Detailed Site Investigation

Proposed Childcare Centre Development
3 Memory Avenue, Crookwell, NSW 2583

Final Report

P2410601JR05V01
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Prepared for BlueSox Pty Ltd

environmental science & engineering

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Client	BlueSox Pty Ltd
Document	P2410601JR05V01
Director	Andrew Norris
Manager	Gray Taylor
Principal Author	Bryson Monaghan

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Suite 201, 20 George St, Hornsby, NSW 2077, Australia
ACN 070 240 890 ABN 85 070 240 890
P +61-2-9476-9999 | mail@martens.com.au | www.martens.com.au

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Glossary of Terms

ABC	Ambient background concentrations
ACL	Added contaminant level
ACM	Asbestos containing material
AEC	Area of environmental concern
α	Alpha
APHA	American Public Health Association
AS	Australian Standard
ASS	Acid sulfate soil
AST	Above ground storage tank
β	Beta
BGL	Below ground level
BoM	Bureau of Meteorology
BTEXN	Benzene, toluene, ethylbenzene, xylene, naphthalene
CEC	Cation exchange capacity
CLM	Contaminated land management
COC	Chain of custody
COPC	Contaminants of potential concern
CSM	Conceptual site model
DA	Development application
DCP	Development control plan
DCS	Department of Customer Service (NSW)
DEC	Department of Environment and Conservation (NSW)
DECC	Department of Environment and Climate Change (NSW)
DECCW	Department of Environment, Climate Change and Water (NSW)
DP	Deposited plan
DPE	Department of Planning and Environment (NSW)
DPI	Department of Primary Industry (NSW)
DQI	Data quality indicator
DQO	Data quality objective
DSI	Detailed Site Investigation
DUAP	Department Urban Affairs and Planning (NSW)
EC	Electrical conductivity
EIL	Ecological investigation level
EPA	Environmental Protection Authority (NSW)
EQL	Estimated quantitation limit (interchangeable with PQL and LOR)
ESL	Ecological screening level
GDE	Groundwater dependent ecosystem
HAP	Historical aerial photography
HAPE	Historical Air Photo Enhancement program
HEPA	Heads of EPAs Australia and New Zealand
HIL	Health investigation level
HM	Heavy metals
HSL	Health screening level
IA	Investigation area
L	Litres
LEP	Local environmental plan
LGA	Local government area
LOR	Limit of reporting
MA	Martens & Associates Pty Ltd
mAHD	Metres Australian Height Datum
mBGL	Metres below ground level
µS/cm	Microsiemens per centimetre
MQO	Measurement quality objectives
NATA	National Association of Testing Authorities
NEMP	National Environmental Management Plan
NEPC	National Environment Protection Council

NEPM	National Environment Protection Measure
NSW	New South Wales
OCP	Organochlorine pesticides
OPP	Organophosphorus pesticides
PACM	Potential asbestos containing material
PAH	Polycyclic aromatic hydrocarbons
PCB	Polychlorinated biphenyl
POEO	Protection of the Environment Operations
PQL	Practical quantitative limit (interchangeable with EQL and LOR)
PSI	Preliminary Site Investigation
QA	Quality assurance
QC	Quality control
RAP	Remedial action plan
RL	Reduced level
RPD	Relative percentage difference
SAC	Site acceptance criteria
SAQP	Sampling, analysis, and quality plan
SCA	Site contamination assessment
SD	Standard deviation
SDT	Spatial digital twin
SDG	Sustainable Development Group Pty Ltd
SEED	Search engine for environmental data
SEPP	State Environmental Planning Policy
SOP	Standard operating procedure
SS	Spatial Service
SRA	Sample receipt advice
SWL	Standing water level
TB	Trip blank
TP	Test pit
TPH	Total petroleum hydrocarbons
TRH	Total recoverable hydrocarbons
UCL	Upper confidence limit
UPSS	Underground petroleum storage system
USCS	Unified Soil Classification System
UST	Underground storage tank

1 Introduction

1.1 Overview

Martens and Associates (**MA**) were engaged by BlueSox Pty Ltd (**the Client**) to undertake a Detailed Site Investigation (**DSI**) for land located at 3 Memory Avenue, Crookwell, NSW (the Site).

This DSI has been prepared to support a development application (**DA**) to Upper Lachlan Shire Council (the Council) for a proposed 20-lot residential subdivision, which includes the development of residential dwellings and a childcare facility.

The scope of this DSI is limited to the portion of the Site designated for the proposed childcare centre (hereafter referred to as the Investigation Area or **IA**). The potential for land contamination will be assessed within this defined IA.

This DSI follows a Preliminary Site Investigation (**PSI**) previously completed by MA for the broader Site area. The Site boundary and IA are shown in Appendix A (Map 01).

1.2 Proposed Development

Based on the preliminary design plan, the proposed childcare development will comprise:

- A single-level, at-grade structure;
- A car park with 18 spaces; and
- A formal outdoor play area.

The proposed development layout is shown on the childcare development plan (Faubourg, 2025) and survey plan (SDG, 2024), provided in Appendix B.

1.3 Objectives

Investigation objectives include:

- Review the findings of the previous PSI (MA, 2025) in relation to the IA.
- Identify historical and current activities on the IA and adjacent land which could potentially result in land contamination.
- Establish areas of environmental concern (**AEC**) and associated contaminants of potential concern (**COPC**) to assist with the development of a conceptual site model (**CSM**) for the IA.
- Quantify potential risks associated with land contamination through a targeted soil sampling and laboratory analysis program.
- Assess the suitability of the IA for the proposed childcare use and, if required, provide recommendations for further investigation, remediation, or management.

1.4 Scope of Works

The scope of works adopted for the investigation included:

- Completion of an intrusive soil investigation, including targeted soil sampling within the IA.
- Laboratory analysis of soil samples for COPC, as identified in the CSM.
- Preparation of a report in accordance with the relevant guidelines.

1.5 Regulatory Guidelines

The following regulatory guidelines have been considered for the preparation of this report:

- NSW DUAP (1998) Managing Land Contamination: Planning Guidelines.
- NEPC (2013a) Schedule B1: Guideline on Investigation Levels for Soil and Groundwater.
- NEPC (2013b) Schedule B2: Guideline on Site Characterisation.
- NSW EPA (2017) Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme.
- NSW EPA (2020) Contaminated Land Guidelines: Consultants Reporting on Contaminated Land.
- NSW EPA (2022) Contaminated Land Guidelines: Sampling design part 1 – application
- State Environmental Planning Policy (Resilience and Hazards) 2021.
- State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.
- Upper Lachlan Development Control Plan 2010
- Upper Lachlan Local Environmental Plan 2010

2 Site and IA Setting

2.1 Site and IA Identification

Site and IA identification details are provided in Table 1. The location of the Site, IA and surrounding land is shown in Appendix A (Map 01).

Table 1: Site and IA identification information.

Item	Detail
Site address	3 Memory Avenue, Crookwell NSW 2583
Legal identification	Lot 2 DP 702788
Proposed Legal identification	Lot 4
Investigation area	Approximately 2050 m^2 (Faubourg, 2025)
Geographic coordinates	Southeast corner of the IA (datum GDA2020 – MGA55): • Easting: 727622 • Northing: 6185257 (Source: NSW SDT Explorer 2025)
Local government area	Upper Lachlan Shire Council
Zoning	R2 – Low Density Residential (Upper Lachlan Local Environmental Plan 2010)
Current land use(s)	Rural
Proposed land use(s)	Childcare Centre
Surrounding land use	• North – low density residential and rural residential land use. • East – Crookwell Cemetery followed by rural residential and agricultural land use. • South – low density residential rural land use. • West – low density residential, general industrial and public recreational land use.

