Aerotropolis area 2021;
- NSW DPIE Western Sydney Aerotropolis Development Control Plan Phase 2 2022;
- State Environmental Planning Policy (Western Sydney Aerotropolis) 2020;
- WSROC Western Sydney Salinity Code of Practice 2004.

1.5 Previous EI Investigations

The results of the EI site investigations carried out to date are reported in:

- EI (2025a) *Geotechnical Investigation (GI)*, EI reference: E26733.G03; and
- EI (2025b) *Preliminary Site Investigation (PSI) with Targeted Sampling*, EI reference: E26733.E01.

Reference should be made to these reports for the relevant geotechnical or contamination consideration respectively.

The objective of the GI was to assess site surface and subsurface conditions at six (6) borehole locations, and to provide geotechnical advice and recommendations to assist in the design of the proposed development and included sample collection and laboratory testing for the purposes of assessing salinity and sodicity occurrence at the site as reported in this SMP.

1.6 Scope of Works

In order to achieve the project objective, the scope of works for the SMP is as follows:

- Desktop review of databases and other publically available information to determine the salinity potential of the site;
- Presenting the results of the EI geotechnical investigation works, which included six (6) boreholes within the development area and the collection of multi-level soil samples, and subsequent laboratory testing of selected samples for saline and sodic exposure parameters, including:
  - pH;
  - electrical conductivity (EC);
  - soluble anions (chloride and sulfate);
  - soluble cations (calcium, magnesium, sodium and potassium);
  - cation exchange capacity (CEC).
- Description of the soil management procedures to be undertaken on-site, which when implemented will prevent, or control, the generation of saline leachate; and
- Description of the contingency measures to be implemented in the case of failure of management procedures.

2. Desktop Review

2.1 Site Description and Identification

The site identification details and associated information are presented in **Table 2-1** below while the site locality is shown on the attached **Figure 1**. A satellite image of the site is presented in **Plate 1** below.

Table 2-1 Summary of Site Information

Information	Detail
Street Address	135 Badgerys Creek Road, Bradfield NSW
Lot and Deposited Plan (DP) Identification	Lot 7 in DP 243457
Site Area	The site area is approximately 2.02 ha (based on the provided survey plan referenced above).
Local Government Area	Liverpool City Council
Current Zoning	Mixed Use (MU1)
Brief Site Description	The site at the time of writing is understood to comprise cleared agricultural land with some large trees particular near the eastern and south-western site boundaries. A farm dam is located near the centre of the site, filling from runoff typically from the north and north-west. The site is located approximately 250m to the future Bradfield Metro Station and 4km to the Western Sydney Airport. It shares a western frontage with Badgerys Creek Road. The eastern boundary of the site adjoins the State government-led Bradfield City Centre which is set to be a vibrant 24/7 global city, driving advancements in industry and will support 10,000 more homes and 20,000 new jobs in Western Sydney.

Plate 1 Satellite image of the site (MetroMap, image dated 3 September 2024)

2.2 Local Land Use

The site is situated within an area of agriculture and commercial use, adjacent to the new Bradfield City Centre, and part of the Western Sydney Aerotropolis. Current uses on surrounding land at the time of our presence on site are described in **Table 2-2** below. For the purpose of this report, the site boundary adjacent to Badgerys Creek Road shall be adopted as the western site boundary.

Table 2-2 Summary of Local Land Use

Direction Relative to Site	Land Use Description
North	Property No. 145 Badgerys Creek Road, a semi-agricultural property with a single-storey residential house set back more than 40m from the common site boundary. A farm dam is located within the centre of the property set back about 8m from the common site boundary. Beyond are similar semi-agricultural properties with residential houses.
East	Bradfield City Centre, currently under construction, comprising Bradfield Metro Station with twin underground metro tunnels running roughly north to south, surrounded by mostly cleared agricultural land and stripped areas with earthworks and construction currently underway. The metro station and lines are part of the Western Sydney Airport metro railway and are Sydney Metro assets. The metro facilities are set back over 200m from the site.
South	Property No. 125 Badgerys Creek Road, a semi-agricultural property with a single-storey residential house set back about 2m from the common site boundary. The farm dam which is present within the site extends directly onto No. 125 Badgerys Creek Road. Beyond are similar semi-agricultural properties with residential houses.
West	Badgerys Creek Road, a two lane, asphalt-paved road in poor condition. Badgerys Creek Road is classified as a Regional Road and may be co-managed with TfNSW. Beyond are properties for agricultural and commercial or industrial uses, and some semi-agricultural properties with residential houses.

2.3 Regional Setting

The site topography, geological, and groundwater information for the locality is summarised in **Table 2-3** below.

Table 2-3 Topographic and Geological Information

Attribute	Description
Topography	The site is located on gentle sloping to undulating topography within the Cumberland Plain area. The site is moderately dipping due to the central drainage line running from the western side of the northern site boundary towards the near centre of the southern boundary, with high points at the opposite eastern and western site boundaries both reaching to RL 81.0 m AHD from the central low of RL 75.0 m AHD.
Soil Landscape	Information on regional soil-landscape conditions, referenced from the eSPADE spatial viewer application (corresponding to the Penrith 9030 Soil Landscape Series Sheet), indicates the site comprises the Blacktown (bt) unit which is described as: ▪ A residual soil forming on broad, gently undulating rises over Wianamatta Group shales. ▪ Soils are shallow to moderately deep (>1 m) and comprise medium to highly plastic, mottled residual soils. ▪ Relevant limitations include moderately to highly reactive subsoil, low permeability, and localised salinity or sodicity.

Attribute	Description
Regional Geology	Information on regional sub-surface conditions, referenced from the NSW Seamless Geology dataset (Colquhoun et al., 2024, corresponding to the Sydney 1:100,000 Geological Series Sheet) indicates: ▪ The site is underlain by Bringelly Shale (Twib), which consists of shale, carbonaceous claystone, claystone, laminate, fine to medium grained lithic sandstone, and rare coal and tuff. ▪ A dyke or vein is indicated to be present about 300 m to the north-west of the site, trending about 140°/ 320°. ▪ Alluvial Floodplain Deposits (Q_af) are present beyond the site toward Badgerys Creek and South Creek/Wianamatta and their tributaries. Minor alluvial deposits or alluvial eroded soils may be present at the site.
Acid Sulfate Soil (ASS) Risk	With reference to the Liverpool Local Environmental Plan 2008 and Acid Sulfate Soil Risk Maps (1:25,000 scale; Murphy, 1997), the site lies within a non-classified / non-mapped area, indicating that the potential for ASS to be present on-site is very low (consistent with the site's high elevation (>70m AHD).
Hydrogeological Landscape	The site is located in the Upper South Creek Hydrogeological Landscape. The limitations and hazards of this HGL include salinity, sheet erosion, gully and streambank erosion. Low gradients and extensive shallow saline groundwater are important features of this landscape.
Ground Profile	Based on the Geotechnical Investigation (EI Ref. E26733.G03) completed by EI, the ground profile of the site consists of: ▪ **TOPSOIL**: Medium plasticity Silty CLAY, with rootlets and organic matter. Increased soil depth is present within the drainage line due to sedimentation and vegetation. ▪ **RESIDUAL SOIL**: Low to medium plasticity, stiff to hard CLAY with trace ironstone gravels, grading into weathered siltstone with depth. ▪ **SILSTONE**: Extremely to distinctly weathered, soil to very low strength SILTSTONE, with frequent bedding partings and weathered clay seams. Grading with depth to slightly weathered to fresh, medium to high strength SILTSTONE, with occasional thick to very thick sandstone beds, and frequent disturbed bedding or bioturbation throughout.
Groundwater	As part of the Geotechnical Investigation (EI Ref. E26733.G03) groundwater monitoring wells were installed across the site. Following initial monitoring of water levels, it was observed that groundwater is typically 4m to 6m BEGL, with shallower groundwater at 1.5m BEGL within the (currently dry) drainage line. A search for groundwater bores registered with WaterNSW was conducted April 2025 and indicated: ▪ Ten (10) bores present within a 500 m radius of the site. ▪ These bores consist of 5 monitoring wells to the east of the site for the Sydney Metro and Bradfield City Centre construction and operation, and 4 production wells to the south consisting of deep (>150 m) and 1 monitoring bore for The Northern Road upgrade project. This suggests that the local groundwater resource is not heavily utilised. ▪ Wells drilled for supply in the area tend to be deep, likely tapping fresher water from the underlying Hawkesbury Sandstone. ▪ Groundwater wells drilled into the Bringelly Shale are expected to have very low yields and high salinity, making them generally unsuitable. ▪ Groundwater within alluvial deposits, being less saline, may have sufficient quality for irrigation purposes.

Attribute	Description
Drainage and Surface Water	The majority of the site surface is open land of grassed topsoil with areas of small to medium tree cover. Site drainage is expected to consist of a majority of surface infiltration with surface run-off directed to the central drainage line and farm dam. The drainage line flows to the south-east towards Moore Gully 300 m south of the site, an ephemeral stream and tributary of Thompsons Creek, within the Upper South Creek system. The nearest surface water feature is the onsite farm dam, followed by the farm dam at the adjacent northern property No. 145 Badgerys Creek Road. Thompsons Creek is the nearest perennial stream.

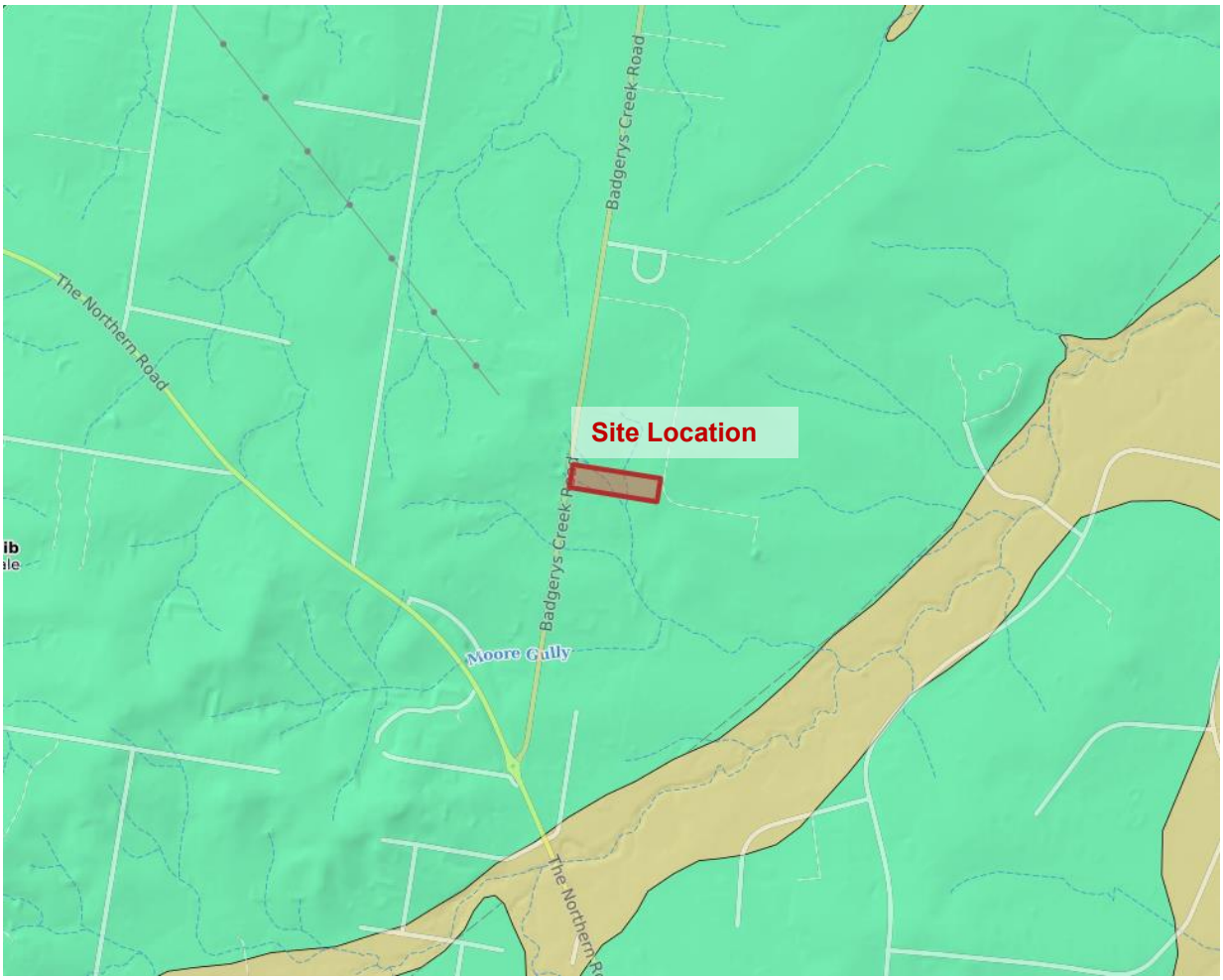

Plate 2 Excerpt of regional geological map showing location of site (Colquhoun, 2024)

Legend:

Bringelly Shale (Twib)		Shale, carbonaceous claystone, claystone, laminate, fine to medium grained lithic sandstone, and rare coal and tuff.
Alluvial Floodplain Deposits (Q_af)		Silt, very fine- to medium-grained lithic to quartz-rich sand, clay.
Dyke or vein		Geological structural feature.

2.4 Salinity Potential

According to DPIE (2021) *Urban Salinity Management in the Western Sydney Aerotropolis area*, the site lies within the Upper South Creek Hydrogeological Landscape, which has a very high salinity hazard. Urban development in this region could accelerate the accumulation of salt in upland depressions and lower colluvial slopes, potentially worsening land salinity impacts in low-lying areas. The flat, confined alluvial plain is highly sensitive, and any disturbance is likely to significantly increase erosion and recharge, leading to the mobilisation of salt into nearby drainage lines and creeks.

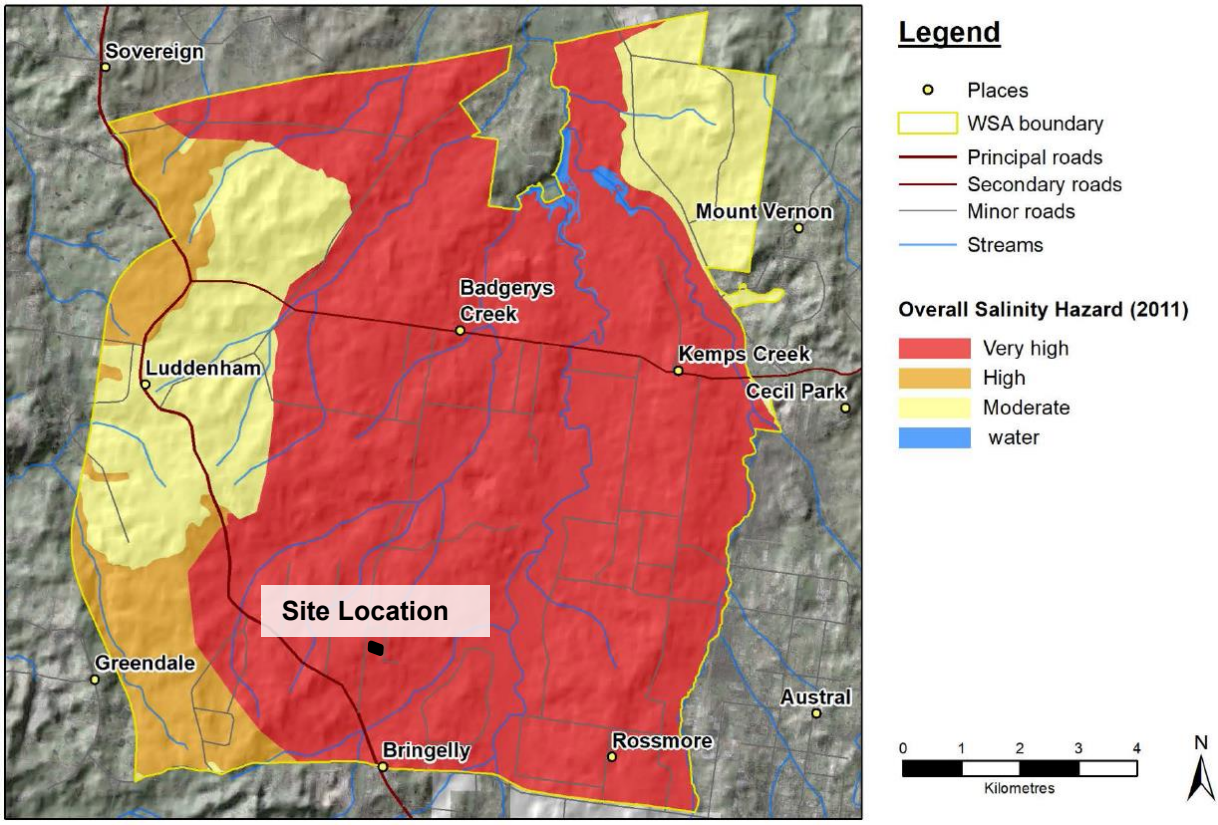

Figure 2-1 Excerpt from Urban salinity management in the Western Sydney Aerotropolis area (DPIE, 2021)

The DIPNR (2003) *Salinity Potential in Western Sydney* map depicts the distribution and severity of dryland salinity in the corresponding area, based on related biophysical factors. According to this map, the site is within an area of 'Moderate Salinity Potential' (**Figure 2-1**), and is adjacent (<100 m) to an area of 'High Salinity Potential' which is present to the south, around Moore Creek.

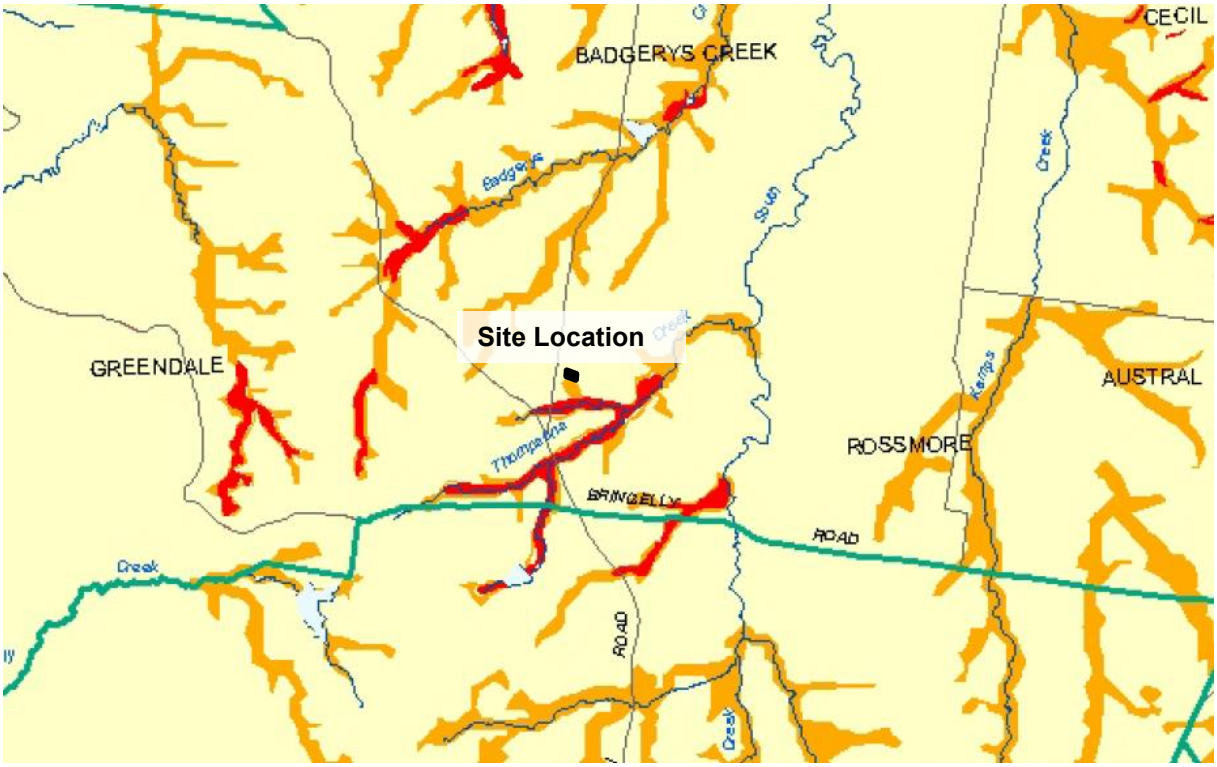

Figure 2-2 Excerpt from Salinity Potential in Western Sydney Map (DIPNR, 2003)

Legend:

Known Salinity		Areas where there is a known occurrence of saline soil, or where air photo interpretation and field observations have confirmed saline soil characteristics.
High Salinity Potential		Areas where soil, geology, topography and groundwater conditions predispose a site to salinity. These conditions are similar to areas of known salinity.
Moderate Salinity Potential		Areas on Wianamatta Group Shales and Tertiary Alluvial Terraces. Scattered areas of scalding and indicator vegetation have been noted but no concentrations have been mapped. Saline areas may occur in this zone.
Very Low Salinity Potential		Areas where salinity processes do not operate or are of minor significance. No salinity has been observed in these areas and is not expected to occur.

2.5 Salinity Indicators

Salinity is either a naturally occurring process or a result of human changes to ecosystems, resulting in increased salt content. An excess amount of salt and water can damage ecosystems (particularly flora) and urban infrastructure. Typical indicators of dryland salinity as described in DIPNR (2002) *Indicators of Urban Salinity* and DIPNR (2005) *Salinity Indicator Plants* are presented in **Table 2-4** below.

Table 2-4 Salinity Indicators from DIPNR (2022 & 2025)

Building Indicators	Ecological Indicators
Crumbling of bricks and mortar (brick fretting)	Accumulation of water in an area (waterlogging)
An accumulation of white salt crystals	High soil erosion and increased runoff
Damp walls (rising or falling; tide marks)	“Puffiness” of dry soils
Bleaching of sandstone	Black iron staining
Breakdown of render or cement/concrete	Bare soil patches (with or without salt crystals)
	Efflorescence (of soil or building materials)
	Excessively clear water
	Plants (include spiny rush and sea barley grass)
	Yellow, stunted, wilting or dead vegetation

3. Investigation Results

3.1 Stratigraphy

A summary of the subsurface conditions across the site, as developed within the GI report (E26733.G03), is presented in **Table 3-1** below. A summary of the depth and elevation of the units observed in each borehole is provided in **Table 3-2** below.

Table 3-1 Summary of Subsurface Conditions

Unit	Material	Depth to Top of Unit (m BEGL) [1]	RL of Top of Unit (m AHD) [1]	Observed Thickness (m)	Comments
1	Topsoil	Surface	76.80 to 80.70	0.10 to 1.85	Silty CLAY, medium plasticity, with rootlets and organic matter. Increased thickness due to sedimentation and vegetation within the drainage line.
2	Residual Soil	0.10 to 1.85	74.95 to 80.60	0.65 to 1.55	Silty CLAY, low to medium plasticity, stiff to hard, with trace ironstone gravels, grading into weathered siltstone with depth. SPT values ranged from 19 to refusal indicated by hammer bounce;
3	Extremely Weathered (XW) Siltstone	0.80 to 2.50	74.30 to 79.50	0.52 to 2.20	SILTSTONE, extremely to distinctly weathered, soil to very low strength. Where rock core was collected in BH4 and BH5M, it indicated frequent bedding partings and weathered clay seams.
4	Distinctly Weathered (DW) Siltstone	2.50 to 3.76	73.34 to 77.30	1.29 to 4.30	SILTSTONE, distinctly weathered, low strength, with occasional bands of medium to high strength. Frequent bedding partings and weathered clay seams observed in all boreholes. Sub-vertical jointing observed in BH2M causing the excessive breakage observed.
5	Slightly Weathered to Fresh (SW-FR)Siltstone	5.05 to 7.32	69.48 to 74.43	- [2]	SILTSTONE, slightly weathered to fresh, medium to high strength, with occasional thick to very thick sandstone beds, and frequent disturbed bedding or bioturbation throughout. Occasional bedding partings and sub-vertical jointing, with jointing more frequent in BH1M, BH2M, and BH3M.

Note 1 Approximate depth and level at the time of our assessment. Depths and levels may vary across the site.
Note 2 Observed up to termination depth in all boreholes.

Table 3-2 Depth and Elevation to Top of Units in Borehole

Unit	Material	Depth to Top of Unit (m BEGL) *RL to Top of Unit [m AHD]*					
		BH1M	BH2M	BH3M	BH4	BH5M	BH6M
1	Topsoil	0.00 *[80.30]*	0.00 *[79.70]*	0.00 *[76.80]*	0.00 *[77.10]*	0.00 *[80.70]*	0.00 *[78.70]*
2	Residual Soil	0.10 *[80.20]*	0.15 *[79.55]*	1.85 *[74.95]*	0.65 *[76.45]*	0.10 *[80.60]*	0.10 *[78.60]*
3	Class V Siltstone	0.80 *[79.50]*	1.70 *[78.00]*	2.50 *[74.30]*	1.80 *[75.30]*	1.50 *[79.20]*	1.20 *[77.50]*
4	Class IV Siltstone	3.00 *[77.30]*	2.50 *[77.20]*	3.02 *[73.78]*	3.76 *[73.34]*	3.58 *[77.12]*	3.07 *[75.63]*
5	Class III Siltstone	5.87 *[74.43]*	6.49 *[73.21]*	7.32 *[69.48]*	5.05 *[72.05]*	6.77 *[73.93]*	6.25 *[72.45]*

3.2 Groundwater Observations

Following the completion of drilling, groundwater monitoring wells were installed in five boreholes (BH1M, BH2M, BH3M, BH5M, and BH6M), and bailed dry following installation to develop the wells.

EI revisited the site to carry out water quality sampling and groundwater permeability testing, with the groundwater levels measured within the monitoring wells as indicated in **Table 3-3** below.

Generally, the groundwater water levels were observed to drop by between 0.08 m and 1.07 m between the two groundwater measuring events on the 6 and 8 May 2025.

EI note that at the time of well installation (23 to 28 April 2025), approximately 49.2 mm of rainfall was received in the area, based on climate data from the nearby '*Badgerys Creek AWS*' weather station (Station No. 067108). Between 23 April 2025 and 2 May 2025, approximately 65 mm of rainfall was received in the region. No rainfall was recorded during the follow up site visits (6 and 8 May 2025). The reductions in groundwater levels measured by EI may reflect response conditions following a period of high rainfall.

Table 3-3 Groundwater Measurements Within the Monitoring Wells

Borehole ID	Groundwater Levels		
	Measurement Date	m BEGL	RL (m AHD)
BH1M	6/05/2025	4.58	75.72
	8/05/2025	4.66	75.64
BH2M	6/05/2025	4.44	75.27
	8/05/2025	5.36	74.34
BH3M	6/05/2025	1.52	75.28
	8/05/2025	1.62	75.18
BH5M	6/05/2025	6.36	74.34
	8/05/2025	7.43	73.27
BH6M	6/05/2025	4.19	74.51
	8/05/2025	5.25	73.45

3.3 Laboratory Analysis

Seven (7) soil samples were selected for laboratory testing of salinity and sodicity exposure parameters including: pH; Chlorine; Sulfate; Electrical Conductivity (EC); Cation Exchange Capacity (CEC); and Exchangeable Cations (Sodium, Potassium, Calcium, Magnesium).

Table 3-4 Salinity and Sodicity Exposure Test Results

Test / Sample ID		BH01_ 0.0-0.1	BH01_ 0.3-0.4	BH01_ 1.5-1.95	BH03_ 0.9-1.0	BH05_ 0.5-0.95	BH05_ 1.5-1.95	BH05_ 3.0-3.45
Unit		1 Topsoil	2 Residual Soil	2 Residual Soil	1 Topsoil	2 Residual Soil	2 Residual Soil	2 Residual Soil
Material [1]		Silty CLAY	CLAY	CLAY	CLAY	CLAY	CLAY	CLAY
Soil Salinity								
Soil pH (1:5)		5.5	5.3	5.2	6.5	5.3	5	5.5
Chlorine, Cl (mg/kg)		11	70	430	35	73	550	500
Sulfate, SO4 (mg/kg)		10	78	180	77	92	500	420
EC 1:5 (µS/cm)		35	120	540	110	120	610	640
CEC (cmol(+)/kg)		9.2	13	9.7	12	11	16	16
Exchangeable Cations (cmol(+)/kg)	Sodium, Na	76	330	700	540	200	850	820
	Potassium, K	190	89	110	75	150	190	180
	Calcium, Ca	720	200	9	93	280	33	19
	Magnesium, Mg	590	1300	770	1100	970	1400	1400

Note 1 Reference should be made to the Geotechnical Investigation report (E26733.G03) for detailed descriptions of the subsurface conditions at each borehole location.

The salinity and sodicity exposure test results on the selected clay soil samples were assessed in accordance with DLWC (2002) *Site Investigations for Urban Salinity* and Hazelton and Murphy (2007) *Interpreting Soil Test Results - What Do All the Numbers Mean?*, which provided for the following classifications:

- 'Non-saline' soil near surface (0.0 m to 1.0 m BEGL) grading to 'Slightly' to 'Moderately' saline soil near the soil/bedrock interface (1.5 m to 3.45 m BEGL).
- 'Very Strongly Sodic' soil throughout the tested range (0.0 m to 3.45 m BEGL).

These findings are consistent with the mapped salinity risks as detailed in **Section 2.4**. The indicators listed in **Table 2-4** above were present at the site in the form of Spiny rush (Juncus acutus) near the drainage line (waterlogged areas). It should be noted that localised areas may have higher salinity present than is indicated by the test results from the spread across the site.

4. Salinity Management

Based on the findings of the laboratory analysis, saline, sodic soils are likely to be encountered during construction. A slight to moderate salinity potential and the presence of very strongly sodic soils was identified, and mitigation measures will be required during construction to reduce the risks posed by these soils.

The salinity management procedures to be implemented onsite are described below, and are in general accordance with the WSROC (2004) *Western Sydney Salinity Code of Practice.* Additional considerations of stormwater management measures will be necessary for the development of any sediment and erosion control plans prepared for the site, and consideration should be given to the measures as detailed by Sections 4 and 5 of Landcom (2004), *Managing Urban Stormwater, Soils and Construction, Volume 1 (4th Edition)*.

In addition, compliance with the salinity management requirements prescribed by the Western Sydney Aerotropolis DCP (2022) will be necessary.

4.1 Preliminary Management Considerations

If investigation determines that saline soils are present on-site, the following activities may intercept and disturb these soils and result in associated environmental impacts via leachates:

- Excavation for the basement;
- Piling;
- Excavations for crane pads, lift overrun pits, building footings and service trenches; and
- Dewatering for basement construction (if groundwater inflow and/or heavy rains occur).

The extent of any adverse impacts associated with salinity will depend on the following factors:

- Volume of disturbed / exposed soil identified as being saline or sodic;
- Physical characteristics of the soil, such as grain size and clay content;
- Time that the soil is exposed to air; and
- Water exposure and the rate of transport for saline materials.

In order to minimise environmental impacts associated with saline, sodic and/or aggressive soils, the management options commonly adopted are:

- Avoidance, or minimisation of soil disturbance;
- Soil amelioration (typically with gypsum, lime, or organic matter);
- Strategic reburial; and/or
- Off-site disposal.

Effective identification and monitoring, combined with a planned treatment program that includes appropriate contingencies, will ensure there is no incremental contribution of saline leachates during basement excavation or localised excavations (foundations, service trenches, etc) and building construction.

It is understood that all excavated materials will be disposed off-site to landfill. It is recommended that all saline soils be assessed on-site immediately upon disturbance. No such soil should be used for structural or general filling above the groundwater table.

4.2 Level of Management Response

WSROC (2004) *Western Sydney Salinity Code of Practice* outlines the requirements for a salinity response plan for sites / works occurring within Western Sydney. Three levels of response are identified, corresponding to increasing salinity resistance. The level applicable to a site is dependent on the identified salinity potential, the associated risk posed to receptors, and the type of works proposed. A summary of the defined levels is provided in **Table 3-1**.

Based on the findings of the assessment, and our understanding of the proposed development, the site was considered to represent Level 2 development.

Table 4-1 WSROC Salinity Response Levels

Level	Salinity / Development Requirements	Management Response
1	Sites in areas of 'moderate' salinity potential as defined by DIPNR Salinity Potential Maps. Specific to small scale (single lot) development involving low risk activities.	Implement 'Level 1 Salinity Management Response Checklist' which focuses on basic building techniques and 'good house-keeping' to manage waterlogging and rising dampness.
2	Sites in areas of 'high' salinity potential as defined by DIPNR Salinity Potential Maps. Specific to small scale (single lot) development involving low risk activities.	Implement 'Level 2 Salinity Management Response Checklist' which focuses on basic building techniques and includes suggestions for varying building materials and techniques, and stringent water and damp control measures for the site.
3	Intended for multiple lot developments / rezoning in areas with a moderate - high salinity potential, or for developments involving salinity risk activities.	Requires a SMP to be developed. The plan should detail the site's response based on the development proposed and should include controls to protect buildings, infrastructure, roads, underground services and the natural water balance.

Note 1 Salinity risk activities include quarrying, intensive agriculture, high levels of irrigation, infiltration to soil and/or groundwater from large, artificial water bodies, waste water re-use and/or treatment, and major landscaping.

4.3 Management during Excavation and Building Construction

Excavation works and building construction should be undertaken in accordance with the *Liverpool Development Control Plan 2008*. For specific requirements regarding building in saline environments, provisions described in The Building Code of Australia (BCA) and relevant Australian Standards (AS) should be referred to.

Typical salinity management requirements include, but are not limited to, the measures detailed below.

Earthworks

The management procedures for excavated saline soils are:

1) Prior to work commencement, the proposed excavation area will be isolated and appropriate bunding put in place.
2) When clearance is granted for soil disposal, the material shall be excavated to the required depth, with direct loading onto waiting trucks.
3) If immediate disposal is not possible, saline soil will be stockpiled on-site, with temporary bunding placed around each mound. Alternatively, it can be deposited into a skip bin.
4) Saline soils are to be disposed at a licenced landfill facility in accordance with the EPA (2014) *Waste Classification Guidelines.*

It is recommended that stockpile(s) containing saline soils be formed on an area where no development works are proposed. The designated area may be subject to change, depending on (modified) plans of the proposed development and access needs. If disposal cannot be performed immediately, plastic sheeting shall be placed over the stockpile.

Additional Considerations

- Areas of cut and fill should be restricted to the building envelope.
- Appropriate measures are required to control stormwater and sediment resulting from road works or utility/service installation.
- Moisture content of fill should not be increased with saline water without field or laboratory trials.
- Waterlogging through poor drainage should be avoided or rectified, with consideration to shrink / swell hazards.
- Erosion / disturbance are to be minimised. Excavation techniques should minimise site disturbance and the exposure of sensitive soil material.
- Implementation of mitigation measures will be necessary to address potential soil erosion risks during construction (i.e. mixing of soils with gypsum).
- If extended periods of rain are forecast, bare ground should be either:
  - Covered with stable fill such are ripped sandstone; or
  - Stabilised with lime proportioned to 3% by weight.
- New houses, buildings or infrastructure (including roads, pathways and retaining walls) in current or potentially salt affected areas may need to be built to withstand the effects of salinity utilising industry accepted standards. In badly affected areas, consideration should be given to rehabilitating salt affected land, building above ground or incorporating open space options (DPIE, 2021).

Notes:

In the interests of project efficiency, approval with the designated landfill facility should be sought prior to works commencement.

The designated landfill facility must be licensed for the certified waste category. The waste category will not be based on just salinity and should consider other potential contaminants of concern (if applicable).

A suitably qualified person (SQP) will need to undertake the required sampling and analysis in accordance with the NSW EPA Waste Classification Guidelines to assess the applicable waste category.

Documentation (tipping dockets) must be collated, accounting for each truck load of soil disposed off-site.

Concrete and Brick Works

- Exposure class masonry units and upgraded mortar classification should be utilised below the damp proof course.
- Consideration should be made to the use of salt resistant bricks and construction materials throughout the construction as a preventative measure for infrastructure degradation.
- Susceptible construction material, such as porous brickwork or lower quality materials should be avoided.
- Manufacturer's recommendations regarding the suitability for use in saline environments for all bricks and concrete blocks should be followed.
- Class N32 concrete or type SR cement with water / cement ratio of 0.5 must be used, with reference to Cement, Concrete and Aggregates Australia (2005) *Guide for residential slabs and footings in saline environments*.
- Proper compaction of the concrete must be achieved.
- Proper curing procedures and duration (minimum 7 days) are to be followed.
- Ensure materials including sand and aggregate are suitable for site conditions.
- Concrete cover over steel reinforcement of minimum 50 mm.
- Turbulence of any water flowing over a concrete structure should be minimised.

- For on-ground slab construction, a sand seating layer of minimum 50mm thickness must be provided, in accordance with Building Code of Australia (BCA) Clause 3.3.3.2.
- Appropriate sub-soil drainage must be installed for slabs, footings, retaining walls and driveways.

Damp Proof Course (DPC)

- Damp proof courses (DPC) should be installed during the initial construction of infrastructure and maintained throughout the development, including the landscaping phase. More specifically:
- A DPC should be installed beneath slabs and extend to the outside face of the external edge beam up the finished ground level, in accordance with BCA clause 3.2.2.6.
- Minimum overlapping of 200 mm at joints with appropriate sealing. Joint seals should be validated (i.e. via air lancing) to ensure satisfactory installation.
- Service penetrations shall be sealed with a close fitting sleeve (i.e. top hat with jubilee clip).
- The DPC materials should be in accordance with AS/NZS 2904 – *Damp-proof courses and flashings.*
- Once installed, the DPC must not be breached by any later works or additions such as steps, verandas, walls, rendering, bagging, pointing, paving, or landscaping. Protective boards should be utilised where follow-on trades must work in an area where the DPC has been installed. The importance of the integrity of the DPC should be included within site toolbox talks to reduce the risk of damage.

4.4 Management of Stormwater and Drainage

The following measures are to be considered for storm water collection, containment, and disposal:

- Implement measures to avoid the infiltration of stormwater, as detailed by the stormwater management plan(s) to be developed for the site.
- Any permanent surface water infrastructure such as ponds and dams should be lined and regularly maintained to limit infiltration.
- Underground water carrying pipes and any on-site sewerage systems are to be properly installed and any existing pipes checked for damage or leaks. Rubber sealed pipes should be used to minimise the risk of water leakage.
- Drainage pipes are to be properly connected and maintained.
- Infrastructure such as concrete slabs, foundations, and retaining walls should be designed to allow good drainage and minimise water logging. The design and layout of retaining walls, driveways, and underground services should have minimal cut, minimise impediment of natural groundwater flow, and provide good drainage. Design and construction is to be carried out in accordance with Australian Standards and Building Codes, to ensure current best practices are occurring.
- Design and construction is to be carried out in accordance with Australian Standards and Building Codes, to ensure current best practices are occurring.

4.5 Management of Vegetation and Landscaping

The following measures are to be considered during the protection and/or development of landscaped areas with vegetation:

- Areas of established vegetation should be maintained (where possible). In areas of deep soil, mulch should be used or salt tolerant plants should be planted to use the groundwater source and reduce infiltration.

- Deep-rooted trees and shrubs are likely to be effective in the landscape of Upper South Creek, intercepting shallow groundwater and providing salinity control. Healthy, actively growing vegetation will also act as a buffer to groundwater accessions in wet seasonal conditions. (DPIE, 2021).
- Landscaping plans apply to 'waterwise' gardening principles. However, procedures designed to encourage excessive infiltration through the soil should be avoided. In certain landscaping situations, infiltration measures to be incorporated may include a sub-surface drain and liner when rapid infiltration to groundwater is likely to occur.
- Irrigation systems should be properly installed to avoid leakage and smart sprinkler systems should be considered.
- Watering of open space should be kept to a minimum, and over-watering must be avoided.