2.2 Environmental Setting

Information relating to the environmental setting of the site is presented in Table 2.

Table 2: Environmental setting information.

Item	Detail
Topography	The topography of the surrounding landscape is characterised by plateaux or valleys of gently undulating to undulating rises. Slope gradients are usually between 2 to 15% and local relief ranges between 5 to 40 m. Elevation of the IA ranges from approximately 910.5 mAHD in the southwest portion and 922 mAHD in the eastern portion. A topographic map of the IA is provided in Appendix A (Map 02).

Item	Detail
Geology	The eSPADE (NSW DPE, 2025) platform indicates the following geology is mapped within the IA: • Crookwell Basalt of Tertiary lava flows with irregular basalt surface indicative of valley fills. Soils have formed in situ and from alluvial-colluvial material derived from the parent rock. Geological mapping produced by the NSW Geological Survey (A.J. Johnston, et al., 2013) as provided on the web platform MinView (GSNSW, 2025), indicates geology at the IA consists of: • Crookwell Basalt - unconsolidated to semi-lithified, poorly sorted, fine to medium grained, quartzose sane to pebble to boulder sized, polymictic gravels, silica, iron and sandstone and conglomerate, minor clay horizons. Mapping for NSW relating to areas where naturally occurring asbestos is known to occur, or has the potential to occur, in geological units was reviewed on the NSW SEED spatial viewer (NSW DPIE, 2025). Mapping did not identify geological units with known or potential naturally occurring asbestos within (or adjacent to) the IA.
Soil landscapes	The eSPADE (NSW DPE, 2025) platform indicates the following soil landscape is mapped within the IA: • Taralga Soil Landscape – Krasnozems and Xanthozem are found on crests. On sideslopes, friable to slightly hardsetting, acid, texture-contrast soils similar to Chocolate Soils predominate. Prairie Soils are common on footslopes, with alluvial soils and wiesenbodens in drainage lines. eSPADE soil modelling covering the IA indicate soil cation exchange capacity (CEC) of the upper 2.0 m of soil ranges between ≤5 and 20 $cmol_c/kg$, while pH values range between pH 4 and pH 6.
Acid sulfate soils	Acid sulfate soils (ASS) risk mapping associated with the Upper Lachlan Local Environmental Plan 2010 indicates the IA is mapped beyond Class 5 area indicating no ASS risk associated with the IA.
Surface hydrology	Drainage is likely to occur by a combination of direct soil infiltration and overland flow.
Nearest surface waterbody	Tributary located 500m southeast leads to Kiamma Creek followed by Crookwell River.
Heritage	Crookwell Cemetery located directly to the east of the IA is mapped as a heritage item. (Upper Lachlan Local Environmental Plan 2010)

2.3 Hydrogeology and Groundwater Use

In accordance with NSW DEC (2007) *Guidelines for the Assessment and Management of Groundwater Contamination,* preliminary assessment to identify hydrogeological conditions and groundwater receptors has been completed to assist with CSM development. Finding of this preliminary assessment is provided in the following subsections.

2.3.1 Hydrogeological Setting

The Bureau of Meteorology Australian Groundwater Insight database (BoM, 2025) indicates the principal hydrogeology of the Crookwell area consists of fractured or

fissured, extensive aquifers of low to moderate productivity. Aquifers comprise an upper aquifer in basalt.

2.3.2 Groundwater Uses

The WaterNSW Real-time Water Database was reviewed to identify local groundwater uses ≤500 m of the IA. A summary of available bore records is provided in Table 3. A map of surrounding groundwater bores and their records is provided in Appendix C.

Table 3: Groundwater bore records summary.

Bore Identification	Registered Use	Direction (and Distance)	Groundwater Depth (mBGL)	Water bearing Zone Information
GW702814	Domestic	60 m, northwest	9.00	Shale – 7.0 to 20.0 mBGL, yield 3.791 L/s.
GW703243	Domestic	305 m, northwest	12.00	Shale – 8.0 to 24.0 mBGL.
GW058774	Domestic	440 m, south	Unknown	Unknown
GW053590	Irrigation	470 m, northwest	21.30	Basalt decomposed - fractured – 15.2 to 22.3 mBGL, yield 2.53 L/s.
GW702705	Domestic	499 m, northwest	3.00	Basalt – 1.5 to 6.0 mBGL, yield 3.375 L/s.

Groundwater is primarily used for domestic and irrigation purposes in surrounding properties, with the closest registered bore located approximately 60 m northwest of the IA. Groundwater depths range from approximately 3.0 mBGL to over 21 mBGL, with yields generally between 2.5 and 3.8 L/s.

No registered groundwater extraction occurs within the IA itself. Groundwater extraction is not anticipated as part of the proposed development, and beneficial reuse is not expected.

A review of the Bureau of Meteorology Groundwater Dependent Ecosystems (GDE) Atlas (BoM, 2025) identified no aquatic GDEs within 500 m of the IA. Terrestrial and subterranean GDEs have not been assessed in the area; however, inflow-dependent ecosystems (IDE) may be present. Based on available information, the presence of sensitive environmental receptors associated with groundwater is considered unlikely.

3 Inspection of the IA

An inspection of the IA was conducted for the investigation by an experienced MA Environmental Consultant on 27 February 2025. Observations made during the inspection are provided below in Table 4.

Table 4: Inspection of the IA observations

Item	Observation
Buildings and structures	No buildings were present within the IA. A fence structure was noted along the southern and eastern boundaries (refer to Plate 1).
Ground surfaces and pavements	The IA was predominantly covered by rural vegetation (refer to Plates 1 and 2). No formal pavement or hardstand was observed.
Fill material and stockpiles	No evidence of fill material or stockpiles was observed.
Historic structures	No evidence of former structures was noted.
Chemical storage	No chemical storage was observed.
UPSS, USTs and ASTs[1]	No evidence of UPSS, USTs, and ASTs was identified.
Waste materials and storage	No waste materials or storage areas were observed.
Odours and staining	No significant odours or staining were noted.
Hazardous building materials	No hazardous building materials were observed.
Electrical substation kiosks	No electrical substations or kiosk infrastructure was noted on or adjacent to the IA.
Vegetation and phytotoxicity	The IA was covered with rural grasses, with sparse shrubs and trees in the northern portion. Vegetation appeared healthy, with no visible signs of phytotoxicity.

Notes:

1. Underground petroleum storage systems (UPSS), underground storage tanks (USTs), and aboveground storage tanks (ASTs).

A selection of photographic images obtained during the inspection of the IA are provided in Appendix J.

4 Previous Investigation

For preparation of the DSI, MA have reviewed the following report relating to previous environmental investigation at the IA:

- Martens and Associates Pty Ltd (2025) *Preliminary Site Investigation, Proposed Residential Subdivision: 3 Memory Avenue, Crookwell NSW*, document reference P2410601JR02V01, dated 28 April 2025 (MA, 2025).

A summary of the key findings provided in the MA (2025) report, in relation to the proposed childcare (Lot 4), are detailed in Table 5.

Table 5: Summary of the MA (2025) investigation.

Item	Detail
MA (2025) Preliminary Site Investigation	
Desktop study	Key findings of the desktop study include: • Historical aerial imagery suggests that some amount of cropping is likely to have occurred within the IA between at least 1963 and 1994. However, poor image quality makes it difficult to confirm definitively. • The IA is not listed on any government register of contaminated land or hazardous industries. • No surrounding land use presents a contamination risk to the IA.
Area of environmental concern (AEC)	The following AEC were identified: • Former agriculture land use and possible cropping.
Conceptual site model (CSM)	• The CSM identified soil as a potentially affected medium due to historical land use. • Potential exposure pathways and receptors (human health and ecological) were identified, suggesting a possible risk under the proposed development scenario.
Conclusions and recommendations	• The PSI concluded that potential risks to receptors may exist and further characterisation was warranted. • A DSI was recommended to assess COPC in soil through targeted sampling and laboratory analysis.

5 Conceptual Site Model

5.1 Areas of Environmental Concern

An assessment of potential areas of environmental concern (AEC) and contaminants of potential concern (COPC) has been made for the IA on the basis of previous investigation findings and is provided in Table 6.

Table 6: Potential contamination sources and contaminants of potential concern.

AEC	Potential for Contamination	COPC
AEC A Former agriculture land use / Possible cropping	Due to the IA's historical agricultural land use, including possible cropping, the application of horticultural/agricultural chemicals and pesticides for pest control may have occurred.	Heavy Metals (HM), organochlorine pesticides (OCPs) / organophosphate pesticides (OPP).

5.2 Source – Exposure Pathway – Receptor Linkages

A conceptual site model (CSM) outlining *source – exposure pathway – receptor* linkages has been developed from information available reporting and is presented in Table 7.

Table 7: Conceptual site model *source – exposure pathway – receptor* linkages.

Item	Description
Potential media affected by AEC and mechanism of contamination	**Soil** is considered the primary affected medium due to the identified AEC. Contaminants are likely to be associated with historical surface application of pesticides or agricultural chemicals, resulting in potential 'top-down' impacts. Contamination, if present, is expected to be spatially limited and occur predominantly in surface and near-surface soils. **Groundwater** is not considered to be a media of interest. No extensive excavations are proposed and thus interception with groundwater is unlikely to occur.
Potential exposure pathways	Potential anthropogenic exposure pathways include ingestion, dermal absorption, inhalation (of dust and / or vapours). Potential ecological exposure pathways include biota uptake and intake.
Potential receptors	Potential human receptors include future users and visitors (adults and children) as well as construction and maintenance work during proposed development works and ongoing maintenance within the IA. Potential ecological receptors include flora and fauna within the IA and surrounding environment.

5.3 Review of Information Data Gaps

A summary of information or data which has not been obtained or considered for inclusion in the DSI is discussed in Table 8. This summary also discusses possible constraints and uncertainty relating to the development of the investigation CSM.

Table 8: Information data gap summary.

Data Gap	Commentary
Land title records	Land title records were not reviewed as part of this DSI. This is unlikely to affect the findings of the investigation as sufficient historical information relating to former activities within the IA was obtained from historical aerial photography interpretation and inspection of the IA (MA, 2025).
Safework NSW dangerous goods records	There is no historical evidence of large volume storage of petroleum hydrocarbons in the IA, nor of past site uses likely to have required such storage. As such, a search of SafeWork NSW dangerous goods records was not obtained for the investigation.
Section 10.7 planning certificate	Section 10.7 planning certificates were not obtained for review as part of the DSI. it is considered information provided in the planning certificate is unlikely to change the conclusions or recommendations of this report as sufficient historical information relating to former activities within the IA was obtained from historical aerial photography interpretation and inspection of the IA (MA, 2025).

6 Sampling, Analysis and Quality Plan

A sampling, analysis and quality plan (SAQP) was developed to ensure sampling data collected for this DSI is representative and provides a robust basis for site assessment decisions. The SAQP has been prepared in general accordance with NEPC (2013b) methodology, and includes:

- Data quality objectives (DQO).
- Data quality indicators (DQI).
- Sampling methodologies and procedures.
- Field screening methods.
- Sample handling, preservation, and storage procedures.
- Field and laboratory quality assurance (QA) / quality control (QC).

The SAQP is summarised in the following subsections.

6.1 Data Quality Objectives

DQOs for the investigation are prepared as statements specifying the qualitative and quantitative data required to support project decisions. DQOs have been prepared in general accordance with NEPC (2013b) and NSW EPA (2020) and are presented below in Table 9.

Table 9: Data quality objectives.

DQO Process Step		DQO Output
1	***State the problem***	
	Summary of contamination problem	Media associated with AEC requires characterisation to determine land use suitability.
	CSM summary	• Contaminants – potentially metals (HM) and pesticides (OCP/OPP). • Sources – former agriculture land use and possible cropping. • Pathways – dermal absorption, inhalation of dust and/or vapour, ingestion and biota uptake / intake have been identified as the pathways of concern. • Receptors – future users and visitors (adults and children), construction and maintenance work as well as flora and fauna within the IA and surrounding environment.
	Investigation constraints	No practical constraints have been identified.
2	***Identify goals of the study***	
	Principal study question(s)	• Is soil suitable for a residential land use based on contaminant levels? • If not, is further investigation, remediation, or management required before media can be considered suitable for proposed development land use?
	Alternative outcomes or actions that could result from resolution of the principal study question(s)	The alternative outcomes will be: • Soil is suitable for residential land use (HIL-A). Or • Soil is not suitable for the proposed land use and remediation is needed to allow development.
	For decision problems, combine the principal study questions and the alternative actions into decision statements	• If the contamination status of soil is acceptable, *the land is suitable for residential land use*. • If the contamination status of soil is unacceptable, *prepare a remedial action plan (RAP)*.
3	***Identify information inputs***	
	Information required to resolve the decision statements/estimation	• Development plans. • Information from previous investigation. • Soil data collected by investigation, including field samples and analytical samples. • Observations during data collection.
	Information needed to establish action level(s)	Investigation criteria will be sourced from: • NEPC (2013) Schedule B1 HILs and HSLs for residential with accessible soil, EILs and ESLs, and Management Limits.

DQO Process Step		DQO Output
	Sampling and analytical methods to provide necessary data	• Sampling and analytical methods will be consistent with existing guidance, including the NEPC (2013) Schedule B2 and B3. • Analytical laboratories will be NATA-accredited and use analytical methods based on NEPM, USEPA and APHA methods.
4	***Define the study boundaries***	
	Target population of interest and relevant spatial boundaries	• The decision area is approximately 2050 m^2. • Fill is not expected across the IA.
	Definition of sampling unit(s)	Sampling units will consist of: • Field samples of appropriately described and logged samples. • Analytical samples of the laboratory-specified sample jar quantity.
	The smallest unit on which decisions or estimates will be made	The decision is to be based on the complete decision area. However, following data analysis, some segregation may be considered (i.e., some of the decision area may be suitable for HIL-A and some may require remediation).
5	***Develop the analytic (statistical) approach***	
	The statistical parameter that characterises the population of interest	The 95% UCL of the arithmetic mean ($\bar{x}$) will be the key statistical parameter. Evaluation of data will include: • The 95% UCL $\bar{x}$ to be ≤ criterion. • No individual sample >250% of criterion. • The sample standard deviation (SD) to be <50% criterion. • No asbestos containing material (ACM) observed on the ground surface or detected in soil. • No laboratory detection of asbestos fibres in soil.
	The action level for decision	• To determine if the material is suitable for HIL-A land use, analytical action levels are to be based on the NEPM HILs and HSLs (NEPC, 2013; Schedule B1). • If the material is not suitable for the HIL-A land use, then a RAP is to be prepared. • Samples will be held at the laboratory for additional analyses (if required).
	Confirmation that measurement detection will allow reliable comparisons with the action level	• Samples will be submitted to NATA-accredited laboratories. • Limit of reporting (LOR) adopted by analytical laboratories will be below the adopted criteria. • To achieve an acceptable LOR for asbestos fines and fibrous asbestos, the method may not be NATA-accredited, undertaken using in-house laboratory methods for quantification.