4.6 Dewatering (Groundwater) Issues

If groundwater is encountered or requires dewatering, the removal (pumping) of seepage water from the localised deeper excavations (foundations, service trenches, etc.) may be necessary. The proposed excavation work was considered unlikely to significantly alter the (local) groundwater table, in the long term. Nevertheless, any required dewatering must be performed in accordance with Liverpool Council conditions.

Specific measures that must be implemented are as follows:

1) The civil and dewatering works program will be undertaken in a staged manner, to minimise their duration and the magnitude of water volume.
2) Active management of civil works and dewatering operations (if required) will be required to minimise potential impacts on the surrounding environment. The use of shoring to physically confine the cone of depression (in the pit), or temporarily slow down groundwater flow, should be considered. Specifications for shoring are to be determined by the appointed structural engineer.
3) Excavation areas will be left open for the shortest possible time.
4) Water to be discharged to Council's stormwater system must:
   (a) Be pumped to an agreed discharge point;
   (b) Not contain a concentration of suspended sediment exceeding 50 mg/L;
   (c) Have a pH of between 6-8; and
   (d) Comply with the ANZG (2018) *Australian and New Zealand Guidelines for Fresh and Marine Water Quality* (specifically the criteria for the protection of 95% of species in freshwater ecosystems), as well as the criteria included in Landcom (2004) *Managing Urban Stormwater: Soils and Construction*.
5) Should acidic water (pH<6) be encountered during the works, it will be treated with lime to display a pH level of 6-8. The treatment system should include a settlement tank of suitable capacity, with dosing pump to neutralise any acidic water, prior to controlled off-site release. A flow meter is to be located on the discharge line, to record volumes of treated effluent.
6) Granulated lime should be added to the water by hand and/or excavator bucket, then mixed. Field pH testing on representative samples should be performed to ensure that sufficient neutralisation has occurred, prior to disposal.
7) Water testing shall be carried out to ensure groundwater is appropriate for discharge. This testing must be undertaken by a suitably qualified environmental consultant and results provided to Council upon request.
8) Results of water testing must be provided in a certification report. Water that does not comply with the above standards must not be discharged off-site. A permit may be required

to discharge such water. It is recommended that consultation with Council be undertaken prior to discharge into the stormwater network.

9) No water containing any suspended matter or contaminants is to leave the site in a manner which could significantly pollute a receiving waterway. Sediment retention traps will be used to control any runoff water.

4.7 Risk Management

This management plan is based on the assumption that saline soils from within the proposed development area will be disturbed and exposed, as a consequence of the site redevelopment. Should the actual amounts of saline materials significantly differ from those in this report, management techniques may need to be revised.

Prior to the commencement of any excavation works, the applicant shall nominate an appropriately qualified environmental scientist to supervise the management of saline, sodic and/or aggressive soils (if necessary). The scientist shall:

1) Provide an acceptance in writing to supervise the aforementioned works and ensure compliance with this management plan and conditions of consent. This must be provided the appropriate Council officer prior to works commencing.

2) On completion of saline soil management, certify that the aforementioned works were conducted in compliance with the approved plan(s), specifications and conditions of consent. This certification shall be submitted to the appropriate Council officer within 30 days of the completion of works.

During excavations, site inspection is to be conducted by the appointed environmental consultant, in order to check that the assumptions made in this plan are consistent with field evidence and practices. The consultant will be responsible for ensuring that:

- Saline soils are kept separate from other soils; and
- Testing of excavated and exposed soils is performed, where required.

All contractors must employ best practices in managing any off-site water and soil quality impacts during site redevelopment. All waste materials must be contained and disposed at appropriate landfill facilities, in accordance with the EPA (2014) *Waste Classification Guidelines*. Any soils to be imported onto the site for the purpose of back-filling or landscaping will require some form of validation, to confirm their suitability for the proposed land use.

If parts of the localised deeper excavations (foundations, service trenches, etc.) are to be set on saline soil horizons, it is suggested that salt-resistant concrete be considered for the concrete shell. The specifications for salt-resistant concrete will be determined by the appointed structural engineer.

Notes:

Best practices must be employed in managing any off-site water and soil quality impacts. No water containing any suspended matter is to leave the site in a manner which could significantly pollute a receiving waterbody.

5. Consultation and Records

During the development and for saline soil management (if required), the following authorities may require consultation:

- New South Wales Environment Protection Authority (EPA), concerning pollution incident and response issues, including off-site migration of leachates;
- WaterNSW, for a dewatering permit and associated conditions; and
- Liverpool Council, regarding development compliance and environmental issues.

The party responsible for the implementation of this SMP should maintain a portfolio documenting all records associated with on-site soil management.

Such records will comprise, though not necessarily be limited to:

- Soil investigation results;
- Field records of salinity monitoring, such as daily field screening results on stockpiled materials, excavation surfaces, application of gypsum / lime, groundwater level and pH level monitoring;
- Records of saline soil transportation, including truck registers and waste (tipping) dockets issued by the receiving land fill facility; and
- Environmental incident reports, in cases of non-conformance and subsequent mitigation measures adopted.

All analysis and monitoring information will be stored electronically to permit ease of access and data interpretation.

6. Statement of Limitations

This report has been prepared for the exclusive use of Bradfield Corporation Pty Ltd who is the only intended beneficiary of EI's work. The scope of this plan is limited to those agreed with Bradfield Corporation Pty Ltd.

No warranties are made as to the information provided in this plan. All recommendations and procedures are of the professional opinions of EI personnel involved with the project and while normal checking of the accuracy of data has been conducted, any circumstances outside the scope of this report or which are not made known to EI personnel and which may impact on those opinions are not the responsibilities of EI.

This plan was prepared for the above named client and no responsibility is accepted for use of any part of this report in any other context or for any other purpose or by other third parties. This report does not purport to provide legal advice.

This plan and associated documents remain the property of EI subject to payment of all fees due for the corresponding reporting. The report shall not be reproduced except in full and with prior written permission by EI.

Should you have any queries regarding this plan, please do not hesitate to contact EI.

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Figures

Figure 1 Site Locality Plan

Figure 2 Test Location Plan

Derwent Road

Badgerys Creek Road

BRADFIELD

Bradfield Railway Station

Derwent

The Northern Road

Badgerys Creek Road

Moore-Gully

Moore-Gully

0 150 300 450 600 m

LEGEND **Note: All locations are approximate**

Site Boundary

eiaustralia
Practical Solutions for Built Environments
Suite 6.01, 55 Miller Street, PYRMONT 2009
Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	G.B.
Approved:	D.D.
Date:	22/09/2025

Bradfield Corporation Pty Ltd

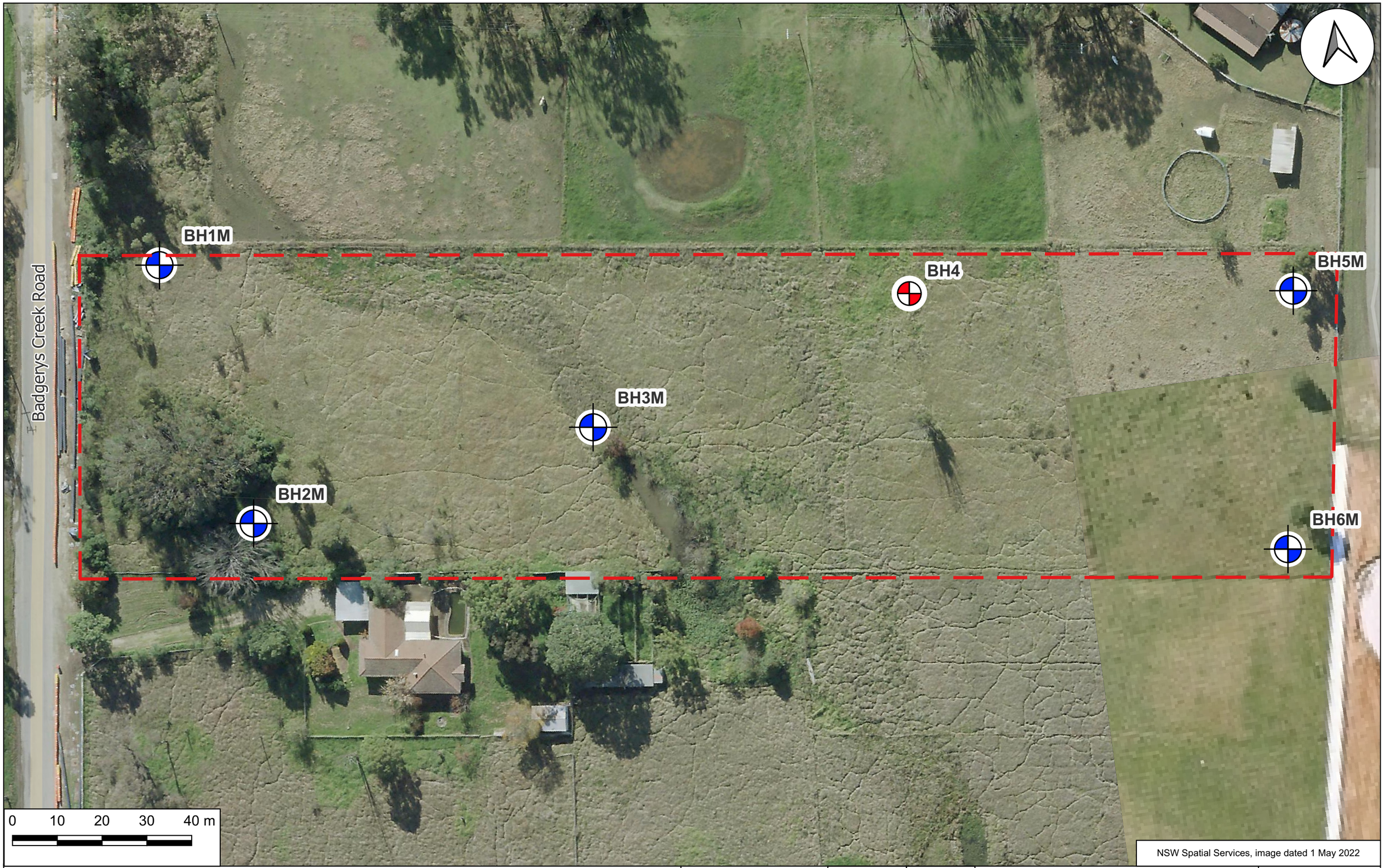
Salinity Management Plan

135 Badgerys Creek Road, Bradfield NSW

Site Locality Plan

Figure: 1

Project: E26733.G17



LEGEND Note: Areas are approximate

- Site Boundary
- Proposed Basement Boundary
- Borehole
- Groundwater Monitoring Well

eiaustralia
Practical Solutions for Built Environments
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Ph (02) 9516 0722 Fax (02) 9518 5088

Drawn:	G.B.
Approved:	D.D.
Date:	22/09/2025

Bradfield Corporation Pty Ltd

Salinity Management Plan

135 Badgerys Creek Road, Bradfield NSW

Test Location Plan

Figure: 2

Project: E26733.G17

Appendix A Borehole Logs And Explanatory Notes

BOREHOLE LOG

BH ID: BH1M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	23 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 23 April 2025
Sheets	1 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.30 m (AHD)	**Northing**	6244091.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290122.0000 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH1M_0.5-0.95 SPT 0.50-0.95 7,9,15 N=24		0 0.00 0.10		80.30 80.20	TOPSOIL: Silty CLAY: medium plasticity, dark brown, with rootlets, no odour odour CLAY: low plasticity, dark red, no odour odour	M ≈ PL M < PL	- VSt	TOPSOIL RESIDUAL SOIL
		BH1M_1.50-1.94 SPT 1.50-1.79 2,16/140 mm N=R		0.80 1 2 2.30 3		79.50 78.00 77.30	SILTSTONE: pale brown-grey, extremely weathered, soil to very low strength, with pale grey clay seams From 2.30m, very low to low strength			BEDROCK
				3.00 4 5 6 7 8 9 10			*Log continued on next page.*			

BOREHOLE CORE LOG

BH ID: BH1M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	23 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 23 April 2025
Sheets	2 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.30 m (AHD)	**Northing**	6244091.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290122.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				0		*Log continued from previous page.*				
				1						
				2						
NMLC	90%	100	16	3		SILTSTONE: brown to dark grey, thinly to medium bedded, iron stained	DW		3.01: JT 20° PR SM CL 3.06: BP 0-10° PR SM CL VN 3.09-3.11: JT 10-20° PR SM CL X3 3.17: BP 0° PR SM CL VN 3.21: JT 0-10° UN SM CL 3.23: BP 0° PR SM CL VN 3.25-3.47: JT 10-50° PR SM CL Infilled 3.35: XWS 0° PR SM CL Infilled 3.45: XWS 0° PR SM CL Infilled 3.49-3.56: BP 0-10° PR SM FE VN 3.61-3.63: XWS 10° PR SM CL Infilled 3.69: XWS 10° PR SM CL Infilled 3.74: BP 10° PR SM FE VN 3.82: BP 0° PR SM FE VN 3.91: BP 10° PR SM CL VN 3.97: BP 10° PR SM CL VN 4.12-4.15: XWS 0° PR SM CL Infilled 4.19: BP 0-15° UN SM FE VN 4.29: BP 0-10° UN SM CL 4.36: BP 10° PR SM CL 4.37-4.41: XWS 10° PR SM CL Infilled 4.46-4.47: XWS 10° PR SM CL Infilled 4.50: JT 70° PR SM FE VN 4.65: BP 0° PR CM CL VN 4.68: JT 30° PR SM CL 4.74-4.75: XWS 0° PR SM CL Infilled 4.77-4.78: XWS 10° PL SM CL Infilled 4.89: JT 80° PR SM FE SN X2 4.97: HB 5.03: JT 80° PR SM FE SN 5.11: BP 10° PR SM FE VN 5.32-5.56: BP 0-10° UN RO GC Infilled 5.66: BP 10° PR RO GC Infilled 5.87: JT 20° PR RO FE/CL Infilled 5.98: BP 0° PR SM FE VN 6.07: DB 6.08-6.97: DB scarring from above gravels 6.81: BP 10° PR SM CL Infilled 6.87-6.91: CS 0-20° PR RO GC Infilled 7.20: BP 10° UN RO FE VN 7.22: BP 10° UN RO FE VN 7.65: BP 10° PR RO FE VN 7.95: BP 10° PR RO FE VN 7.98: HB 8.09: BP 0° PR RO FE VN 8.25: JT 80° PR RO FE/QZ Infilled 8.26: BP 20° PR RO FE VN 8.38: JT 80° ST RO CL 8.54-8.74: JT 30-90° ST RO CL 8.73: DB 9.01: HB 9.03-9.04: XWS 0° PR SM CL Infilled 9.09: BP 0° PR SM CL VN 9.16-9.19: XWS 0° PR SM CL Infilled 9.27: BP 0° PR CM CN 9.93: BP 10° PR SM CN	30 100 300 1000 3000
				4						
				5						
				5.31	74.99	From 5.31m, with bands of sand/gravel, medium sand to fine gravel size, sub-rounded, bands up to 60mm thick, iron indurated				
				5.81	74.49	SILTSTONE: dark grey, indistinctly thinly bedded, trace mudstone/carbonaceous inclusions or laminations, up to 20mm in size				
				6						
	70%	100	89	6.98	73.32	From 6.98m to 7.14m, bioturbation burrow				
				7.20	73.10	SANDSTONE: pale grey to grey, fine to medium grained, very thinly to thinly bedded, occasional bioturbation or disturbed bedding	FR			
				8						
	40%	100	90	8.26	72.04	SILTSTONE: dark grey, laminated to very thinly bedded, occasional bioturbation or disturbed bedding				
				9						
				10						

BOREHOLE CORE LOG

BH ID: BH1M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025		
Client	Creative Vision			**Completed**	23 April 2025		
Job No.	E26733.G03			**Logged By**	GB	**Date**	23 April 2025
Sheets	3 of 3			**Review By**	JB	**Date**	23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.30 m (AHD)	**Northing**	6244091.0000 (MGA 2020 Zone 56)		
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290122.0000 (MGA 2020 Zone 56)		

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral VL 0-1 / L 0-3 / M 1 / H 3 / VH 10 / EH	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING 30 / 100 / 300 / 1000 / 3000
	40%			11		69.39	SILTSTONE: dark grey, laminated to very thinly bedded, occasional bioturbation or disturbed bedding		M	9.94: BP 0° PR SM CN 10.08: HB 10.22: BP 0° PR SM CN 10.26: BP 0° PR SM CN 10.33: BP 0° PR SM CN 10.51-10.58: CS 0-30° SM VN QZ	100
							Terminated at 10.91m. Target depth reached.				
				12							
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

MONITORING WELL LOG

BH ID: BH1M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	23 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 23 April 2025
Sheets	1 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.30 m (AHD)	**Northing**	6244091.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290122.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
GWNE	BH1M_0.5-0.95 SPT 0.50-0.95 7,9,15 N=24	0.00 0.10	80.30 80.20	TOPSOIL: Silty CLAY: medium plasticity, dark brown, with rootlets, no odour odour CLAY: low plasticity, dark red, no odour odour	M ≈ PL M < PL
	BH1M_1.50-1.94 SPT 1.50-1.79 2,16/140 mm N=R	0.80	79.50	SILTSTONE: pale brown-grey, extremely weathered, soil to very low strength, with pale grey clay seams	
		2.30	78.00	From 2.30m, very low to low strength	
90%		3.00	77.30	SILTSTONE: brown to dark grey, thinly to medium bedded, iron stained	
		5.31	74.99	From 5.31m, with bands of sand/gravel, medium sand to fine gravel size, sub-rounded, bands up to 60mm thick, iron indurated	
		5.81	74.49	SILTSTONE: dark grey, indistinctly thinly bedded, trace mudstone/carbonaceous inclusions or laminations, up to 20mm in size	
70%		6.98	73.32	From 6.98m to 7.14m, bioturbation burrow	
		7.20	73.10	SANDSTONE: pale grey to grey, fine to medium grained, very thinly to thinly bedded, occasional bioturbation or disturbed bedding	
40%		8.26	72.04	SILTSTONE: dark grey, laminated to very thinly bedded, occasional bioturbation or disturbed bedding	

BACKFILL DETAILS	STANDPIPE DETAILS
	Well Stickup =0.86m (RL 81.16m)
Grout 0.00m - 5.50m	
	-0.86m - 7.91m PVC casing (50mm Ø)
Bentonite 5.50m - 6.50m	
Sand 6.50m - 10.91m	
	7.91m - 10.91m PVC screen (50mm Ø)

This log should be read in conjunction with EI Australia's accompanying explanatory notes.