DQO Process Step		DQO Output
	Combined outputs from previous DQOs steps, developed as an *'if …, then …, else …'* theoretical decision rule based on chosen action levels.	• If the statistical parameters of the sampling data exceed applicable action levels, then preparation of a RAP will be required. *Otherwise* • If the statistical parameters are below applicable action levels, then land will be determined to be suitable for HIL-A land use.
6	***Specify performance or acceptance criteria***	
	The decision rule as a statistical hypothesis test.	• The null hypothesis is that soil is contaminated and exceeds adopted criteria. • The alternative hypothesis is that soil is not contaminated above the adopted criteria.
	Consequences of making incorrect decisions from the test.	Possible decision errors include: • Soil material being accepted as suitable for HIL-A land use when it is not, thereby potentially risking human health or environmental impacts. • Unnecessary remediation of soil material offsite, imposing needless financial and resource burdens on the development project.
	Acceptable limits on the likelihood of making decision errors, including acceptable alpha (α) and beta (β) risk levels	Stated hypotheses: • *Null hypothesis* (H0): the 95% UCL, and other requirements, are > the action level; and • *Alternate hypothesis* (HA): the 95% UCL, and other requirements, are ≤ the action level. Potential outcomes include Type I and Type II errors: • Type I error of determining the soil material is acceptable for the proposed HIL-A land use when it is not (wrongly rejects true H0). • Type II error of determining the soil material is unacceptable for the proposed HIL-A land use when it is (wrongly accepts false H0). For performance criteria, the acceptable limits on the likelihood of making decision errors to be applied are: • Alpha risk (Type I error) of $\alpha = 0.05$ • Beta risk (Type II error) of $\beta = 0.2$.
7	***Optimised design for obtaining data***	
	Sampling and analysis design	To allow statistical inference, a probabilistic systematic sampling strategy is to be adopted to screen soils for diffuse contamination. NSW EPA (2022) minimum grid-based sampling requirements will be adopted for the investigation based on the decision area of 2050 m^2. Eight test locations will be set out on an approximate 16 m square grid designed to detect an 18.7 m diameter hotspot with 95% confidence. Test pits will be excavated at each sampling location into underlying natural material. Field samples will be collected at the ground surface (0.0-0.1 m) at each sampling location. Samples will be selected for analytical testing based on the soil units encountered at sampling locations and field observations made (including visual and olfactory evidence).

DQO Process Step		DQO Output
	Implementation of the design and contingency plans	The field methods for sample collection, handling, and analysis (at analytical laboratories) are described in Section 6.4 and 6.5. Contingencies include, collecting additional samples from material that is significantly different from the reworked natural, and conducting additional analysis where field indicators (staining, odours, field screening results) suggest other contaminants.
	QA/QC procedures	Required field QA and field and laboratory QC are described in Section 6.2 and include data quality indicators (DQIs) and associated measurement quality objectives (MQOs).
	Operational details and theoretical assumptions of the selected design in the SAQP.	Theoretical assumptions include: • Soil material is relatively homogenous, consists of natural material, and only minor wastes exist (if any).

6.2 Data Quality Indicators

In accordance with NSW EPA (2017, 2020), the field and laboratory data set obtained for the investigation will be compared with DQIs outlined in Table 10 to ensure acquired data meets the needs of the project and DQOs have been met.

Table 10: Data quality indicators.

Assessment Measure (DQI)	Comment
Precision – a measure of the variability (or reproducibility) of data.	Precision will be assessed by collection of a minimum 10% field duplicates and calculation of the relative percent difference (RPD) with parent samples. Data precision will be deemed acceptable where results are: • Any RPD (for 0 - 10 x EQL), or • RPD <50% (for 10 - 30 x EQL) or • RPD <30% (for >30 x EQL) Exceedance of this range may still be considered acceptable where heterogeneous materials are sampled.
Accuracy – a measure of the closeness of reported data to the true value.	Data accuracy will be assessed by: • Field spikes and blanks. • Laboratory duplicates, spikes, surrogates, and blanks.
Representativeness – confidence that data is representative of each media present on site.	To ensure data representativeness, the following field and laboratory procedures will be followed: • Design and implementation of the sampling program completed in accordance with the SAQP. • Use of a trip spike for assessing volatile losses during field sampling and a trip blank to ensure no cross contamination or laboratory artefacts. • Laboratory hold times are met, and sample handling and transportation is completed in accordance with the SAQP.
Completeness – a measure of the amount of usable data from a data collection activity.	To ensure data set completeness, the following is required: • Confirmation sampling was completed in general accordance with SAQP. • Provision of COC and sample receipt forms. • Provision of results from all laboratory QA / QC samples (lab blanks, trip blank and trip spike, lab duplicates). • Use of appropriate sampling and analytical methods. • NATA accreditation stamp on all laboratory reports.
Comparability – confidence that data may be considered equivalent for each sampling and analytical event.	Data comparability will be maintained by ensuring: • All sampling events undertaken follow methodologies outlined in the SAQP and published guidelines. • NATA accredited laboratory methodologies are followed for all laboratory analysis.

6.3 Site Assessment Criteria

Site assessment criteria (SAC) adopted for the characterisation of soil for the DSI are summarised in Table 11.

Table 11: IA assessment criteria.

Adopted Guidelines	Rationale
Soils	
NEPC (2013a), HEPA (2025)	Health investigation levels (HIL) Samples are assessed against: • NEPC (2013a) HIL-A investigation levels for residential (with soil access) land use. Health screening levels (HSL) *Petroleum hydrocarbons* Samples are assessed against: • NEPC (2013a) soil HSL-A&B – low to high density residential land use (silt dominant soils) have been considered for soil vapour intrusion. *Asbestos* Asbestos HSLs outlined in NEPC (2013a) have not been adopted for this investigation. Alternatively, presence of asbestos in soils or in material samples is assessed on a detect / non detect basis. Should asbestos be detected in samples, or evidence of demolition debris be present in soil, further asbestos investigation and quantification may be required. Management Limits NEPC (2013a) management limits have been adopted for the petroleum hydrocarbons for residential / parkland – coarse textured soils.
NEPC (2013a), HEPA (2025), CRC CARE (2017)	Ecological Investigation Levels (EIL) EILs for select metals, DDT, and naphthalene are derived from NEPC (2013a) for protection of terrestrial ecosystems in residential & public open space. EILs are calculated using Added Contaminant Levels (ACL) for respective contaminants in NEPC (2013a) using the most conservative pH, CEC, clay content values, and Ambient Background Concentrations (ABC) are derived from NSW - old suburb / low traffic ABCs, tabulated in NEPC (2013d). Contamination is also considered aged (>2 years). Soil parameters adopted for EIL calculations are based on compiled site-specific analytical data, where noted: • CEC – 15 $cmol_c/kg$ (based on laboratory analysis, see Appendix F) • pH – pH 6.3 (based on laboratory analysis, see Appendix F) • Clay content - 30% • Organic carbon content – 10% EIL calculation sheets are provided in Appendix I. Ecological Screening Levels (ESL) TRH and BTEX are assessed against ESLs for urban residential & public open space – coarse textured soils presented in NEPC (2013a). High reliability ecological guideline levels provided in Table 11 of CRC CARE (2017) have been adopted for benzo(α)pyrene (fresh), as an alternative to low reliability ESLs values outlined in NEPC (2013a).

6.4 Field Investigation Methodology

6.4.1 Soil Investigation

The methodology adopted for field investigation and sampling of soils to meet established project DQOs is provided in Table 12.

Table 12: Soil investigation and sampling methodology.

Item	Description
Date of fieldworks	Soil investigation and sampling was completed on 1 May 2025.
Investigation method(s)	Soil investigation was conducted by the following methods: • Excavating eight test pits (TP101 – TP108) using hand tools.. Sampling locations are shown in Appendix A (Map 04).
Soil logging	Soils were classified in the field with respect to lithological characteristics and texture. Soil classifications and descriptions were based on the Unified Soil Classification System (USCS) and Australian Standard (AS) AS1726:2017 - *Geotechnical IA Investigations*. Soils were also evaluated qualitatively for odour, visual evidence of contamination, and anthropogenic inclusions. Test pit logs for the investigation are presented in Appendix D. A summary of soil descriptions and field observations is provided in Section 7.3
Soil sampling	Soil samples were obtained from by an experienced MA environmental consultant using a dedicated, clean pair of nitrile gloves for collection of each sample. Each sample obtained from test pit excavations was collected directly from soils within the test pit. Each sample was placed into a laboratory supplied, 250 mL glass jar, with no headspace (to limit volatile loss) and labelled with a unique sample identifier.
Sample preservation	Soil samples were stored in a refrigerated (ice filled) chest, whilst onsite and in transit to the laboratory. All samples were submitted and analysed within the required holding period, as documented in laboratory sample receipt advice (SRA) presented in Appendix H.
QC sampling	The following quality control (QC) sampling rates were proposed for soil investigation: • Field duplicate samples were collected and analysed at a rate 10%. • A laboratory prepared trip blank and trip spike were stored with collected soil samples in the field and during transportation to the analytical laboratory for each analytical sample batch.
Sample handling and transport	Sample storage and transport was conducted according with industry guidance and standards. Samples were placed immediately into an ice chilled cooler box following collection. Primary samples were dispatched to Envirolab Services Pty Ltd (Envirolab), a NATA accredited analytical laboratory, under chain of custody (COC) conditions for analysis. COC certificates and SRA documentation was provided to MA for confirmation purposes and is attached in Appendix H.

6.5 Sampling and Analysis Rationale

Sample analysis was completed in accordance with NEPC (2013c) *Schedule B3: Guideline on Laboratory Analysis of Potentially Contaminated Soils*. The laboratory analytical suite used for the investigation is provided in Table 13.

Table 13: Summary of COPC laboratory analysis of media.

COPC	Soil Samples	QC Samples	QC Purpose
Heavy metals	8	1	Intra laboratory duplicates
Chromium Speciation	8	1	Intra laboratory duplicates
OCP / OPP	8		
BTEXN	1	1	Trip spike
TRH	1	1	Trip blank
PAH	1		
PCB	1		
Asbestos (in soil)	1		
CEC	2		
pH	2		

Based on the conceptual site model (CSM), heavy metals and pesticides (OCP/OPP) were identified as the COPC due to the site's historical agricultural use. Accordingly, the analytical program primarily targeted these COPC. For completeness, a single soil sample was also submitted for a broader suite of analytes—including BTEXN, TRH, PAHs, PCBs, and asbestos—to screen for any unexpected contamination and ensure a comprehensive assessment of site conditions.

7 Field and Analytical Results

7.1 Investigation Constraints

The proposed scope of works (Section 1.4) for the investigation was completed. No practical constraints were encountered during the investigation.

7.2 Data Quality Assessment

Field and laboratory QA/QC has been reviewed for the investigation and is presented in the Data Quality Assessment provided in Appendix E.

Assessment of the field and analytical data produced by the investigation indicated that data adequately satisfies the DQIs that were developed for the investigation. It is therefore concluded that the overall data quality is of an acceptable standard to be used for interpretation.

7.3 Subsurface Conditions and Field Observations

No fill material was observed at any test pit location within the IA. Natural soils were encountered to a maximum investigation depth of 0.3 m below ground level (mbgl) and generally comprised brown to light brown clayey silt.

All test pits were terminated upon refusal on shallow bedrock, which limited investigation depth.

Groundwater seepage was not encountered at any location.

No visual or olfactory evidence of contamination (e.g., staining or odours) was noted in soils during excavation. Anthropogenic materials, including demolition debris or potential asbestos-containing material (PACM), were not observed during test pitting or sample collection.

Test locations are shown on the sampling plan in Appendix A (Map 04), with detailed test pit logs provided in Appendix D. Selected photographs from the field investigation are included in Appendix J

7.4 Soil Results

7.4.1 Soil Analytical Results

A summary of laboratory analytical results for analysed soil samples, compared to adopted SAC, is provided in Table 14. A detailed tabulation of soil analytical results showing individual samples compared to adopted SAC is provided in Appendix F. Laboratory analytical documentation is available in Appendix G.

Table 14: Summary of soil analytical results compared to assessment criteria.

Analyte	Results Compared to SAC
Heavy metals	Most heavy metals were reported at concentrations below the laboratory limit of reporting (LOR) or below the adopted SAC. However, total chromium was reported in all samples at concentrations between 160 and 240 mg/kg, exceeding the NEPM (2013) HIL for Chromium (VI) of 100 mg/kg. As such, chromium speciation analysis was undertaken. The speciation results indicated that both Chromium (VI) and Chromium (III) were below the respective LORs in all samples. These findings suggest that the elevated total chromium concentrations are likely attributable to environmentally stable forms not associated with human health risk.
BTEXN	BTEXN was reported in soil samples by the laboratory at concentrations below LOR and below adopted SAC.
TRH	TRHs concentrations were reported by the laboratory in soil samples at levels below LOR and below adopted SAC.
PAH	Concentrations of relevant PAHs were reported in analysed soil samples at levels below LOR and below adopted SAC.
OCP / OPP	Concentrations of OCP and OPP in analysed soil samples were reported below LOR and below the respective SAC.
PCB	PCB (total) was reported in analysed soil samples by the laboratory at concentrations below LOR and below the adopted SAC.
Asbestos (identification in soil)	The analytical laboratory reported that no asbestos was detected at the reporting limit of 0.1 g/kg in analysed soils samples. Trace analysis by the laboratory did not detect asbestos in soil samples.

7.5 Discussion

The analytical results from soil sampling were assessed against the adopted site assessment criteria (SAC) for residential land use (HIL-A), consistent with the proposed childcare development.

With the exception of total chromium, all reported concentrations of COPC, including heavy metals, pesticides, petroleum hydrocarbons (BTEXN, TRH), PAHs, PCBs, and asbestos, were below laboratory limits of reporting or relevant SAC.

Total chromium was reported at concentrations exceeding the HIL for Chromium (VI) in all soil samples. However, chromium speciation testing confirmed that both Chromium (VI) and Chromium (III) were below laboratory detection limits. These findings suggest that the elevated total chromium concentrations are likely attributable to environmentally stable, non-bioavailable forms of chromium that do not pose a risk under the proposed land use. As such, no further assessment or management of chromium is considered necessary.

No asbestos, anthropogenic fill, odours, staining, or other field indicators of contamination were observed during intrusive works. The overall findings are consistent with the conceptual site model, which identified only low potential for contamination associated with former agricultural land use.

8 Conclusions and Recommendations

MA has completed a DSI within proposed Lot 4 of 3 Memory Avenue, Crookwell, NSW (the IA), to assess potential land contamination risk in support of a future childcare development DA.

The investigation included targeted soil sampling and laboratory analysis to assess potential contamination risks associated with historical agricultural land use. With the exception of total chromium, all COPC were reported at concentrations below the adopted site assessment criteria (SAC) for residential land use (HIL-A).

Total chromium concentrations exceeded the Chromium (VI) HIL in all samples; however, chromium speciation confirmed that both Chromium (VI) and Chromium (III) were below laboratory detection limits. This indicates that the elevated total chromium is attributable to environmentally stable, low-risk forms of chromium not relevant to health-based criteria.

Based on the results of this assessment, MA consider that the IA is suitable for the proposed childcare development with no further investigation, remediation or management required. This report provides the consent authority with data and analysis sufficient to consider whether the land is contaminated [s 4.6 (1) (a)] and to conclude that the land is suitable for the intended use without the need for remediation or ongoing management considerations with regards to contaminated land.