MONITORING WELL LOG

BH ID: BH1M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	23 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 23 April 2025
Sheets	2 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.30 m (AHD)	**Northing**	6244091.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290122.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
40%		11		69.39	SILTSTONE: dark grey, laminated to very thinly bedded, occasional bioturbation or disturbed bedding			
					Terminated at 10.91m. Target depth reached.			
		12						
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						

CORE PHOTOGRAPH OF BOREHOLE: BH1M

Project	Proposed Mixed-use Development	**East**	290122	**Depth Range**	3.00m to 10.91m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6244091	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 80.3m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	GB	**Date**	23 / 04 / 2025
Client	Creative Vision	**Box**	1-2 of 2	**Checked**	JB	**Date**	23 / 06 / 2025

BOREHOLE LOG

BH ID: BH2M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	24 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 24 April 2025
Sheets	1 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈79.70 m (AHD)	**Northing**	6244031.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290135.0000 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH2M_0.50-0.95 SPT 0.50-0.95 5,7,12 N=19		0.00 0.15 0.60 1		79.70 79.55 79.10	TOPSOIL: Silty CLAY: medium plasticity, dark brown, with rootlets, no odour odour CLAY: low plasticity, dark red, trace rootlets, no odour odour From 0.60m, pale grey mottled dark red	M ≈ PL M < PL	- VSt	TOPSOIL RESIDUAL SOIL
		BH2M_1.50-1.86 SPT 1.50-1.86 8,16,10/60 mm N=R		1.70 2		78.00	SILTSTONE: brown-grey to dark grey and dark red, extremely weathered, soil to very low strength			BEDROCK
				2.50 3 4 5 6 7 8 9 10		77.20	*Log continued on next page.*			

BOREHOLE CORE LOG

BH ID: BH2M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	24 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 24 April 2025
Sheets	2 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈79.70 m (AHD)	**Northing**	6244031.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290135.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				0		*Log continued from previous page.*				
NMLC	70%	100	47	3		SILTSTONE: dark grey, laminated to very thinly bedded, iron stained	DW	▼	2.56: BP 0° PR SM FE SN 2.57: JT 40° PR SM FE SN X2 2.65: BP 0° PR SM FE SN 2.67: JT 30° PR SM FE SN 2.76: DB 2.82: DB 2.89: BP 0° PR SM FE VN 2.98: BP 0° PR SM FE SN 3.06: JT 40° PR SM CN 3.13: JT 10° PR SM CN 3.34: DB 3.45-4.69: JT 80-90° PR SM FE VN breakage along joint obscures further defects 3.47: BP 10° PR SM FE VN	
	20%	100	39	5					4.47: JT 60° CU SM FE VN 4.73-4.78: CS 0-40° IR SM GC Infilled 4.83: JT 30° PR SM FE VN 4.92: BP 10° PR SM FE VN 4.94-5.08: JT 80-90° PR SM FE VN 5.12: JT 30° PR SM FE VN 5.25-5.28: XWS 0° PR SM GC Infilled 5.36: JT 50° PR RO GC Infilled 5.57: BP 0-10° PR SM GR Infilled 5.70-5.72: XWS 0° PR SM GC Infilled 5.75: JT 30-80° CU SM CN 5.84-6.29: JT 80-90° PR SN FE VN	
				5.09	74.61	From 5.09m to 5.32m, with bands of sand/gravel, medium sand to fine gravel size, sub-rounded, bands up to 60mm thick				
				5.32	74.38	From 5.32m to 5.57m, with sand, fine grained, grey to dark grey				
				5.72	73.98	SILTSTONE: dark grey, indistinctly thinly bedded, trace iron staining				
				5.98	73.77	From 5.93m to 5.93m, gravel inclusions, medium size, sub-rounded	SW			
	70%	100	88	6.36	73.34	SILTSTONE: grey to dark grey, indistinctly laminated to thinly bedded, with fine grained sand, occasional bioturbation or disturbed bedding	FR	▼	6.14: JT 80° PR SM FE VN 6.32-6.35: DB 6.37: JT 80-90° CU SM QZ VN 6.40: DB 6.47: JT 70° IR SM QZ VN 6.48: BP 0° PR SM CN 6.97-7.07: JT 80° PR SM QZ VN 7.06-8.38: JT 80-90° PR SM QZ VN 7.33: XWS 0° PR SM GC Infilled 7.81: BP 0° PR SM CN 8.24-8.32: XWS 0-20° PR SM GC Infilled 8.41-8.49: XWS 0-20° PR SM GC Infilled 8.59: BP 0° PR SM CL VN 8.91: BP 10° PR CN CL VN 8.98: HB 9.03: BP 0° PR SN CL VN 9.22: DB	
	80%			9.52	70.18	NO CORE: 90mm thick				
				9.61	70.09	SILTSTONE: as above			9.62: DB 9.66: HB	
				10						

BOREHOLE CORE LOG

BH ID: BH2M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	24 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 24 April 2025
Sheets	3 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈79.70 m (AHD)	**Northing**	6244031.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290135.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
	80%	97	92	11			SILTSTONE: as above			10.05: HB 10.37: BP 0° PR SM CN 10.68: BP 10° PR SM CN 10.72: BP 0° PR SM CL VN 10.78: BP 0° PR SM CL VN 10.91: JT 30° PR SM CL VN 10.97: HB 11.07: DB	
				11.07		68.63	From 11.07m to 11.07m, gravel inclusions, medium size, rounded				
				11.78		67.92	From 11.78m to 11.83m, gravel inclusions, medium size, rounded			11.79: DB	
				12		67.51	Terminated at 12.19m. Target depth reached.				
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

MONITORING WELL LOG

BH ID: BH2M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025	
Client	Creative Vision			**Completed**	24 April 2025	
Job No.	E26733.G03			**Logged By**	GB	**Date** 24 April 2025
Sheets	1 of 2			**Review By**	JB	**Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈79.70 m (AHD)	**Northing**	6244031.0000 (MGA 2020 Zone 56)	
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290135.0000 (MGA 2020 Zone 56)	

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
GWNE	BH2M_0.50-0.95 SPT 0.50-0.95 5,7,12 N=19	0.00 0.15	79.70 79.55	TOPSOIL: Silty CLAY: medium plasticity, dark brown, with rootlets, no odour odour CLAY: low plasticity, dark red, trace rootlets, no odour odour	M < PL
		0.60	79.10	From 0.60m, pale grey mottled dark red	M < PL
	BH2M_1.50-1.86 SPT 1.50-1.86 8,16,10/60 mm N=R	1.70	78.00	SILTSTONE: brown-grey to dark grey and dark red, extremely weathered, soil to very low strength	
70%		2.50	77.20	SILTSTONE: dark grey, laminated to very thinly bedded, iron stained	
20%		5.09	74.61	From 5.09m to 5.32m, with bands of sand/gravel, medium sand to fine gravel size, sub-rounded, bands up to 60mm thick	
		5.32	74.38	From 5.32m to 5.57m, with sand, fine grained, grey to dark grey	
		5.72	73.98	SILTSTONE: dark grey, indistinctly thinly bedded, trace iron staining	
		5.93	73.77	From 5.93m to 5.93m, gravel inclusions, medium size, sub-rounded	
70%		6.36	73.34	SILTSTONE: grey to dark grey, indistinctly laminated to thinly bedded, with fine grained sand, occasional bioturbation or disturbed bedding	
80%		9.52	70.18	NO CORE: 90mm thick	
		9.61	70.09	SILTSTONE: as above	

BACKFILL DETAILS	STANDPIPE DETAILS
	Well Stickup =0.95m (RL 80.65m)
Grout 0.00m - 2.50m	-0.95m - 3.50m PVC casing (50mm Ø)
Bentonite 2.50m - 3.50m	
Sand 3.50m - 6.50m	3.50m - 6.50m PVC screen (50mm Ø)
Bentonite 6.50m - 7.50m	
Cuttings	

This log should be read in conjunction with EI Australia's accompanying explanatory notes.

MONITORING WELL LOG

BH ID: BH2M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	23 April 2025
Client	Creative Vision			**Completed**	24 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 24 April 2025
Sheets	2 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈79.70 m (AHD)	**Northing**	6244031.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290135.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
80%		11		68.63	SILTSTONE: as above		7.50m - 12.19m	
		11.07			From 11.07m to 11.07m, gravel inclusions, medium size, rounded			
		11.78		67.92	From 11.78m to 11.83m, gravel inclusions, medium size, rounded			
		12		67.51	Terminated at 12.19m. Target depth reached.			
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						

CORE PHOTOGRAPH OF BOREHOLE: BH2M

Project	Proposed Mixed-use Development	**East**	290135	**Depth Range**	2.5m to 12.19m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6244031	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 79.7m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	GB	**Date**	24 / 04 / 2025
Client	Creative Vision	**Box**	1-3 of 3	**Checked**	JB	**Date**	23 / 06 / 2025

BOREHOLE LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	1 of 4			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH3M_0.50-0.95 SPT 0.50-0.95 3,3,6 N=9		0 0.00		76.80	TOPSOIL: Silty CLAY: low to medium plasticity, dark brown, with rootlets, no odour odour	M ≈ PL	-	TOPSOIL
				0.70 1		76.10	CLAY: low to medium plasticity, dark red mottled grey, trace rootlets, no odour odour			
		BH3M_1.50-1.95 SPT 1.50-1.95 2,3,4 N=7		1.20		75.60	CLAY: low plasticity, red-brown, trace sand/gravel, medium sand to fine gravel size, rounded, trace rootlets, occasional charcoal pieces, fine to medium size, no odour odour	M < PL	F - St	
				1.85 2		74.95	CLAY: low plasticity, pale grey mottled pale yellow-brown, trace iron indurated nodules, fine to medium gravel size, dark red, no odour odour		VSt	RESIDUAL SOIL
				2.50		74.30	SILTSTONE: grey to pale brown, extremely weathered, soil to very low strength			BEDROCK
		BH3M_3.00-3.05 SPT 3.00-3.05 10/50 mm N=R		3 3.02		73.78	*Log continued on next page.*			
				4						
				5						
				6						
				7						
				8						
				9						
				10						

BOREHOLE CORE LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	2 of 4			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0			*Log continued from previous page.*				
				1							
				2							
				3			SILTSTONE: dark grey-brown, laminated to very thinly bedded, iron stained, occasional gravel inclusions, fine gravel size, sub-rounded			3.06: XWS 0° PR SM CL Infilled 3.07: JT 20° PR SM FE VN 3.15: BP 0° PR SM FE VN 3.17: XWS 10° PR SM CL Infilled 3.21: JT 80-90° CU SM FE VN 3.27-3.38: BP 0-10° PR SM FE VN X6 3.45-3.62: BP 0-10° PR SM FE VN X7 3.64: JT 40° PR SM FE VN 3.78: JT 20° PR SM FE CN 3.86: BP 0° PR SM FE VN 4.14-4.16: BP 0° PR SM FE VN X2 4.22: BP 10° PR SM FE VN 4.25: BP 0° PR SM FE VN 4.34: JT 30° PR SM FE VN 4.45: HB 4.74: HB	
		100	45	4							
				4.41		72.39	From 4.41m to 4.73m, with gravel inclusions				
	100%			5				DW			
		96	50	5.81		70.99	From 5.81m to 5.93m, bands of gravel, fine gravel size, bands up to 50mm thick			5.02: BP 10° PR SM CL Infilled 5.09: JT 20° PR SM FE VN 5.15: BP 0° PR SM FE VN 5.60: XWS 0° PR SM CL Infilled 5.63: BP 0° IR RO FE VN 5.73: BP 10° PR RO FE VN 5.81: BP 0-10° PR RO FE VN 5.85-5.88: XWS 0-10° PR SM GC Infilled 5.93: BP 0° PR RO FE VN 5.98: JT 30° PR SM FE VN 6.09: HB 6.16: JT 50° PR SM FE VN 6.60: JT 30° PR SM FE VN 6.82-6.84: DB crushed seam	
				5.98		70.87	SILTSTONE: dark grey, laminated to very thinly bedded, with fine grained sand, trace iron staining, occasional bioturbation or disturbed bedding				
				7		69.81	NO CORE: 10mm thick				
				7.00		69.80	SILTSTONE: dark grey, laminated to very thinly bedded, with fine grained sand, trace gravel inclusions, fine to medium size, rounded, occasional bioturbation or disturbed bedding			7.16: JT 60° PR RO GC Infilled 7.29: DB 7.32: BP 0-10° PR SM CL VN 7.52: BP 0-10° PR SM CL VN 7.78: DB 7.94: BP 0-10° PR SN CL Infilled 7.99: DB 8.09: HB 8.20: HB 8.34: HB 8.38: HB 8.44: BP 0° PR SM CL VN 8.72-8.76: XWS 0° PR SM CL Infilled 8.82: JT 80-90° CU SM CL Infilled 8.87-9.15: XWS 0° PR SM CL Infilled	
	90%	100	75	8				SW			
				9							
				9.15		67.65	SANDSTONE: grey, fine to medium grained, laminated to thinly bedded, occasional bioturbation or disturbed bedding			9.47: JT 50° PR SM CL Infilled 9.68: HB bioturbation	
				10							

BOREHOLE CORE LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	3 of 4			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	DISCONTINUITIES & ADDITIONAL DATA
NMLC	90%	95	92	11.00	65.80	SANDSTONE: grey, fine to medium grained, laminated to thinly bedded, occasional bioturbation or disturbed bedding		10.19: DB 10.52: BP 0° PR RO CL VN 10.53: JT 70-90° CU RO CL 10.59: BP 0° PR RO CL VN 10.61: BP 0-10° UN RO CL VN
				11.76	65.04	SILTSTONE: dark grey, laminated to very thinly bedded, with fine grained sand, trace gravel inclusions, fine to medium size, rounded		11.07: DB 11.19: BP 0-10° CU RO CL 11.35: BP 0-10° UN RO CL VN 11.67: DB 11.91: HB 12.15: HB 12.28: BP 0° PR RO CL VN 12.81: BP 0-10° UN RO CL VN 12.95: DB
				12.97	63.83	From 11.76m, with bands of increased sand content, up to 220mm thick, and occasional bioturbation or disturbed bedding		
				13.10	63.70	NO CORE: 130mm thick		
	80%	100	88			SILTSTONE: grey to dark grey, laminated to thickly bedded with fine grained sandy SILSTONE beds, beds up to 300mm thick, occasional bioturbation or disturbed bedding	FR	13.19: BP 10° PR SM GC VN 13.25: DB 13.39: JT 60-90° IR SM GC Infilled 13.71: HB 13.96: HB 14.10: HB 14.28: HB 14.35: BP 0° PR SM CL VN 14.46: HB 14.57: BP 0-10° PR RO COAL VN 14.73-14.75: XWS 0° PR SM CL Infilled 15.08: JT 40° PR RO GC Infilled 15.62: HB 15.85: DB 15.88: DB 16.02: HB 16.08-16.15: JT 60-80° IR SM GC Infilled 16.26: DB 16.86: HB 16.95: HB 16.98: HB 17.07-17.34: JT 80-90° PR RO CL 17.63: DB 17.97-18.08: JT 80-90° PR RO CL 18.08: BP 0° PR RO CL VN 18.19: HB 18.28: HB 18.86: HB 18.95: HB 19.01: HB 19.10: DB 19.29: DB 19.51: BP 0-10° PR SM CL VN 19.53: DB
	30%	100	89					
	10%	100	80					

ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral: VL 0-1, L 0-3, M 1, H 3, VH 10, EH

FRACTURE SPACING: 30, 100, 300, 1000, 3000

BOREHOLE CORE LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	4 of 4			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

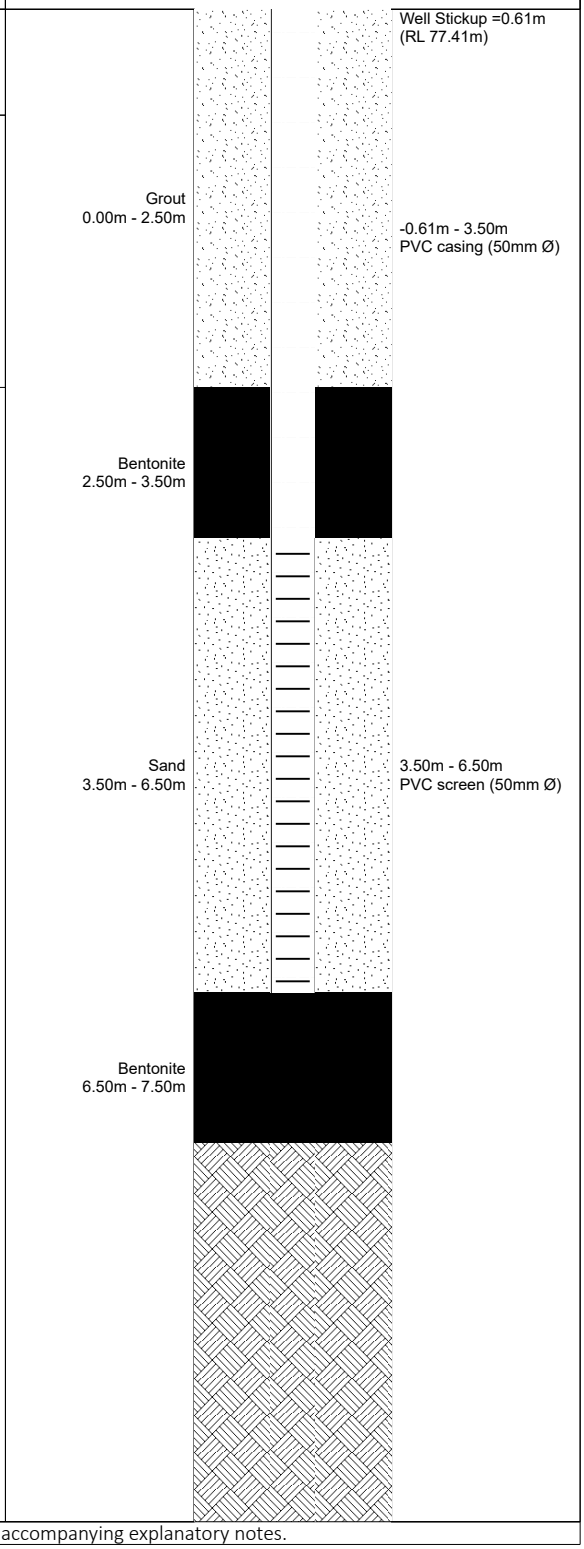
METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
	10%	100	100	21			SILTSTONE: grey to dark grey, laminated to thickly bedded with fine grained sandy SILSTONE beds, beds up to 300mm thick, occasional bioturbation or disturbed bedding		M ▼	20.23: HB 20.71-20.89: BP 0° PR SM CL VN X3 21.02: HB 21.14-21.22: BP 0-10° PR SM CL VN X3 21.75: HB	
				22		54.83	Terminated at 21.97m. Target depth reached.				
				23							
				24							
				25							
				26							
				27							
				28							
				29							
				30							

MONITORING WELL LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	1 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
GWNE	BH3M_0.50-0.95 SPT 0.50-0.95 3,3,6 N=9	0.00	76.80	TOPSOIL: Silty CLAY: low to medium plasticity, dark brown, with rootlets, no odour odour	M ≈ PL
		0.70	76.10	CLAY: low to medium plasticity, dark red mottled grey, trace rootlets, no odour odour	
	BH3M_1.50-1.95 SPT 1.50-1.95 2,3,4 N=7	1.20	75.60	CLAY: low plasticity, red-brown, trace sand/gravel, medium sand to fine gravel size, rounded, trace rootlets, occasional charcoal pieces, fine to medium size, no odour odour	M < PL
		1.85	74.95	CLAY: low plasticity, pale grey mottled pale yellow-brown, trace iron indurated nodules, fine to medium gravel size, dark red, no odour odour	
		2.50	74.30	SILTSTONE: grey to pale brown, extremely weathered, soil to very low strength	
100%	BH3M_3.00-3.05 SPT 3.00-3.05 10/50 mm N=R	3.02	73.78	SILTSTONE: dark grey-brown, laminated to very thinly bedded, iron stained, occasional gravel inclusions, fine gravel size, sub-rounded	
		4.41	72.39	From 4.41m to 4.73m, with gravel inclusions	
		5.81	70.99	From 5.81m to 5.93m, bands of gravel, fine gravel size, bands up to 50mm thick	
		5.93	70.87	SILTSTONE: dark grey, laminated to very thinly bedded, with fine grained sand, trace iron staining, occasional biorturbation or disturbed bedding	
		6.99	69.81	NO CORE: 10mm thick	
90%		7.00	69.80	SILTSTONE: dark grey, laminated to very thinly bedded, with fine grained sand, trace gravel inclusions, fine to medium size, rounded, occasional bioturbation or disturbed bedding	
		9.15	67.65	SANDSTONE: grey, fine to medium grained, laminated to thinly bedded, occasional bioturbation or disturbed bedding	