We recommend that the following works are completed so that contamination risks remain low and acceptable during, and post construction works:

- Preparation and implementation of a Construction Environmental Management Plan (CEMP) for the construction phase of the project. The CEMP is to include protocols to address any unexpected finds which may be encountered during targeted investigation works for footings and other potential targeted minor excavation as part of the proposed development.
- If required, undertake a formal waste classification assessment to ensure that any spoil generated during development work is classified and disposed of in accordance with NSW EPA (2014) Waste Classification Guidelines.

9 Limitations Statement

This DSI was undertaken in line with current industry standards.

It is important, however, to note that no land contamination study can be a complete and exhaustive characterisation of a site, nor can it be guaranteed that any assessment shall identify and characterise all areas of potential contamination or all past potentially contaminating land uses. Therefore, this report should not be read as a guarantee that no contamination shall be found on the IA. Should material be exposed in future which appears to be contaminated or inconsistent with natural site soils, additional testing may be required to determine the implications for the site.

Martens & Associates Pty Ltd has undertaken this assessment for the purposes of the current development proposal. No reliance on this report should be made for any other investigation or proposal. Martens & Associates Pty Ltd accepts no responsibility and provides no guarantee regarding the characteristics of areas of the site not specifically studied in this investigation.

10 References

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Appendix A – Maps

Map	Title
Map 01	Site Overview
Map 02	Investigation Area Overview
Map 03	AEC

0 10 20 30 40 50 m

1:1250 @ A3

Viewport A

Notes:
- Aerial from Nearmap (2025)
- Topography from NSW Clip and Ship (2025)

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Environment | Water | Geotechnics | Civil | Projects

Map Title / Figure:
Site Overview

Map 01	Map
3 Memory Avenue, Crookwell, NSW 2583	Site
Childcare	Project
Detailed Site Investigation	Sub-Project
BlueSox Pty Ltd	Client
08/05/2025	Date

Project No: P2410601 Map Set: MS03-R02 EPSG: 7856

Project No: P2410601 Map Set: MS03-R02 EPSG: 7856

0 6 12 18 24 30 m

1:500 @ A3

Viewport B

Notes:
- Aerial from Nearmap (2025)
- Topography from NSW Clip and Ship (2025)

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Map Title / Figure:

Investigation Area Overview

Map 02	Map
3 Memory Avenue, Crookwell, NSW 2583	Site
Childcare	Project
Detailed Site Investigation	Sub-Project
BlueSox Pty Ltd	Client
08/05/2025	Date

Project No: P2410601 Map Set: MS03-R02 EPSG: 7856

0 6 12 18 24 30 m

1:500 @ A3

Viewport B

Notes:
- Aerial from Nearmap (2025)

Map Title / Figure:
AEC

Map 03	Map
3 Memory Avenue, Crookwell, NSW 2583	Site
Childcare	Project
Detailed Site Investigation	Sub-Project
BlueSox Pty Ltd	Client
08/05/2025	Date

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0 6 12 18 24 30 m

1:500 @ A3

Viewport B

Notes:
- Aerial from Nearmap (2025)

Map Title / Figure:

Sampling Locations

Map 04	Map
3 Memory Avenue, Crookwell, NSW 2583	Site
Childcare	Project
Detailed Site Investigation	Sub-Project
BlueSox Pty Ltd	Client
08/05/2025	Date

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Project No: P2410601 Map Set: MS03-R02 EPSG: 7856

Appendix B – Development and Survey Plans

Proposed Childcare Development at
3 Memory Ave, Crookwell

Design Facts:

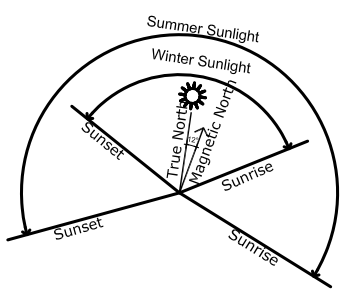
Site Area:	2050m²
GFA:	592m²
FSR:	28.9%
Height:	5.1m
Landscape Area:	605m² (29%)
Parking:	
- Employees	11
- Drop Off Spots	7

Setbacks:

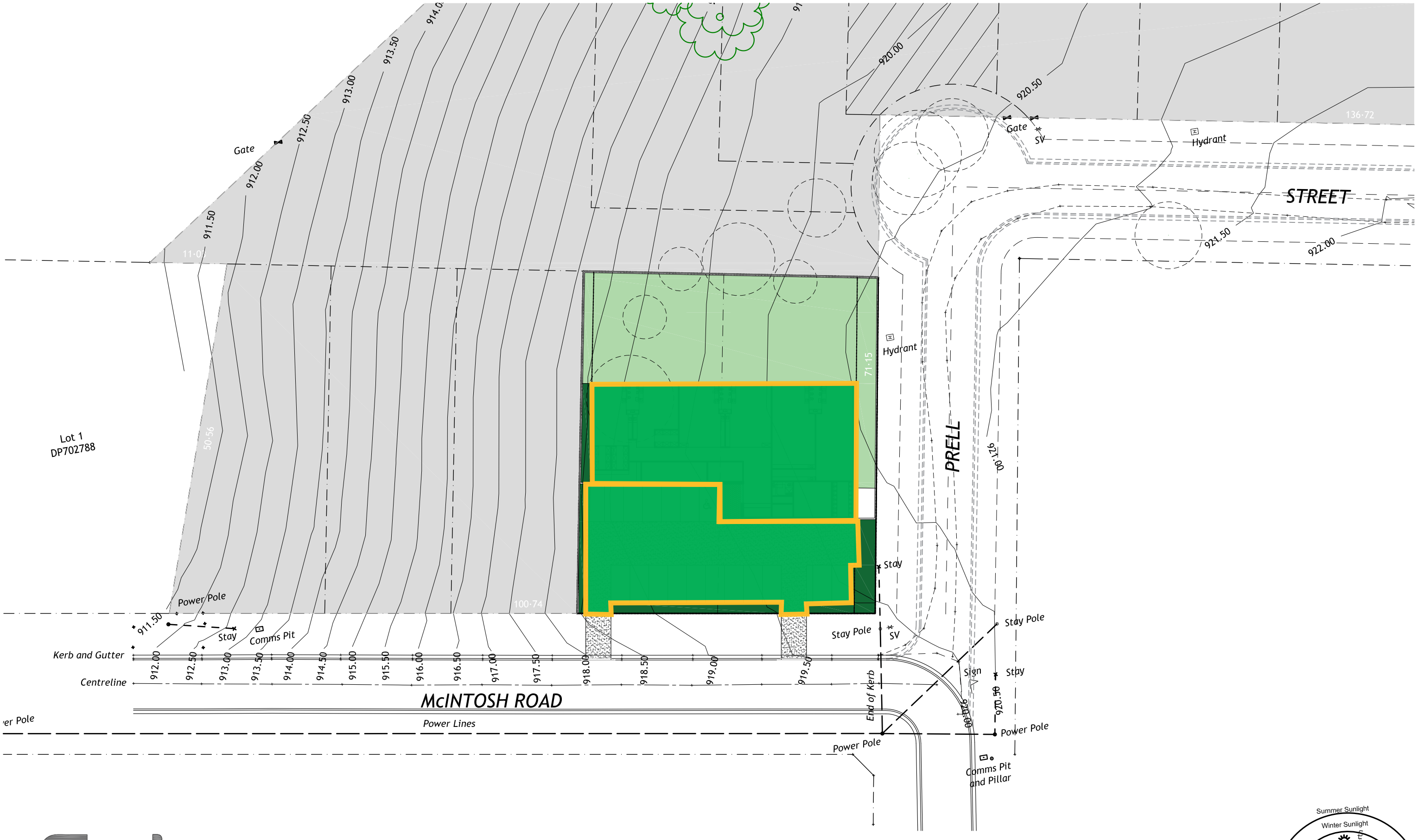
- Front:	13.4~18.5m
- Secondary:	3~3.2m
- Side:	1.5~1.75m
- Rear:	15.2~16m

Faubourg 24 Pty Ltd
38 Bellevue Ave, Denistone - T 0403664825 E admin@faubourg24.com www.faubourg24.com
ABN 47 012 991 610- Nominated Architect: Dany Romanos Khoury NSW Reg# 7753

Cover Page
100330 SK00
Issue A



Proposed Childcare Development at
3 Memory Ave, Crookwell



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ABN 47 012 991 610- Nominated Architect: Dany Romanos Khoury NSW Reg# 7753

Site Plan
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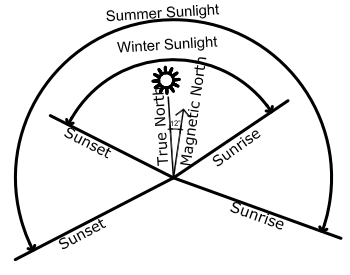
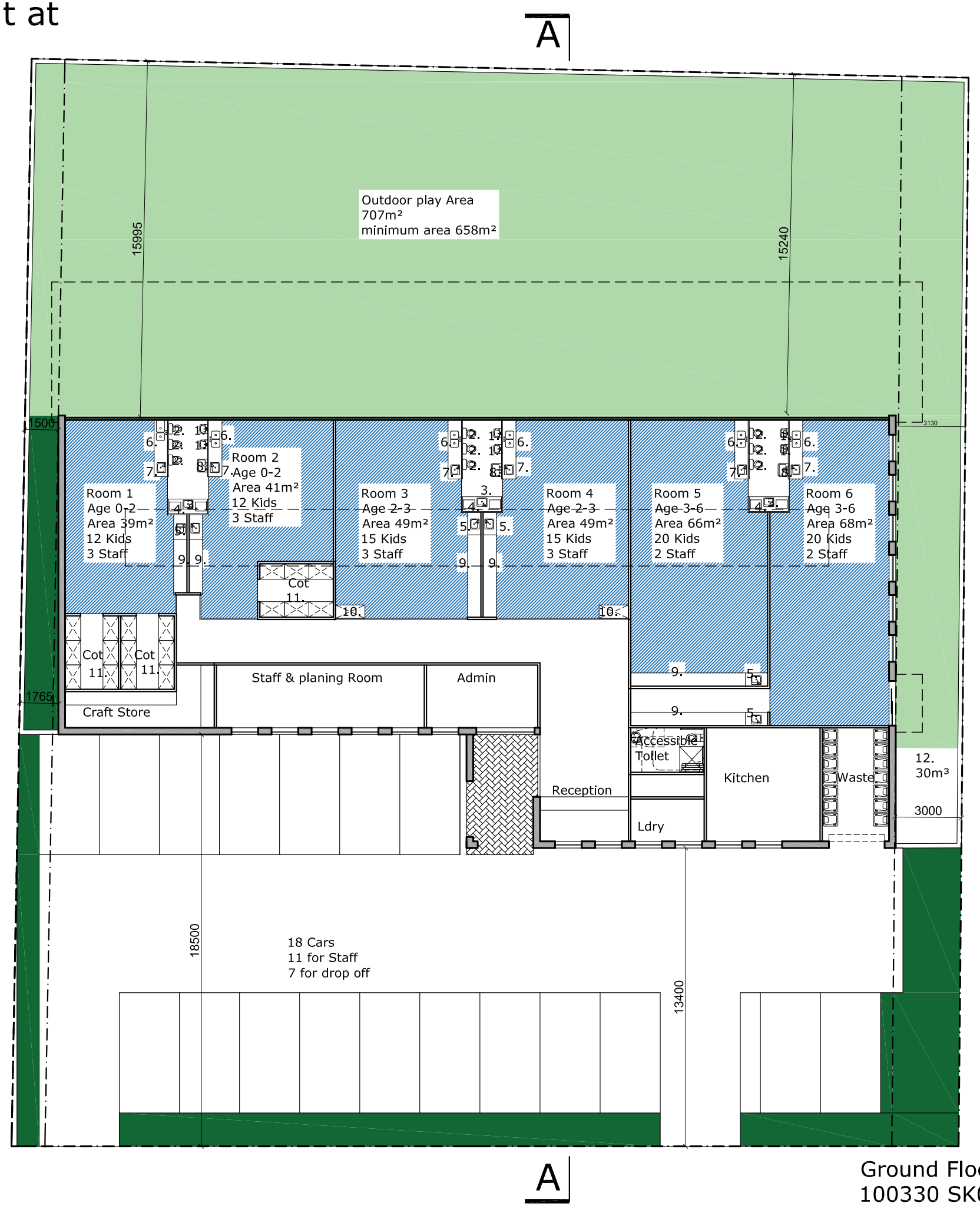
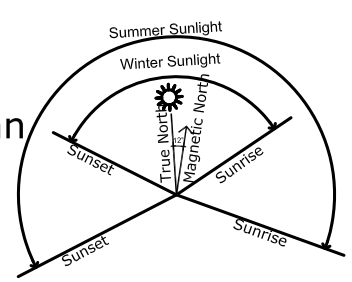
Issue A
Scale 1:500



Proposed Childcare Development at 3 Memory Ave, Crookwell



1. Kids Hands Basin
2. Kids Toilet
3. Bench Type Baby Bath
4. Bench Type Nappy Change
5. Bottle Prep
6. Crafts Sink
7. Kitchenette
8. Adult Hand Basin
9. Storage 1.5m High
10. Day bed storage
11. Cot area
12. Outdoor Storage 2.4m High



Ground Floor Plan
100330 SK02
Issue A
Scale 1:200

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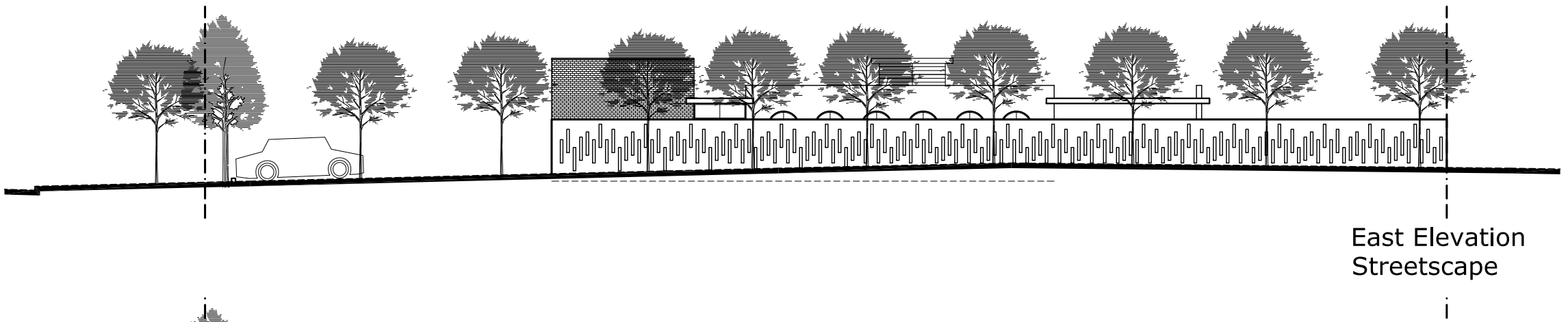
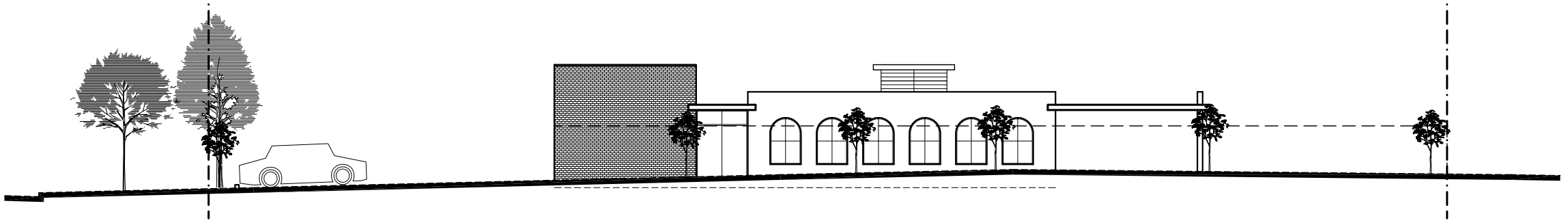
38 Bellevue Ave, Denistone - T 0403664825 E admin@faubourg24.com www.faubourg24.com
ABN 47 012 991 610- Nominated Archtect: Dany Romanos Khoury NSW Reg# 7753