MONITORING WELL LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	2 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
90%		11.00		65.80	SANDSTONE: grey, fine to medium grained, laminated to thinly bedded, occasional bioturbation or disturbed bedding			
		11.76		65.04	SILTSTONE: dark grey, laminated to very thinly bedded, with fine grained sand, trace gravel inclusions, fine to medium size, rounded			
		12.97		63.83	From 11.76m, with bands of increased sand content, up to 220mm thick, and occasional bioturbation or disturbed bedding			
		13.10		63.70	NO CORE: 130mm thick			
80%					SILTSTONE: grey to dark grey, laminated to thickly bedded with fine grained sandy SILSTONE beds, beds up to 300mm thick, occasional bioturbation or disturbed bedding		Cuttings 7.50m - 21.97m	
30%								
10%		20						

MONITORING WELL LOG

BH ID: BH3M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	24 April 2025
Client	Creative Vision			**Completed**	28 April 2025
Job No.	E26733.G03			**Logged By**	GB **Date** 28 April 2025
Sheets	3 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈76.80 m (AHD)	**Northing**	6244042.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290213.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
10%		21			SILTSTONE: grey to dark grey, laminated to thickly bedded with fine grained sandy SILSTONE beds, beds up to 300mm thick, occasional bioturbation or disturbed bedding			
		22		54.83	Terminated at 21.97m. Target depth reached.			
		23						
		24						
		25						
		26						
		27						
		28						
		29						
		30						

CORE PHOTOGRAPH OF BOREHOLE: BH3M

Project	Proposed Mixed-use Development	**East**	290213	**Depth Range**	3.02m to 12.00m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6244042	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 76.8m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	GB	**Date**	28 / 04 / 2025
Client	Creative Vision	**Box**	1-2 of 4	**Checked**	JB	**Date**	23 / 06 / 2025

CORE PHOTOGRAPH OF BOREHOLE: BH3M

Project	Proposed Mixed-use Development	**East**	290213	**Depth Range**	12.00m to 21.97m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6244042	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 76.8m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	GB	**Date**	28 / 04 / 2025
Client	Creative Vision	**Box**	3-4 of 4	**Checked**	JB	**Date**	23 / 06 / 2025

BOREHOLE LOG

BH ID: BH4

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	29 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 29 April 2025
Sheets	1 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈77.10 m (AHD)	**Northing**	6244062.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290287.0000 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH4_0.50-0.95 SPT 0.50-0.95 3,9,14 N=23		0.00		77.10	TOPSOIL: SAND: fine to medium grained, dark brown, trace sub-angular to sub-rounded gravels with rootlets	M	-	TOPSOIL
				0.65		76.45	CLAY: low plasticity, dark red			RESIDUAL SOIL
		BH4_1.50-1.95 SPT 1.50-1.95 4,7,10 N=17		1						
				2				M < PL	VSt	
		BH4_3.00-3.01 SPT 3.00-3.01 4/10 mm N=R		3						
				3.50		73.60	*Log continued on next page.*			
				4						
				5						
				6						
				7						
				8						
				9						
				10						

BOREHOLE CORE LOG

BH ID: BH4

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	29 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 29 April 2025
Sheets	2 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈77.10 m (AHD)	**Northing**	6244062.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290287.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING
				0			*Log continued from previous page.*				
				1							
				2							
				3							
NMLC	90%	100	83	4			SILTSTONE: dark grey-brown, very thinly to thinly bedded, iron stained	MW		4.16: BP PR SM CN 4.24: BP PR SM CN 4.36: PR SM CN 4.38: PR SM CN	
				4.81		72.29	SILTSTONE: grey to dark grey, thinly to medium bedded			4.70: BP PR SM CN 4.78: BP PR SM CN	
				5						5.28: BP PR SM CN	
				6						5.96: PR SM CN	
		100	95	7				SW		7.13: BP PR SM CN 7.14: BP PR SM CN	
				8						7.69: BP PR SM CN 7.73: PR SM CN 7.82: BP PR SM CN 8.08: BP PR SM CN 8.19: BP PR SM CN	
				9						8.48: BP PR SM CN 8.82: BP PR SM CN 9.17: PR SM CN	
				9.34		67.76	From 9.34m, trace pebble or mudstone inclusions, up to 20mm in size			9.35: BP PR SM CN	
				10							

BOREHOLE CORE LOG

BH ID: BH4

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	29 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 29 April 2025
Sheets	3 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈77.10 m (AHD)	**Northing**	6244062.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290287.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
	90%	100	100	11			From 9.34m, trace pebble or mudstone inclusions, up to 20mm in size	SW	M ▼	10.14: BP PR SM CN 10.40: BP PR SM CN 10.69: BP PR SM CN 11.51: BP PR SM Infilled	100
				12		64.99	Terminated at 12.11m. Target Depth Reached.				
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

CORE PHOTOGRAPH OF BOREHOLE: BH4

Project	Proposed Mixed-use Development	**East**	290287	**Depth Range**	3.5m to 12.11m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6244062	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 77.1m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	JO	**Date**	29 / 04 / 2025
Client	Creative Vision	**Box**	1-3 of 3	**Checked**	JB	**Date**	23 / 06 / 2025

BOREHOLE LOG

BH ID: BH5M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	1 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.70 m (AHD)	**Northing**	6244051.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290372.0000 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T	GWNE	BH5M_0.50-0.95 SPT 0.50-0.95 5,5,7 N=12		0.00 0.10 1		80.70 80.60	TOPSOIL: Silty CLAY: medium plasticity, dark brown with rootlets Silty CLAY: medium plasticity, orange-brown	M > PL	- St	TOPSOIL RESIDUAL SOIL
		BH5M_1.50-1.95 SPT 1.50-1.95 3,7,12 N=19		1.50 2		79.20	From 1.50m, pale grey-orange	M ≈ PL	VSt	
		BH5M_3.00-3.18 SPT 3.00-3.18 14,6/30 mm HB N=R		3 3.20		77.50	*Log continued on next page.*			
				4 5 6 7 8 9 10						

BOREHOLE CORE LOG

BH ID: BH5M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	2 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.70 m (AHD)	**Northing**	6244051.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290372.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0			*Log continued from previous page.*				
				1							
				2							
				3							
NMLC	90%	100	71	4			SILTSTONE: grey-brown, thinly to medium bedded, iron stained	MW		3.43: JT 90° PR SM CN 3.57: BP PR SM CN 3.59: BP PR SM CN 3.69: BP PR SM CN 3.81: BP PR SM CN 4.14: JT 30° PR SM CN 4.23: BP PR SM CN 4.32: BP PR SM CN 4.62: BP PR SM CN	
				5						5.08: BP PR SM CN 5.26: JT 90° PR SM CN 5.38: JT 40° PR SM CN 5.60: BP PR SM CN	
				6						6.08: BP PR SM CN 6.12: BP PR SM CN	
				6.27		74.43	From 6.27m, with fine grained sand				
		100	92	6.72		73.98	SILTSTONE: grey to dark grey, thinly to medium bedded			6.61: JT 45° PR SM CN 6.91: BP PR SM CN 7.09: JT 10° CU SM CN 7.25: BP PR SM CN 7.30: BP PR SM 7.34: BP PR SM CN 7.35: BP PR SM CN 7.58: BP PR SM CN 7.64: JT 45° PR SM CN	
				7							
				8				SW		8.19: BP PR SM CN 8.38: BP PR SM CN 8.40: BP PR SM CN 8.49: BP PR SM CN 8.77: BP PR SM CN	
				9						9.27: BP PR SM CN	
				9.49		71.21	From 9.49m, trace pebble or mudstone inclusions, up to 20mm in size, and occasional bioturbation or disturbed bedding				
				10						9.90: BP PR SM CN	

BOREHOLE CORE LOG

BH ID: BH5M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025		
Client	Creative Vision			**Completed**	30 April 2025		
Job No.	E26733.G03			**Logged By**	JO	**Date**	30 April 2025
Sheets	3 of 3			**Review By**	JB	**Date**	23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.70 m (AHD)	**Northing**	6244051.0000 (MGA 2020 Zone 56)		
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290372.0000 (MGA 2020 Zone 56)		

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
	90%	100	89	11			From 9.49m, trace pebble or mudstone inclusions, up to 20mm in size, and occasional bioturbation or disturbed bedding		M	9.95: BP PR SM CN 10.19: BP PR SM CN 10.48: BP PR SM CN 10.76: BP PR SM CN 11.16: BP PR SM CN 11.36: BP PR SM CN 11.59: BP PR SM CN 11.62: BP PR SM CN 11.66: BP PR SM CN 11.75: BP PR SM CN 11.92: BP PR SM CN	100
				12		68.54	Terminated at 12.16m. Target Depth Reached.			11.96: BP PR SM CN 12.06: BP PR SM CN	
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

MONITORING WELL LOG

BH ID: BH5M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	1 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.70 m (AHD)	**Northing**	6244051.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290372.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
		0.00	80.70	TOPSOIL: Silty CLAY: medium plasticity, dark brown with rootlets	M > PL
		0.10	80.60	Silty CLAY: medium plasticity, orange-brown	
	BH5M_0.50-0.95 SPT 0.50-0.95 5,5,7 N=12	1			
GWNE	BH5M_1.50-1.95 SPT 1.50-1.95 3,7,12 N=19	1.50	79.20	From 1.50m, pale grey-orange	M ≈ PL
		2			
	BH5M_3.00-3.18 SPT 3.00-3.18 14,6/30 mm HB N=R	3			
		3.20	77.50	SILTSTONE: grey-brown, thinly to medium bedded, iron stained	
		4			
		5			
		6			
90%		6.27	74.43	From 6.27m, with fine grained sand	
		6.72	73.98	SILTSTONE: grey to dark grey, thinly to medium bedded	
		7			
		8			
		9			
		9.49	71.21	From 9.49m, trace pebble or mudstone inclusions, up to 20mm in size, and occasional bioturbation or disturbed bedding	
		10			

BACKFILL DETAILS

Grout
0.00m - 5.00m

Bentonite
5.00m - 6.00m

Sand
6.00m - 12.16m

STANDPIPE DETAILS

Well Stickup =0.99m
(RL 81.69m)

-0.99m - 6.16m
PVC casing (50mm Ø)

6.16m - 12.16m
PVC screen (50mm Ø)

MONITORING WELL LOG

BH ID: BH5M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	29 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	2 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈80.70 m (AHD)	**Northing**	6244051.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290372.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
90%		11			From 9.49m, trace pebble or mudstone inclusions, up to 20mm in size, and occasional bioturbation or disturbed bedding			
		12		68.54	Terminated at 12.16m. Target Depth Reached.			
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						

CORE PHOTOGRAPH OF BOREHOLE: BH5M

Project	Proposed Mixed-use Development	**East**	290372	**Depth Range**	3.2m to 12.16m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6244051	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 80.7m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	JO	**Date**	30 / 04 / 2025
Client	Creative Vision	**Box**	1-3 of 3	**Checked**	JB	**Date**	23 / 06 / 2025

BOREHOLE LOG

BH ID: BH6M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	30 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	1 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈78.70 m (AHD)	**Northing**	6243994.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290363.0000 (MGA 2020 Zone 56)

METHOD	GROUND WATER LEVELS	SAMPLES & FIELD TESTS	SAMPLE RECOVERY	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY / REL. DENSITY	MATERIAL ORIGIN & OBSERVATIONS
AD/T		BH6M_0.50-0.95 SPT 0.50-0.95 3,6,9 N=15		0.00 0.10		78.70 78.60	TOPSOIL: CLAY: low plasticity, dark brown trace rootlets CLAY: low to medium plasticity, orange-brown	M > PL	-	TOPSOIL RESIDUAL SOIL
		BH6M_1.50-1.95 SPT 1.50-1.95 5,9,24 HB N=33		1 2				M < PL	VSt	
		BH6M_3.00-3.10 SPT 3.00-3.10 13/100 mm HB N=R		3.00		75.70	*Log continued on next page.*			
				4 5 6 7 8 9 10						

BOREHOLE CORE LOG

BH ID: BH6M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	30 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	2 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈78.70 m (AHD)	**Northing**	6243994.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290363.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
				0			*Log continued from previous page.*				
				1							
				2							
NMLC	90%	100	91	3			SILTSTONE: dark grey-brown, laminated to very thinly bedded	HW		3.03: BP PR SM CN 3.06: BP PR SM CN 3.14: JT 30° PR SM CN 3.22: JT 20° PR SM CN 3.50: BP PR SM CN 3.60: JT 30° PR SM CN 3.63: BP PR SM CN 3.68: BP PR SM CN 3.73: BP PR SM CN 3.89: BP PR SM CN 4.22: BP PR SM CN 4.30: BP PR SM CN	
				4							
				4.46		74.24	From 4.46m, with fine grained sand			4.68: BP PR SM CN 4.90: JT 20° PR SM CN 5.06: BP PR SM CN 5.28: BP PR SM CN	
				5							
		100	92	5.55		73.15	SANDSTONE: grey, laminated to thinly bedded, trace iron staining, occasional bioturbation or disturbed bedding	MW		5.66: BP PR SM CN 5.74: BP PR SM CN 5.89: BP PR SM CN 5.93: BP PR SM CN 6.05: BP PR SM CN 6.27: BP PR SM CN 6.58: BP PR SM 6.68: BP PR SM CN 6.75: BP PR SM CN 6.89: BP PR SM 7.03: BP PR SM CN 7.14: BP PR SM CN 7.24: BP PR SM CN 7.38: BP PR SM CN	
				6							
				7							
				7.83		70.87	From 7.83m, thinly to medium bedded, bioturbation and disturbed bedding absent			7.74: BP PR SM CN 7.83: BP PR SM CN 8.28: BP PR SM CN	
				8							
				8.67		70.03	SILTSTONE: dark grey-brown, laminated to thinly bedded, trace iron staining			8.67: BP PR SM CN	
				9						9.12: BP PR SM CN 9.30: JT 20° PR SM CN 9.59: JT 10° PR SM CN	
				9.88		68.82	From 9.88m, iron staining absent, occasional bioturbation or disturbed bedding			9.78: BP PR SM CN	
				10							

BOREHOLE CORE LOG

BH ID: BH6M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	30 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	3 of 3			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈78.70 m (AHD)	**Northing**	6243994.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290363.0000 (MGA 2020 Zone 56)

METHOD	Flush Return	TCR %	RQD %	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	WEATHERING	ESTIMATED STRENGTH Is(50) ▼ - Axial ▽ - Diametral (VL 0-1, L 0-3, M 1, H 3, VH 10, EH)	DISCONTINUITIES & ADDITIONAL DATA	FRACTURE SPACING (30, 100, 300, 1000, 3000)
	90%	100	100	11			From 9.88m, iron staining absent, occasional bioturbation or disturbed bedding	FR	▼ M 1	10.20: BP PR SM CN	
		100	70	12		66.70	Terminated at 12.00m. Target Depth Reached.				
				13							
				14							
				15							
				16							
				17							
				18							
				19							
				20							

MONITORING WELL LOG

BH ID: BH6M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	30 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	1 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈78.70 m (AHD)	**Northing**	6243994.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290363.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION
		0.00	78.70	TOPSOIL: CLAY: low plasticity, dark brown trace rootlets	M > PL
		0.10	78.60	CLAY: low to medium plasticity, orange-brown	
	BH6M_0.50-0.95 SPT 0.50-0.95 3,6,9 N=15	1			
	BH6M_1.50-1.95 SPT 1.50-1.95 5,9,24 HB N=33	2			M < PL
	BH6M_3.00-3.10 SPT 3.00-3.10 13/100 mm HB N=R	3.00	75.70	SILTSTONE: dark grey-brown, laminated to very thinly bedded	
		4			
		4.46	74.24	From 4.46m, with fine grained sand	
		5			
90%		5.55	73.15	SANDSTONE: grey, laminated to thinly bedded, trace iron staining, occasional bioturbation or disturbed bedding	
		6			
		7			
		7.83	70.87	From 7.83m, thinly to medium bedded, bioturbation and disturbed bedding absent	
		8			
		8.67	70.03	SILTSTONE: dark grey-brown, laminated to thinly bedded, trace iron staining	
		9			
		9.88		From 9.88m, iron staining absent, occasional bioturbation or disturbed bedding	
		10			

BACKFILL DETAILS

Grout
0.00m - 5.00m

Bentonite
5.00m - 6.00m

Sand
6.00m - 12.00m

STANDPIPE DETAILS

Well Stickup =0.90m
(RL 79.60m)

-0.90m - 6.10m
PVC casing (50mm Ø)

6.10m - 9.10m
PVC screen (50mm Ø)

MONITORING WELL LOG

BH ID: BH6M

Location	135 Badgerys Creek Road, Bradfield NSW			**Started**	30 April 2025
Client	Creative Vision			**Completed**	30 April 2025
Job No.	E26733.G03			**Logged By**	JO **Date** 30 April 2025
Sheets	2 of 2			**Review By**	JB **Date** 23 June 2025
Drilling Contractor	Geosense Drilling Engineers	**Surface RL**	≈78.70 m (AHD)	**Northing**	6243994.0000 (MGA 2020 Zone 56)
Plant	Comacchio Geo 205	**Inclination**	90°	**Easting**	290363.0000 (MGA 2020 Zone 56)

WATER	SAMPLES & FIELD TESTS	DEPTH (m)	GRAPHIC LOG	RL (m AHD)	MATERIAL DESCRIPTION	MOISTURE CONDITION	BACKFILL DETAILS	STANDPIPE DETAILS
90%		11		68.82	From 9.88m, iron staining absent, occasional bioturbation or disturbed bedding			
		12		66.70	Terminated at 12.00m. Target Depth Reached.			
		13						
		14						
		15						
		16						
		17						
		18						
		19						
		20						

CORE PHOTOGRAPH OF BOREHOLE: BH6M

Project	Proposed Mixed-use Development	**East**	290363	**Depth Range**	3.0m to 12.0m BEGL		
Location	135 Badgerys Creek Road, Bradfield NSW	**North**	6243994	**Contractor**	Geosense Drilling Engineers Pty Ltd		
Position	See Figure 2	**Surface RL**	≈ 78.7m	**Drill Rig**	Comacchio GEO 205		
Job No.	E26733.G03	**Inclination**	-90°	**Logged**	JO	**Date**	30 / 04 / 2025
Client	Creative Vision	**Box**	1-2 of 2	**Checked**	JB	**Date**	23 / 06 / 2025

EXPLANATION OF NOTES, ABBREVIATIONS & TERMS USED ON BOREHOLE AND TEST PIT LOGS

DRILLING/EXCAVATION METHOD

HA	Hand Auger	**ADH**	Hollow Auger	**NQ**	Diamond Core - 47 mm
DT	Diatube Coring	**RT**	Rotary Tricone bit	**NMLC**	Diamond Core - 52 mm
NDD	Non-destructive digging	**RAB**	Rotary Air Blast	**HQ**	Diamond Core - 63 mm
AD*	Auger Drilling	**RC**	Reverse Circulation	**HMLC**	Diamond Core - 63 mm
***V**	V-Bit	**PT**	Push Tube	**EX**	Tracked Hydraulic Excavator
***T**	TC-Bit, e.g. AD/T	**WB**	Washbore	**HAND**	Excavated by Hand Methods

PENETRATION RESISTANCE

L	**Low Resistance**	Rapid penetration/ excavation possible with little effort from equipment used.
M	**Medium Resistance**	Penetration/ excavation possible at an acceptable rate with moderate effort from equipment used.
H	**High Resistance**	Penetration/ excavation is possible but at a slow rate and requires significant effort from equipment used.
R	**Refusal/Practical Refusal**	No further progress possible without risk of damage or unacceptable wear to equipment used.

These assessments are subjective and are dependent on many factors, including equipment power and weight, condition of excavation or drilling tools and experience of the operator.

WATER

Standing Water Level — **Partial water loss**

Water Seepage — **Complete Water Loss**

GWNO	GROUNDWATER NOT OBSERVED - Observation of groundwater, whether present or not, was not possible due to drilling water, surface seepage or cave-in of the borehole/ test pit.
GWNE	GROUNDWATER NOT ENCOUNTERED - Borehole/ test pit was dry soon after excavation. However, groundwater could be present in less permeable strata. Inflow may have been observed had the borehole/ test pit been left open for a longer period.

SAMPLING AND TESTING

SPT	Standard Penetration Test to AS1289.6.3.1-2004
4,7,11 N=18	4,7,11 = Blows per 150mm. N = Blows per 300mm penetration following a 150mm seating drive
30/80mm	Where practical refusal occurs, the blows and penetration for that interval are reported, N is not reported
RW	Penetration occurred under the rod weight only, N<1
HW	Penetration occurred under the hammer and rod weight only, N<1
HB	Hammer double bouncing on anvil, N is not reported
Sampling	
DS	Disturbed Sample
ES	Sample for environmental testing
BDS	Bulk disturbed Sample
GS	Gas Sample
WS	Water Sample
U50	Thin walled tube sample - number indicates nominal sample diameter in millimetres
Testing	
FP	Field Permeability test over section noted
FVS	Field Vane Shear test expressed as uncorrected shear strength (sv= peak value, sr= residual value)
PID	Photoionisation Detector reading in ppm
PM	Pressuremeter test over section noted
PP	Pocket Penetrometer test expressed as instrument reading in kPa
WPT	Water Pressure tests
DCP	Dynamic Cone Penetrometer test
CPT	Static Cone Penetration test
CPTu	Static Cone Penetration test with pore pressure (u) measurement

GEOLOGICAL BOUNDARIES

———— = Observed Boundary (position known)

– – – – – – – – – – = Observed Boundary (position approximate)

– –?– –?– –?– – = Boundary (interpreted or inferred)

ROCK CORE RECOVERY

TCR=Total Core Recovery (%)

$$= \frac{\textit{Length of core recovered}}{\textit{Length of core run}} \times 100$$

RQD = Rock Quality Designation (%)

$$= \frac{\sum \textit{Axial lengths of core} > 100mm}{\textit{Length of core run}} \times 100$$

METHOD OF SOIL DESCRIPTION USED ON BOREHOLE AND TEST PIT LOGS

	FILL		ORGANIC SOILS (OL, OH or Pt)		CLAY (CL, CI or CH)
	COUBLES or BOULDERS		SILT (ML or MH)		SAND (SP or SW)
	GRAVEL (GP or GW)	Combinations of these basic symbols may be used to indicate mixed materials such as sandy clay			

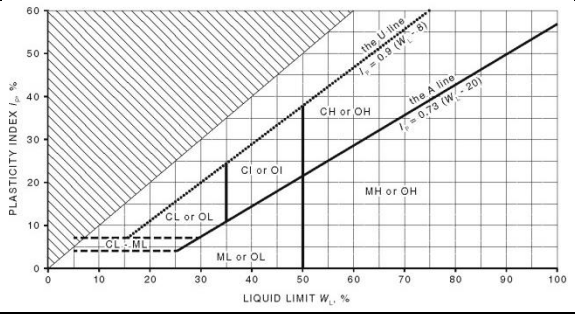
CLASSIFICATION AND INFERRED STRATIGRAPHY

Soil is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS 1726:2017, Section 6.1 – Soil description and classification.

PARTICLE SIZE CHARACTERISTICS

Fraction	Components	Sub Division	Size mm
Oversize	BOULDERS		>200
	COBBLES		63 to 200
Coarse grained soil	GRAVEL	Coarse	19 to 63
		Medium	6.7 to 19
		Fine	2.36 to 6.7
	SAND	Coarse	0.6 to 2.36
		Medium	0.21 to 0.6
		Fine	0.075 to 0.21
Fine grained soil	SILT		0.002 to 0.075
	CLAY		<0.002

PLASTICITY PROPERTIES



GROUP SYMBOLS

Major Divisions		Symbol	Description
COARSE GRAINED SOILS More than 65% of soil excluding oversize fraction is greater than 0.075mm	GRAVEL More than 50% of coarse fraction is >2.36mm	GW	Well graded gravel and gravel-sand mixtures, little or no fines, no dry strength.
		GP	Poorly graded gravel and gravel-sand mixtures, little or no fines, no dry strength.
		GM	Silty gravel, gravel-sand-silt mixtures, zero to medium dry strength.
		GC	Clayey gravel, gravel-sand-clay mixtures, medium to high dry strength.
	SAND More than 50% of coarse fraction is <2.36 mm	SW	Well graded sand and gravelly sand, little or no fines, no dry strength.
		SP	Poorly graded sand and gravelly sand, little or no fines, no dry strength.
		SM	Silty sand, sand-silt mixtures, zero to medium dry strength.
		SC	Clayey sand, sandy-clay mixtures, medium to high dry strength.
FINE GRAINED SOILS More than 35% of soil excluding oversized fraction is less than 0.075mm	Liquid Limit less < 50%	ML	Inorganic silts of low plasticity, very fine sands, rock flour, silty or clayey fine sands, zero to medium dry strength.
		CL, CI	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, medium to high dry strength.
		OL	Organic silts and organic silty clays of low plasticity, low to medium dry strength.
	Liquid Limit > than 50%	MH	Inorganic silts of high plasticity, high to very high dry strength.
		CH	Inorganic clays of high plasticity, high to very high dry strength.
		OH	Organic clays of medium to high plasticity, medium to high dry strength.
Highly Organic soil		PT	Peat muck and other highly organic soils.

MOISTURE CONDITION

Symbol	Term	Description
D	Dry	Non- cohesive and free-running.
M	Moist	Soils feel cool, darkened in colour. Soil tends to stick together.
W	Wet	Soils feel cool, darkened in colour. Soil tends to stick together, free water forms when handling.

Moisture content of cohesive soils shall be described in relation to plastic limit (PL) or liquid limit (LL) for soils with higher moisture content as follows: Moist, dry of plastic limit (w < PL); Moist, near plastic limit (w ≈ PL); Moist, wet of plastic limit (w < PL); Wet, near liquid limit (w ≈ LL), Wet, wet of liquid limit (w > LL),

CONSISTENCY

Symbol	Term	Undrained Shear Strength (kPa)	SPT "N" #
VS	Very Soft	≤ 12	≤ 2
S	Soft	>12 to ≤ 25	>2 to ≤ 4
F	Firm	>25 to ≤ 50	>4 to 8
St	Stiff	>50 to ≤ 100	>8 to 15
VSt	Very Stiff	>100 to ≤ 200	>15 to 30
H	Hard	>200	>30
Fr	Friable	-	

DENSITY

Symbol	Term	Density Index %	SPT "N" #
VL	Very Loose	≤ 15	0 to 4
L	Loose	>15 to ≤ 35	4 to 10
MD	Medium Dense	>35 to ≤ 65	10 to 30
D	Dense	>65 to ≤ 85	30 to 50
VD	Very Dense	>85	Above 50

In the absence of test results, consistency and density may be assessed from correlations with the observed behaviour of the material.
SPT correlations are not stated in AS1726:2017, and may be subject to corrections for overburden pressure, moisture content of the soil, and equipment type.

MINOR COMPONENTS

Term	Assessment Guide	Proportion by Mass
Add 'Trace'	Presence just detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: ≤ 5% Fine grained soil: ≤ 15%
Add 'With'	Presence easily detectable by feel or eye but soil properties little or no different to general properties of primary component	Coarse grained soils: 5 - 12% Fine grained soil: 15 - 30%
Prefix soil name	Presence easily detectable by feel or eye in conjunction with the general properties of primary component	Coarse grained soils: >12% Fine grained soil: >30%

TERMS FOR ROCK MATERIAL STRENGTH AND WEATHERING

CLASSIFICATION AND INFERRED STRATIGRAPHY

Rock is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 2017, Section 6.2 – Rock identification, description and classification.

ROCK MATERIAL STRENGTH CLASSIFICATION

Symbol	Term	Point Load Index, $Is_{(50)}$ (MPa) #	Field Guide
VL	Very Low	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30 mm can be broken by finger pressure.
L	Low	0.1 to 0.3	Easily scored with a knife; indentations 1 mm to 3 mm show in the specimen with firm blows of pick point; has dull sound under hammer. A piece of core 150 mm long by 50 mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
M	Medium	0.3 to 1	Readily scored with a knife; a piece of core 150 mm long by 50 mm diameter can be broken by hand with difficulty.
H	High	1 to 3	A piece of core 150 mm long by 50 mm diameter cannot be broken by hand but can be broken with pick with a single firm blow; rock rings under hammer.
VH	Very High	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
EH	Extremely High	>10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.

 # Rock Strength Test Results

▼ Point Load Strength Index, $Is_{(50)}$, Axial test (MPa)

● Point Load Strength Index, $Is_{(50)}$, Diametral test (MPa)

Relationship between rock strength test result ($Is_{(50)}$) and unconfined compressive strength (UCS) will vary with rock type and strength, and should be determined on a site-specific basis. However UCS is typically 20 x $Is_{(50)}$.

ROCK MATERIAL WEATHERING CLASSIFICATION

Symbol		Term	Field Guide
RS		Residual Soil	Soil developed on extremely weathered rock; the mass structure and substance fabric are no longer evident; there is a large change in volume but the soil has not been significantly transported.
XW		Extremely Weathered	Rock is weathered to such an extent that it has soil properties - i.e. it either disintegrates or can be remoulded, in water.
DW	HW	Distinctly Weathered	Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores. In some environments it is convenient to subdivide into Highly Weathered and Moderately Weathered, with the degree of alteration typically less for MW.
	MW		
SW		Slightly Weathered	Rock slightly discoloured but shows little or no change of strength relative to fresh rock.
FR		Fresh	Rock shows no sign of decomposition or staining.

ABBREVIATIONS AND DESCRIPTIONS FOR ROCK MATERIAL AND DEFECTS

CLASSIFICATION AND INFERRED STRATIGRAPHY
Rock is broadly classified and described in Borehole and Test Pit Logs using the preferred method given in AS1726 – 2017, Section 6.2 – Rock identification, description and classification.

DETAILED ROCK DEFECT SPACING

Defect Spacing

Spacing/width (mm)	Descriptor	Symbol
<20	Extremely Close	EC
20-60	Very Close	VC
60-200	Close	C
200-600	Medium	M
600-2000	Wide	W
2000-6000	Very Wide	VW

Bedding Thickness (Stratification)

Term	Spacing (mm)
Thinly laminated	<6
Laminated	6 – 20
Very thinly bedded	20 – 60
Thinly bedded	60 – 200
Medium bedded	200 – 600
Thickly bedded	600 – 2,000
Very thickly bedded	> 2,000

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT TYPES

Defect Type	Abbr.	Description
Joint	JT	Surface of a fracture or parting, formed without displacement, across which the rock has little or no tensile strength. May be closed or filled by air, water or soil or rock substance, which acts as cement.
Bedding Parting	BP	Surface of fracture or parting, across which the rock has little or no tensile strength, parallel or sub-parallel to layering/ bedding. Bedding refers to the layering or stratification of a rock, indicating orientation during deposition, resulting in planar anisotropy in the rock material.
Contact	CO	The surface between two types or ages of rock.
Sheared Surface	SSU	A near planar, curved or undulating surface which is usually smooth, polished or slickensided.
Sheared Seam/ Zone (Fault)	SS/SZ	Seam or zone with roughly parallel almost planar boundaries of rock substance cut by closely spaced (often <50 mm) parallel and usually smooth or slickensided joints or cleavage planes.
Crushed Seam/ Zone (Fault)	CS/CZ	Seam or zone composed of disoriented usually angular fragments of the host rock substance, with roughly parallel near-planar boundaries. The brecciated fragments may be of clay, silt, sand or gravel sizes or mixtures of these.
Extremely Weathered Seam/ Zone	XWS/XWZ	Seam of soil substance, often with gradational boundaries, formed by weathering of the rock material in places.
Infilled Seam	IS	Seam of soil substance, usually clay or clayey, with very distinct roughly parallel boundaries, formed by soil migrating into joint or open cavity.
Vein	VN	Distinct sheet-like body of minerals crystallised within rock through typically open-space filling or crack-seal growth.

NOTE: Defects size of <100mm SS, CS and XWS. Defects size of >100mm SZ, CZ and XWZ.

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT SHAPE AND ROUGHNESS

Shape	Abbr.	Description	Roughness	Abbr.	Description
Planar	PR	Consistent orientation	Polished	POL	Shiny smooth surface
Curved	CU	Gradual change in orientation	Slickensided	SL	Grooved or striated surface, usually polished
Undulating	UN	Wavy surface	Smooth	SM	Smooth to touch. Few or no surface irregularities
Stepped	ST	One or more well defined steps	Rough	RO	Many small surface irregularities (amplitude generally <1mm). Feels like fine to coarse sandpaper
Irregular	IR	Many sharp changes in orientation	Very Rough	VR	Many large surface irregularities, amplitude generally >1mm. Feels like very coarse sandpaper

Orientation: **Vertical Boreholes –** The dip (inclination from horizontal) of the defect.
Inclined Boreholes – The inclination is measured as the acute angle to the core axis.

ABBREVIATIONS AND DESCRIPTIONS FOR DEFECT COATING

Coating	Abbr.	Description
Clean	CN	No visible coating or infilling
Stain	SN	No visible coating but surfaces are discoloured by staining, often limonite (orange-brown)
Veneer	VNR	A visible coating of soil or mineral substance, usually too thin to measure (< 1 mm); may be patchy

DEFECT APERTURE

Aperture	Abbr.	Description
Closed	CL	Closed.
Open	OP	Without any infill material.
Infilled	-	Soil or rock i.e. clay, silt, talc, pyrite, quartz, etc.

Appendix B Laboratory Test Summaries and Test Certificates

TABLE - SUMMARY OF SALINITY RESULTS

Sample ID	Sample Depth	Soil Texture [1]	Soil pH (1:5) [2]	Cl (mg/kg)	SO4 (mg/kg)	EC 1:5 (µS/cm)	ECe (µS/cm)	ECe (dS/m)	Soil Salinity Class [3]
BH01_0.0-0.1	0.0-0.1	Clay Loam	5.5	11	10	35	315	0.315	Non-Saline
BH01_0.3-0.4	0.3-0.4	Medium Clay	5.3	70	78	120	840	0.84	Non-Saline
BH01_1.5-1.95	1.5-1.95	Medium Clay	5.2	430	180	540	3780	3.78	Slightly Saline
BH03_0.9-1.0	0.9-1.0	Light Clay	6.5	35	77	110	935	0.935	Non-Saline
BH05_0.5-0.95	0.5-0.95	Medium Clay	5.3	73	92	120	840	0.84	Non-Saline
BH05_1.5-1.95	1.5-1.95	Medium Clay	5	550	500	610	4270	4.27	Moderately Saline
BH05_3.0-3.45	3.0-3.45	Medium Clay	5.5	500	420	640	4480	4.48	Moderately Saline

Notes

1 - Soil texture classes based on 'Factual Key for the Recognition of Australian Soils' (Northcote, 1979).

2 - pH measured in water (1:5 soil/water ratio).

3 - Information derived from 'Site Investigations for Soil Salinity', Department of Land and Water Conservation (2002)

TABLE - SUMMARY OF SODICITY RESULTS

Sample ID	Sample Depth	Soil Texture [1]	CEC (cmol(+)/kg) [1]	CEC Rating [2]	Exchangeable Cations (cmol(+)/kg) [3]				ESP (%) [4]	Sodicity Rating [5]
					Na	K	Ca	Mg		
BH01_0.0-0.1	0.0-0.1	Clay Loam	5.5	Low	76	190	720	590	1381.82	Very Strongly Sodic
BH01_0.3-0.4	0.3-0.4	Medium Clay	5.3	Low	330	89	200	1300	6226.42	Very Strongly Sodic
BH01_1.5-1.95	1.5-1.95	Medium Clay	5.2	Low	700	110	9	770	13461.54	Very Strongly Sodic
BH03_0.9-1.0	0.9-1.0	Light Clay	6.5	Low	540	75	93	1100	8307.69	Very Strongly Sodic
BH05_0.5-0.95	0.5-0.95	Medium Clay	5.3	Low	200	150	280	970	3773.58	Very Strongly Sodic
BH05_1.5-1.95	1.5-1.95	Medium Clay	5	Low	850	190	33	1400	17000.00	Very Strongly Sodic
BH05_3.0-3.45	3.0-3.45	Medium Clay	5.5	Low	820	180	19	1400	14909.09	Very Strongly Sodic

Notes

1 - Cation exchange capacity (CEC) expressed as centimoles of positive charge per kilogram of soil (cmol(+)/kg).

2 - CEC rating derived from Table 5.5 of Hazelton and Murphy (2007) Interpreting Soil Test Results: What Do All The Numbers Mean?

3 - Exchangeable cations expressed as centimoles of positive charge per kilogram of soil (cmol(+)/kg).

4 - Exchangeable sodium percentage (ESP). ESP is expressed as exchangeable sodium (Na_x) divided by cation exchange capacity (CEC), (Na / CEC X 100).

5 - Sodicity rating derived from Table 5.45 of Hazelton and Murphy (2007) Interpreting Soil Test Results: What Do All The Numbers Mean?

ANALYTICAL REPORT

Accreditation No. 2562

CLIENT DETAILS

Contact	Gregory Briscoe
Client	EI AUSTRALIA
Address	SUITE 6.01 55 MILLER STREET PYRMONT NSW 2009
Telephone	61 2 95160722
Facsimile	(Not specified)
Email	Greg.Briscoe@eiaustralia.com.au
Project	**E26733 135 Badgerys Creek rd Bradfield N**
Order Number	**E26733**
Samples	21

LABORATORY DETAILS

Manager	Shane McDermott
Laboratory	SGS Alexandria Environmental
Address	Unit 16, 33 Maddox St Alexandria NSW 2015
Telephone	+61 2 8594 0400
Facsimile	+61 2 8594 0499
Email	au.environmental.sydney@sgs.com
SGS Reference	**SE282211A R0**
Date Received	9/5/2025
Date Reported	16/5/2025

COMMENTS

Accredited for compliance with ISO/IEC 17025 - Testing. NATA accredited laboratory 2562(4354).

SIGNATORIES

Dong LIANG
Metals/Inorganics Team Leader

Shane MCDERMOTT
Laboratory Manager

Ying Ying ZHANG
Laboratory Technician

pH in soil (1:5) [AN101] Tested: 13/5/2025

PARAMETER	UOM	LOR	BH01_0.0-0.1 SOIL - 23/4/2025 SE282211A.001	BH01_0.3-0.4 SOIL - 23/4/2025 SE282211A.002	BH03_0.9-1.0 SOIL - 24/4/2025 SE282211A.005	BH02_0.5-0.95 SOIL - 23/4/2025 SE282211A.013	BH03_0.5-0.95 SOIL - 23/4/2025 SE282211A.014
pH	pH Units	0.1	**5.5**	**5.3**	**6.5**	**5.1**	**6.0**

PARAMETER	UOM	LOR	BH03_1.5 SOIL - 23/4/2025 SE282211A.015	BH04_3-3.01 SOIL - 23/4/2025 SE282211A.016	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019
pH	pH Units	0.1	**6.2**	**7.1**	**5.3**	**5.0**	**5.5**

PARAMETER	UOM	LOR	BH06_1.5-1.95 SOIL - 23/4/2025 SE282211A.020	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
pH	pH Units	0.1	**5.3**	**5.2**

Conductivity and TDS by Calculation - Soil [AN106] Tested: 13/5/2025

PARAMETER	UOM	LOR	BH01_0.0-0.1 SOIL - 23/4/2025 SE282211A.001	BH01_0.3-0.4 SOIL - 23/4/2025 SE282211A.002	BH03_0.9-1.0 SOIL - 24/4/2025 SE282211A.005	BH02_0.5-0.95 SOIL - 23/4/2025 SE282211A.013	BH03_0.5-0.95 SOIL - 23/4/2025 SE282211A.014
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	35	120	110	440	61

PARAMETER	UOM	LOR	BH03_1.5 SOIL - 23/4/2025 SE282211A.015	BH04_3-3.01 SOIL - 23/4/2025 SE282211A.016	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	260	120	120	610	640

PARAMETER	UOM	LOR	BH06_1.5-1.95 SOIL - 23/4/2025 SE282211A.020	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
Conductivity of Extract (1:5 dry sample basis)	µS/cm	1	400	540

Exchangeable Cations and Cation Exchange Capacity (CEC/ESP/SAR) [AN122] Tested: 15/5/2025

PARAMETER	UOM	LOR	BH01_0.0-0.1 SOIL - 23/4/2025 SE282211A.001	BH01_0.3-0.4 SOIL - 23/4/2025 SE282211A.002	BH03_0.9-1.0 SOIL - 24/4/2025 SE282211A.005	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018
Exchangeable Calcium, Ca	mg/kg	2	720	200	93	280	33
Exchangeable Calcium, Ca	meq/100g	0.01	3.6	0.99	0.46	1.4	0.17
Exchangeable Calcium Percentage*	%	0.1	39.0	7.6	3.9	13.2	1.0
Exchangeable Potassium, K	mg/kg	2	190	89	75	150	190
Exchangeable Potassium, K	meq/100g	0.01	0.50	0.23	0.19	0.39	0.47
Exchangeable Potassium Percentage*	%	0.1	5.4	1.7	1.6	3.6	2.9
Exchangeable Magnesium, Mg	mg/kg	2	590	1300	1100	970	1400
Exchangeable Magnesium, Mg	meq/100g	0.02	4.8	10	8.9	8.0	12
Exchangeable Magnesium Percentage*	%	0.1	52.1	79.6	74.7	75.1	73.2
Exchangeable Sodium, Na	mg/kg	2	76	330	540	200	850
Exchangeable Sodium, Na	meq/100g	0.01	0.33	1.4	2.4	0.85	3.7
Exchangeable Sodium Percentage*	%	0.1	3.6	11.0	19.8	8.0	22.9
Cation Exchange Capacity	meq/100g	0.02	9.2	13	12	11	16

PARAMETER	UOM	LOR	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
Exchangeable Calcium, Ca	mg/kg	2	19	9
Exchangeable Calcium, Ca	meq/100g	0.01	0.10	0.05
Exchangeable Calcium Percentage*	%	0.1	0.6	0.5
Exchangeable Potassium, K	mg/kg	2	180	110
Exchangeable Potassium, K	meq/100g	0.01	0.46	0.29
Exchangeable Potassium Percentage*	%	0.1	2.9	3.0
Exchangeable Magnesium, Mg	mg/kg	2	1400	770
Exchangeable Magnesium, Mg	meq/100g	0.02	12	6.3
Exchangeable Magnesium Percentage*	%	0.1	73.9	65.3
Exchangeable Sodium, Na	mg/kg	2	820	700
Exchangeable Sodium, Na	meq/100g	0.01	3.6	3.0
Exchangeable Sodium Percentage*	%	0.1	22.5	31.2
Cation Exchange Capacity	meq/100g	0.02	16	9.7

Soluble Anions (1:5) in Soil/Solids by Ion Chromatography [AN245] Tested: 13/5/2025

PARAMETER	UOM	LOR	BH01_0.0-0.1 SOIL - 23/4/2025 SE282211A.001	BH01_0.3-0.4 SOIL - 23/4/2025 SE282211A.002	BH03_0.9-1.0 SOIL - 24/4/2025 SE282211A.005	BH02_0.5-0.95 SOIL - 23/4/2025 SE282211A.013	BH03_0.5-0.95 SOIL - 23/4/2025 SE282211A.014
Chloride	mg/kg	0.25	11	70	35	500	20
Sulfate	mg/kg	5	10	78	77	160	44

PARAMETER	UOM	LOR	BH03_1.5 SOIL - 23/4/2025 SE282211A.015	BH04_3-3.01 SOIL - 23/4/2025 SE282211A.016	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019
Chloride	mg/kg	0.25	260	72	73	550	500
Sulfate	mg/kg	5	63	78	92	500	420

PARAMETER	UOM	LOR	BH06_1.5-1.95 SOIL - 23/4/2025 SE282211A.020	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
Chloride	mg/kg	0.25	380	430
Sulfate	mg/kg	5	86	180

Alkalinity in Soil [AN002/AN135] Tested: 13/5/2025

PARAMETER	UOM	LOR	BH01_0.0-0.1 SOIL - 23/4/2025 SE282211A.001	BH01_0.3-0.4 SOIL - 23/4/2025 SE282211A.002	BH03_0.9-1.0 SOIL - 24/4/2025 SE282211A.005	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	<25	<25	**130**	<25	<25
Carbonate Alkalinity as CO3 in Soil*	mg/kg	25	<25	<25	<25	<25	<25
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	<25	<25	<25	<25	<25
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	<25	<25	**110**	<25	<25

PARAMETER	UOM	LOR	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
Bicarbonate Alkalinity as HCO3 in Soil*	mg/kg	25	<25	<25
Carbonate Alkalinity as CO3 in Soil*	mg/kg	25	<25	<25
Hydroxide Alkalinity as OH in Soil*	mg/kg	25	<25	<25
Total Alkalinity as CaCO3 in Soil*	mg/kg	25	<25	<25

Total Recoverable Elements in Soil/Waste Solids/Materials by ICPOES [AN040/AN320] Tested: 9/5/2025

PARAMETER	UOM	LOR	BH01_0.0-0.1 SOIL - 23/4/2025 SE282211A.001	BH01_0.3-0.4 SOIL - 23/4/2025 SE282211A.002	BH03_0.9-1.0 SOIL - 24/4/2025 SE282211A.005	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018
Calcium, Ca	mg/kg	5	1800	390	33	350	84
Magnesium, Mg	mg/kg	5	1500	2000	1400	1600	3100
Sodium, Na	mg/kg	5	160	460	580	260	980
Potassium, K	mg/kg	10	1200	630	520	610	860

PARAMETER	UOM	LOR	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
Calcium, Ca	mg/kg	5	29	26
Magnesium, Mg	mg/kg	5	1900	2300
Sodium, Na	mg/kg	5	970	880
Potassium, K	mg/kg	10	770	700

Moisture Content [AN002] Tested: 9/5/2025

PARAMETER	UOM	LOR	BH02_0.5-0.95 SOIL - 23/4/2025 SE282211A.013	BH03_0.5-0.95 SOIL - 23/4/2025 SE282211A.014	BH03_1.5 SOIL - 23/4/2025 SE282211A.015	BH04_3-3.01 SOIL - 23/4/2025 SE282211A.016	BH05_0.5-0.95 SOIL - 23/4/2025 SE282211A.017
% Moisture	%w/w	1	**11.1**	**14.5**	**18.5**	**8.8**	**12.2**

PARAMETER	UOM	LOR	BH05_1.5-1.95 SOIL - 23/4/2025 SE282211A.018	BH05_3.0-3.45 SOIL - 23/4/2025 SE282211A.019	BH06_1.5-1.95 SOIL - 23/4/2025 SE282211A.020	BH01_1.5-1.95 SOIL - 23/4/2025 SE282211A.021
% Moisture	%w/w	1	**13.8**	**10.8**	**9.8**	**7.8**

METHOD	METHODOLOGY SUMMARY
AN002/AN135	Alkalinity (and forms of) by Titration: The sample is extracted 1to 5 in deionised water and the extract titrated with standard acid to pH 8.3 (P titre) and pH 4.5 (T titre) and permanent and/or total alkalinity calculated. The results are expressed as equivalents of calcium carbonate or recalculated as bicarbonate, carbonate and hydroxide. Reference APHA 2320. Internal Reference AN135
AN002	The test is carried out by drying (at either 40°C or 105°C) a known mass of sample in a weighed evaporating basin. After fully dry the sample is re-weighed. Samples such as sludge and sediment having high percentages of moisture will take some time in a drying oven for complete removal of water.
AN040/AN320	A portion of sample is digested with nitric acid to decompose organic matter and hydrochloric acid to complete the digestion of metals. The digest is then analysed by ICP OES with metals results reported on the dried sample basis. Based on USEPA method 200.8 and 6010C.
AN040	A portion of sample is digested with Nitric acid to decompose organic matter and Hydrochloric acid to complete the digestion of metals and then filtered for analysis by AAS or ICP as per USEPA Method 200.8.
AN101	pH in Soil Sludge Sediment and Water: pH is measured electrometrically using a combination electrode and is calibrated against 3 buffers purchased commercially. For soils, sediments and sludges, an extract with water (or 0.01M CaCl2) is made at a ratio of 1:5 and the pH determined and reported on the extract. Reference APHA 4500-H+.
AN106	Conductivity and TDS by Calculation: Conductivity is measured by meter with temperature compensation and is calibrated against a standard solution of potassium chloride. Conductivity is generally reported as µmhos/cm or µS/cm @ 25°C. For soils, an extract of as received sample with water is made at a ratio of 1:5 and the EC determined and reported on the extract, or calculated back to the as-received sample. Salinity can be estimated from conductivity using a conversion factor, which for natural waters, is in the range 0.55 to 0.75. Reference APHA 2510 B.
AN122	Exchangeable Cations, CEC and ESP: Soil sample is extracted in 1M Ammonium Acetate at pH=7 (or 1M Ammonium Chloride at pH=7) with cations (Na, K, Ca & Mg) then determined by ICP OES/ICP MS and reported as Exchangeable Cations. For saline soils, these results can be corrected for water soluble cations and reported as Exchangeable cations in meq/100g or soil can be pre-treated (aqueous ethanol/aqueous glycerol) prior to extraction. Cation Exchange Capacity (CEC) is the sum of the exchangeable cations in meq/100g.
AN122	The Exchangeable Sodium Percentage (ESP) is calculated as the exchangeable sodium divided by the CEC (all in meq/100g) times 100. ESP can be used to categorise the sodicity of the soil as below: ESP < 6% non-sodic ESP 6-15% sodic ESP >15% strongly sodic Method is referenced to Rayment and Lyons, 2011, sections 15D3 and 15N1.-
AN245	Anions by Ion Chromatography: A water sample is injected into an eluent stream that passes through the ion chromatographic system where the anions of interest ie Br, Cl, NO2, NO3 and SO4 are separated on their relative affinities for the active sites on the column packing material. Changes to the conductivity and the UV-visible absorbance of the eluent enable identification and quantitation of the anions based on their retention time and peak height or area. APHA 4110 B

FOOTNOTES

*	NATA accreditation does not cover the performance of this service.	-	Not analysed.	UOM	Unit of Measure.
		NVL	Not validated.	LOR	Limit of Reporting.
**	Indicative data, theoretical holding time exceeded.	IS	Insufficient sample for analysis.	↑↓	Raised/lowered Limit of Reporting.
		LNR	Sample listed, but not received.		
***	Indicates that both * and ** apply.				

Unless it is reported that sampling has been performed by SGS, the samples have been analysed as received.
Solid samples expressed on a dry weight basis.

Where "Total" analyte groups are reported (for example, Total PAHs, Total OC Pesticides) the total will be calculated as the sum of the individual analytes, with those analytes that are reported as <LOR being assumed to be zero. The summed (Total) limit of reporting is calculated by summing the individual analyte LORs and dividing by two. For example, where 16 individual analytes are being summed and each has an LOR of 0.1 mg/kg, the "Totals" LOR will be 1.6 / 2 (0.8 mg/kg). Where only 2 analytes are being summed, the " Total" LOR will be the sum of those two LORs.

Some totals may not appear to add up because the total is rounded after adding up the raw values.

If reported, measurement uncertainty follow the ± sign after the analytical result and is expressed as the expanded uncertainty calculated using a coverage factor of 2, providing a level of confidence of approximately 95%, unless stated otherwise in the comments section of this report.

Results reported for samples tested under test methods with codes starting with ARS-SOP, radionuclide or gross radioactivity concentrations are expressed in becquerel (Bq) per unit of mass or volume or per wipe as stated on the report. Becquerel is the SI unit for activity and equals one nuclear transformation per second.
Note that in terms of units of radioactivity:

a. 1 Bq is equivalent to 27 pCi
b. 37 MBq is equivalent to 1 mCi

For results reported for samples tested under test methods with codes starting with ARS-SOP, less than (<) values indicate the detection limit for each radionuclide or parameter for the measurement system used. The respective detection limits have been calculated in accordance with ISO 11929.

The QC and MU criteria are subject to internal review according to the SGS QAQC plan and may be provided on request or alternatively can be found here: www.sgs.com.au/en-gb/environment-health-and-safety.

Appendix C Site Survey and Selected Proposed Development Plans

A1

MGA

BEARINGS SHOWN ARE ON MGA ORIENTATION

TN

187°41'40" ~ 72.25

277°41'40" ~ 280.79

97°41'40" ~ 279.395

ROAD

BITUMEN

SHOULDER

SSWP

POST AND FENCE

THICK VEGETATION

CREEK OF

SHOULDER

GRAVEL

BADGERYS

CROWN EDGE OF ROAD

SSWP

6
DP243457

7
DP243457
2.024ha

No. 135
VACANT BLOCK

THICK VEGETATION

THICK VEGETATION

DAM

WATER LEVEL
RL 75.90

BENCHMARK
CUT IN KERB
RL 79.21 A.H.D.

COM

STEEL FRAME FENCE

SHEET METAL FENCE

METAL CARPORT

GUTTER RL815±

GUTTER RL816±

No. 125
SINGLE STOREY
BRICK RESIDENCE
TILE ROOF

8
DP243457

Schedule of Trees			
No	Diam	Spread	Height
1	0.6	10	15
2	0.4	8	8
3	0.8	10	20
4	0.8	10	20
5	0.3	6	10
6	0.2	4	6
7	0.4	10	6
8	0.5	10	6
9	0.2	6	4
10	0.4	7	5
11	0.4	12	6
12	0.7	10	6
13	0.3	5	6
14	0.5	13	7
15	0.2	8	4
16	0.2	8	4
17	0.2	8	4
18	0.2	8	4
19	0.2	10	3
20	0.4	10	3
21	0.3	10	5
22	0.2	8	3
23	0.6	10	20
24	0.8	12	30

UNDERGROUND SERVICES LEGEND
QUALITY LEVEL D (AS 5488.1:2019)

W POTABLE WATER MAIN
C COMMUNICATIONS CABLES

CAUTION: FIBRE OPTIC CABLES ARE PRESENT IN THIS AREA

APPROXIMATE POSITION ONLY VIDE 'DIAL-BEFORE-YOU-DIG' PLANS JOB No. 36593476 SEARCH DATE 03/03/2024. WHERE CRITICAL TO DESIGN, UNDERGROUND SERVICES SHOULD BE LOCATED BY MORE ACCURATE METHODS.

SERVICES NOTES:-

1. ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND IF SHOWN AS *+ 89.67* ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019. LEVELS SHOWN ARE SURFACE LEVELS UNLESS NOTED OTHERWISE.
2. UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2019 AND ARE ONLY CURRENT FOR 3 MONTHS FROM THE SEARCH DATE NOTED ABOVE. ALL RELEVANT AUTHORITIES MUST BE CONTRACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

2 4 6 8 10 20 25
1:250

GENERAL NOTES

ONLY TREES GREATER THAN 3.5 METRES IN HEIGHT ARE SHOWN ON THIS PLAN AND THEIR POSITIONS ARE DIAGRAMMATIC ONLY AND MAY REQUIRE ADDITIONAL SURVEY WHERE CRITICAL TO DESIGN.

CONTOURS ARE INDICATIVE AT GROUND FORM ONLY. SPOT LEVELS ONLY SHOULD BE USED FOR CALCULATIONS OF QUANTITIES WITH CAUTION.

LEVELS ARE ON AUSTRALIAN HEIGHT DATUM (AHD).

ALL SETOUT LEVELS MUST BE REFERRED TO THE BENCH MARK SHOWN ON THIS PLAN.

BOUNDARY NOTES

A BASIC BOUNDARY SURVEY HAS BEEN DONE SUITABLE FOR DA LODGEMENT PURPOSES.

BOUNDARIES HAVE NOT BEEN MARKED.

SURVEY INFORMATION NOTES

THE ORIGIN OF COORDINATES COMES FROM SSM18058 E290147.221 N6244411.534 CLASS B POSITIONAL UNCERTAINTY (PU) 0.03 (MGA2020) ADOPTED FROM SCIMS DATED 08/05/2024.

THE ORIGIN OF LEVELS COMES FROM SSM18058 RL89.212 CLASS LC POSITIONAL UNCERTAINTY (PU) 0.02 ADOPTED FROM SCIMS DATED 08/05/2024.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY A COORDINATE JOIN BETWEEN SSM18058 AND SSM18057.

CERTIFICATE OF TITLE NOTES

THE FOLLOWING INFORMATION RELATES TO THE RESPECTIVE CERTIFICATE OF TITLE OF EACH LOTS:

- LOT 7 IN DP243457
  (CT EDITION 1 DATED 16/04/2024 SEARCH DATE 10/05/2024)
  - AFFECTED BY:
    - COVENANT (N158123)
    - CAVEAT (AT979889)

COVENANTS AND RESTRICTIONS NOTED ON THE TITLE HAVE NOT BEEN INVESTIGATED. THESE SHOULD BE INVESTIGATED PRIOR TO DESIGN TO ENSURE ANY FUTURE DEVELOPMENT COMPLIES.

SERVICES NOTES

ONLY THOSE SERVICES VISIBLE AT THE TIME OF SURVEY HAVE BEEN LOCATED AND ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2019.

UNDERGROUND SERVICES HAVE BEEN PLOTTED FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2019 AND ARE ONLY CURRENT AT THE DATE OF SEARCH.

ALL RELEVANT AUTHORITIES MUST BE CONTACTED TO DETERMINE THE FULL EXTENT OF SERVICES PRIOR TO ANY PLANNING OR WORKS NEAR THE SITE.

LEGEND

TAG	DESCRIPTION
BB	BOTTOM OF BANK
CL	CENTERLINE OF ROAD
COM	COMMUNICATIONS PIT
SSWP	SEALED STORMWATER PIT
TB	TOP OF BANK

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 7 IN DP243457

135 BADGERYS CREEK ROAD
BRADFIELD

CLIENT: CREATIVE VISION

FILE: 9165-Contour & Detail-Issue A-135 Badgerys Creek Road Bradfield.dwg

LGA: LIVERPOOL

REF: 9165	CONTOURS: 0.5m
ISSUE: A	DATUM: AHD
SURVEY DATE: 08/05/2024	AZIMUTH: MGA2020
SCALE: 1:250	SHEET 1 OF 2 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	08/05/24	ORIGINAL ISSUE	JM	MD

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GDA2020

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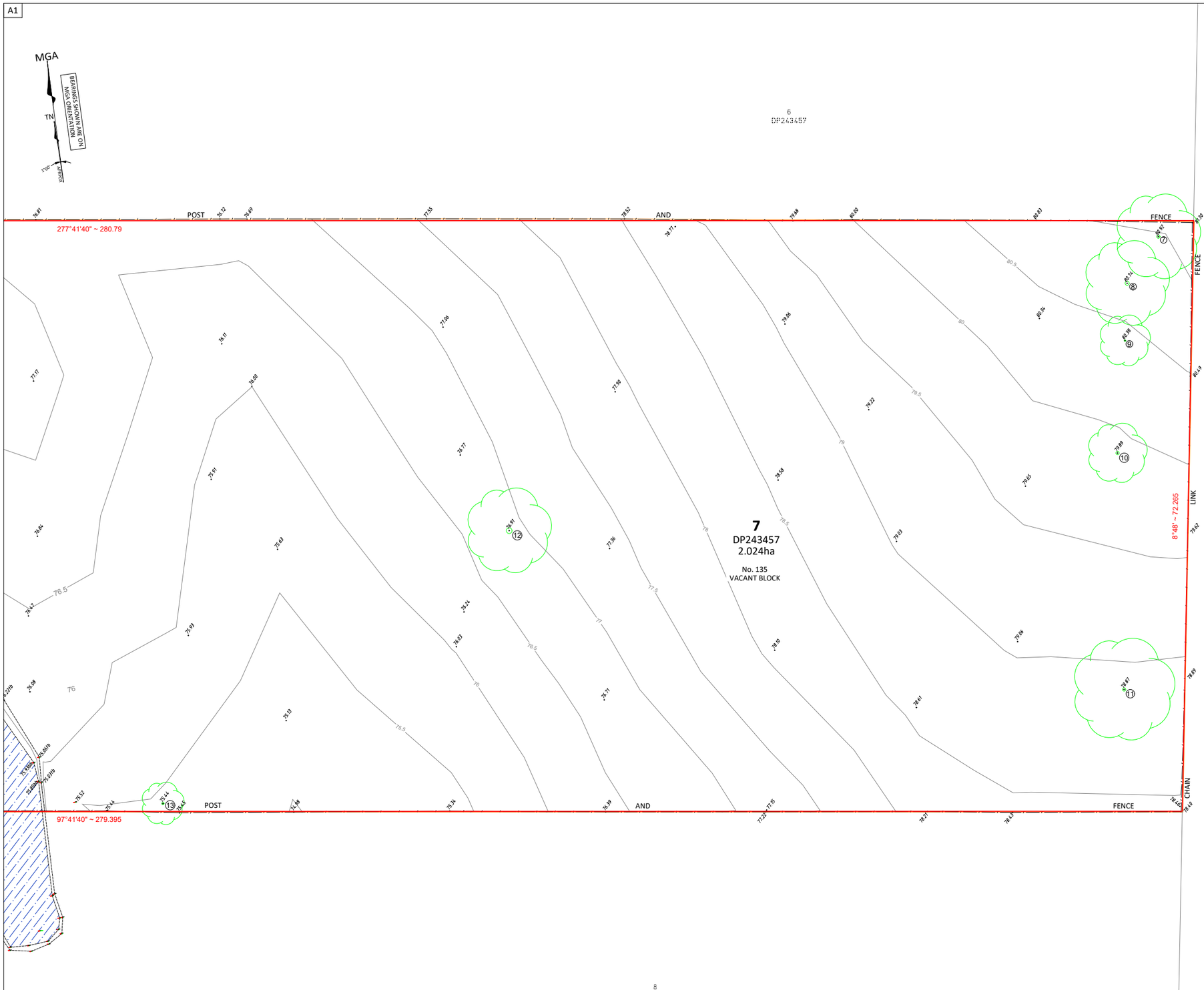
under Professional Standards Legislation

A1



2 4 6 8 10 20 25
1:250

GENERAL NOTES

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LEGEND

TAG	DESCRIPTION
BB	BOTTOM OF BANK
CL	CENTERLINE OF ROAD
COM	COMMUNICATIONS PIT
SSWP	SEALED STORMWATER PIT
TB	TOP OF BANK

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 7 IN DP243457

135 BADGERYS CREEK ROAD
BRADFIELD

CLIENT: CREATIVE VISION

FILE: 9165-Contour & Detail-Issue A-135 Badgerys Creek Road Bradfield.dwg

LGA: LIVERPOOL	
REF: 9165	CONTOURS: 0.5m
ISSUE: A	DATUM: AHD
SURVEY DATE: 08/05/2024	AZIMUTH: MGA2020
SCALE: 1:250	SHEET 2 OF 2 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	08/05/24	ORIGINAL ISSUE	JM	MD

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GDA2020

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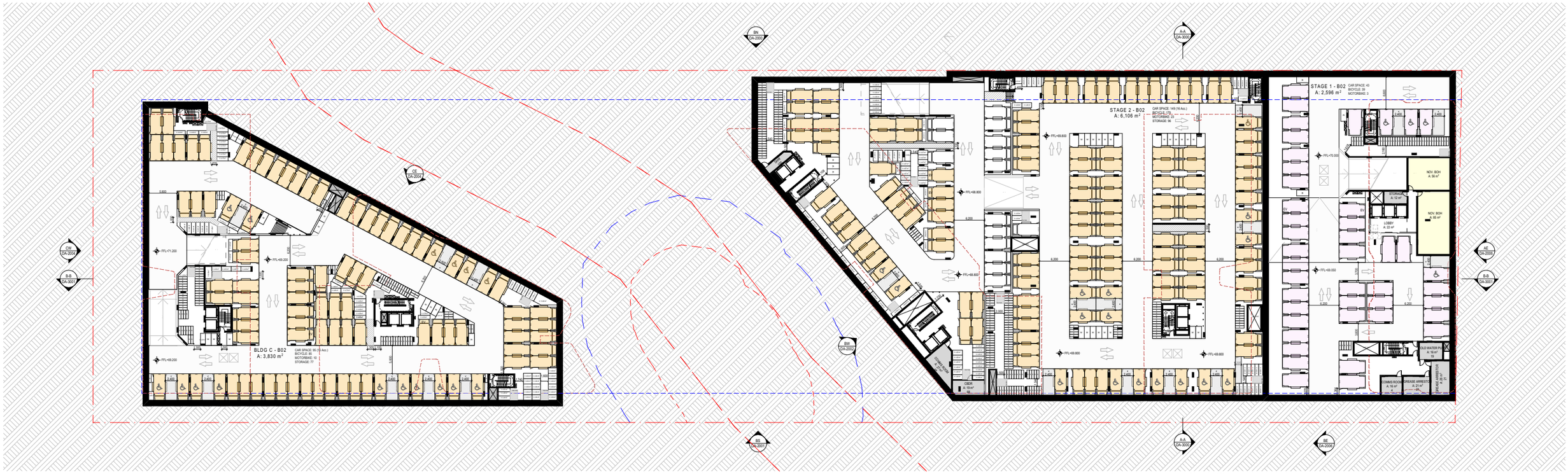

CAR PARKING LEGEND

		BLDG A	BLDG B	BLDG C
	RETAIL PREMISES CAR SPACE	0	0	0
	RETAIL PREMISES CAR SPACE	0	0	0
	HOTEL / CONFERENCE CAR SPACE	43 (4 ACC.)	0	0
	GYM CAR SPACE	0	0	0
	MEDICIAL CAR SPACE	0	0	0
	COMMERCIAL CAR SPACE	0	0	0
	CHILCARE CAR SPACE	0	0	0
	RESIDENTIAL CAR SPACE	0	134 (16 ACC.)	95 (16 ACC.)
	RESI. VISITOR CAR SPACE	0	15	0
	TAVERN CAR SPACE	0	0	0
	CAR SHARE	0	0	0
	TOTAL	43 (4 ACC.)	149 (16 ACC.)	95 (16 ACC.)

NOTES:

ACCESSIBLE PARKING SPACES WITH THEIR SHARED AREAS TO ACHIEVE A MIN. CLEAR HEAD HEIGHT OF 2.5M

FOR INFORMATION

REV	CKD	APP	Status	DATE
01	HN	AJ	FOR INFORMATION	9/5/2025
02	HN	AJ	FOR INFORMATION	9/11/2025
03	DC	AS	FOR INFORMATION	9/19/2025

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NORTH POINT

SCALE
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Nominated Architects NSW:
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PROJECT TITLE
135 Badgerys Creeks, Bradfield
DEVELOPMENT APPLICATION

DRAWING TITLE
GENERAL FLOOR PLAN - BASEMENT 02

CLIENT
CREATIVEVISION
cvision.com.au

PROJECT NUMBER
20799

STAGE
DA

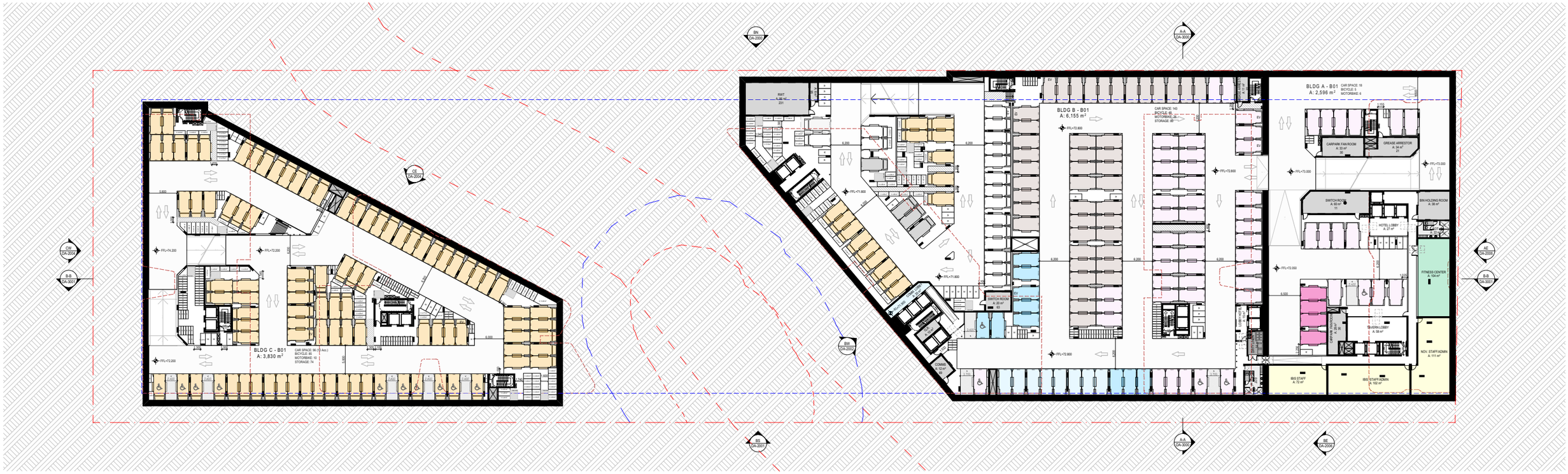
APPROVED
AS

CHECKED
DC

DRAWN

DRAWING NUMBER
DA-10B3

REVISION
03



CAR PARKING LEGEND

		BLDG A	BLDG B	BLDG C
	RETAIL PREMISES CAR SPACE	0	0	0
	RETAIL PREMISES CAR SPACE	0	0	0
	HOTEL / CONFERENCE CAR SPACE	14 (1 ACC.)	44 (3 ACC.)	0
	GYM CAR SPACE	0	44	0
	MEDICIAL CAR SPACE	0	10 (1 ACC.)	0
	COMMERCIAL CAR SPACE	0	8	0
	CHILCARE CAR SPACE	0	0	0
	RESIDENTIAL CAR SPACE	0	16	96 (10ACC.)
	RESI. VISITOR CAR SPACE	0	17	0
	TAVERN CAR SPACE	4	0	0
	CAR SHARE	0	4	0
	TOTAL	18 (1 ACC.)	143 (4 ACC.)	96 (10ACC.)

NOTES:

ACCESSIBLE PARKING SPACES WITH THEIR SHARED
AREAS TO ACHIEVE A MIN. CLEAR HEAD HEIGHT OF 2.5M

FOR INFORMATION

REV	CKD	APP	Status	DATE
01	HN	AJ	FOR INFORMATION	9/5/2025
02	HN	AJ	FOR INFORMATION	9/11/2025
03	DC	AS	FOR INFORMATION	9/19/2025

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PROJECT TITLE
135 Badgerys Creeks, Bradfield
DEVELOPMENT APPLICATION

DRAWING TITLE
GENERAL FLOOR PLAN - BASEMENT 01

CLIENT
CREATIVEVISION
cvision.com.au

PROJECT NUMBER
20799

STAGE
DA

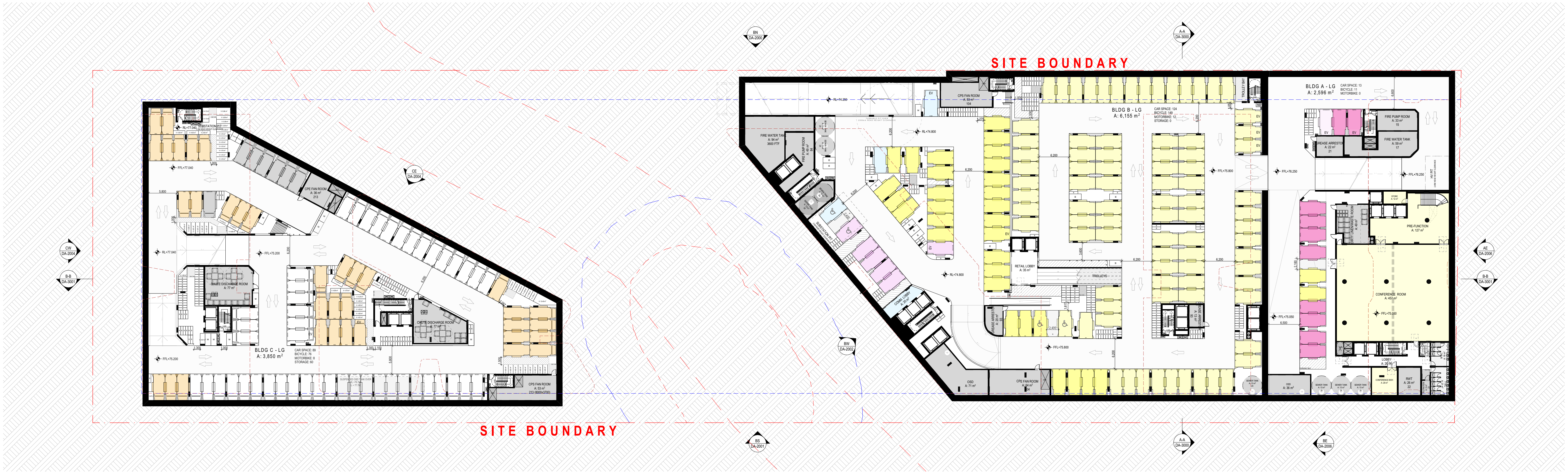
APPROVED
AS

CHECKED
DC

DRAWN

DRAWING NUMBER
DA-10B2

REVISION
03



CAR PARKING LEGEND

	BLDG A	BLDG B	BLDG C
RETAIL PREMISES CAR SPACE	2	31 (1 ACC.)	0
RETAIL PREMISES CAR SPACE	0	84 (1 ACC.)	0
HOTEL / CONFERENCE CAR SPACE	1	0	0
GYM CAR SPACE	0	0	0
MEDICIAL CAR SPACE	0	0	0
COMMERCIAL CAR SPACE	0	3 (1 ACC.)	0
CHILCARE CAR SPACE	0	6 (1 ACC.)	0
RESIDENTIAL CAR SPACE	0	0	35
RESI. VISITOR CAR SPACE	0	0	47
TAVERN CAR SPACE	10	0	0
CAR SHARE	0	0	7
TOTAL	13	125 (4 ACC.)	89

NOTES:

ACCESSIBLE PARKING SPACES WITH THEIR SHARED AREAS TO ACHIEVE A MIN. CLEAR HEAD HEIGHT OF 2.5M

FOR INFORMATION

REV	CKD	APP	Status	DATE
01	HN	AJ	FOR INFORMATION	9/5/2025
02	HN	AJ	FOR INFORMATION	9/11/2025
03	DC	AS	FOR INFORMATION	9/17/2025
04	DC	AS	FOR INFORMATION	9/19/2025

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PROJECT TITLE
135 Badgerys Creeks, Bradfield
DEVELOPMENT APPLICATION

DRAWING TITLE
GENERAL FLOOR PLAN - LOWER GROUND

CLIENT
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PROJECT NUMBER
20799

STAGE
DA

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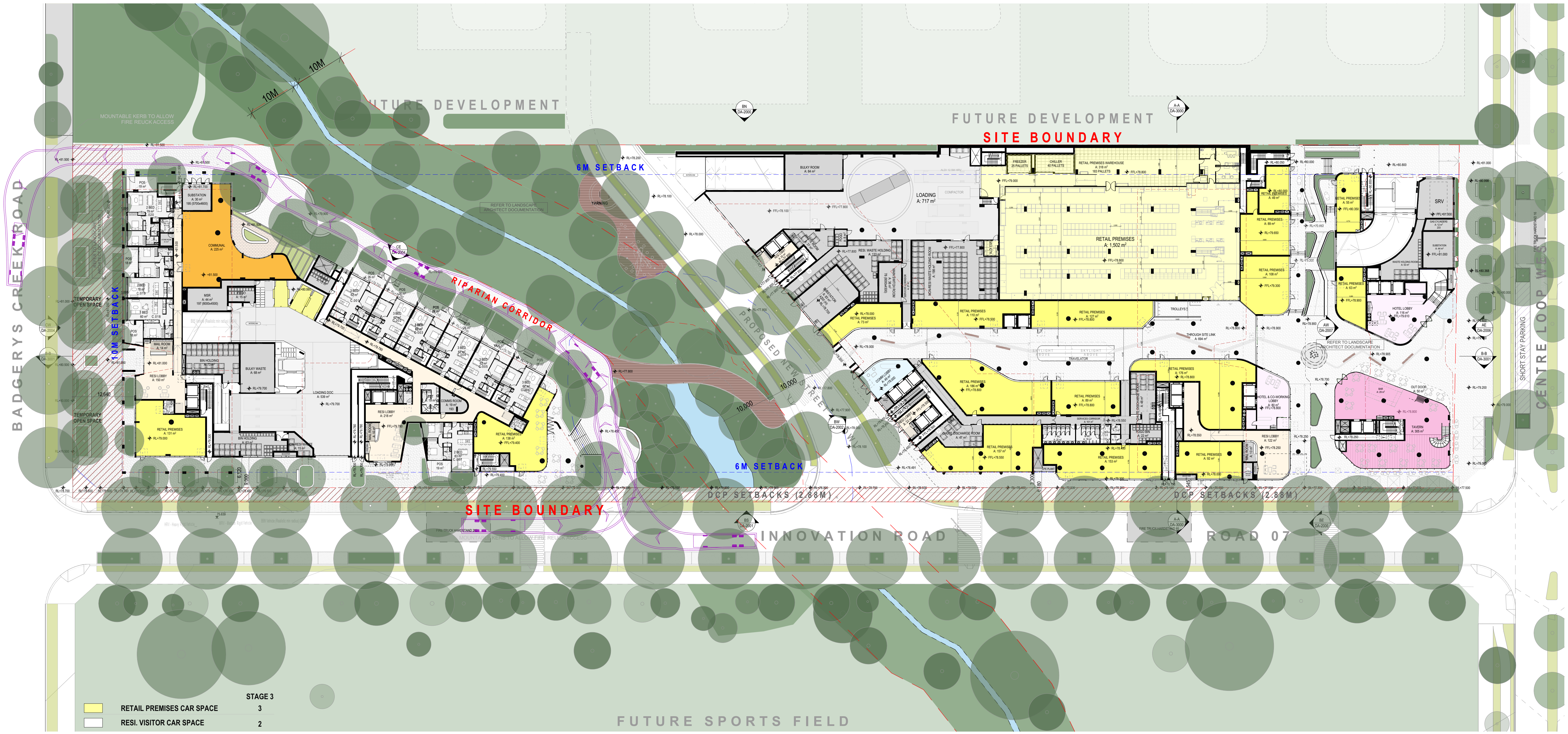
CHECKED
DC

DRAWN

DRAWING NUMBER
DA-10B1

REVISION
04



FOR INFORMATION

REV	CKD	APP	Status	DATE
01	HN	AJ	FOR INFORMATION	9/5/2025
02	HN	AJ	FOR INFORMATION	9/11/2025
03	DC	AS	FOR INFORMATION	9/17/2025
04	DC	AS	FOR INFORMATION	9/19/2025

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PROJECT TITLE
135 Badgerys Creeks, Bradfield
DEVELOPMENT APPLICATION

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AS	DC	

DRAWING TITLE
GENERAL FLOOR PLAN - GROUND 00

PROJECT NUMBER
20799

STAGE
DA

DRAWING NUMBER
DA-1000

REVISION
04