Proposed Childcare Development at 3 Memory Ave, Crookwell

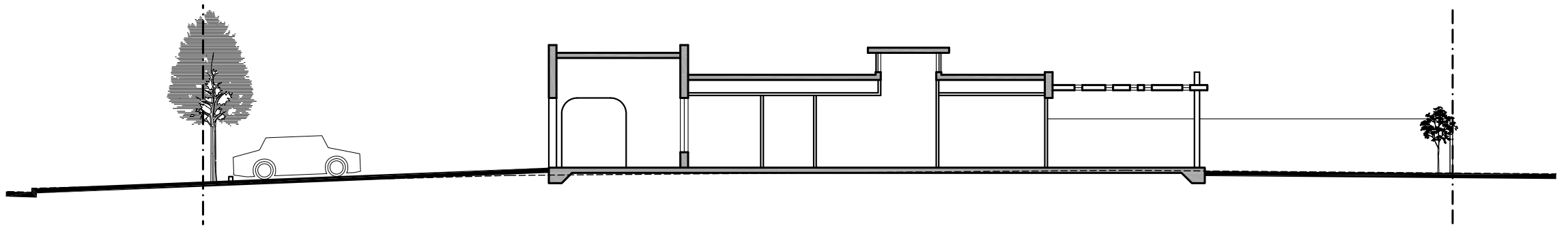
South Elevation



East Elevation
Streetscape



East Elevation
Building Line



Section AA

88 Harris Street Sydney- SJB

Northcote Childcare- Law Architects

St Lucia Campus- DWP

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38 Bellevue Ave, Denistone - T 0403664825 E admin@faubourg24.com www.faubourg24.com
ABN 47 012 991 610- Nominated Architect: Dany Romanos Khoury NSW Reg# 7753

Elevations & Section AA
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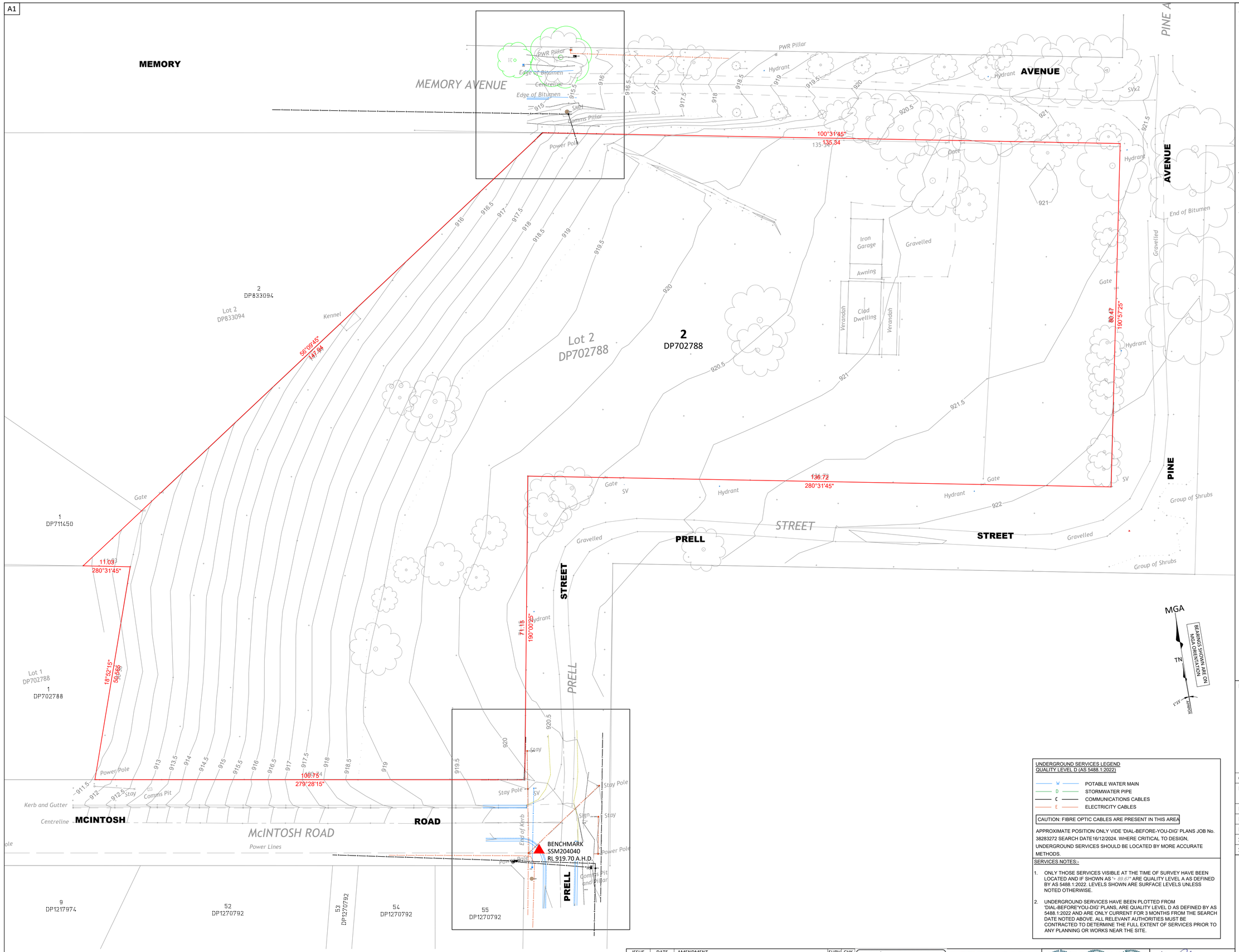
Issue A
Scale 1:200

A1



GENERAL NOTES

THE OVERALL SURVEY OF LOT 2 DP702788 SHOWN IS FROM A SURVEY BY SOUTHERN CROSS CONSULTING SURVEYORS DATED 25/11/2022 REF 24884C.

SDG HAS SURVEYED THE AREAS WITHIN DIAGRAMS A AND B AND THE DRAINAGE INFORMATION SHOWN ALONG McINTOSH ROAD ONLY.

THE ORIGINAL 3D DTM MESH BY SOUTHERN CROSS CONSULTING SURVEYORS WITHIN THE AREAS OF DIAGRAMS A AND B HAS BEEN DELETED AND THE SDG 3D MESH HAS BEEN SPLICED IN.

SDG HAS NOT CHECKED THE OVERALL SURVEY BY SOUTHERN CROSS CONSULTING SURVEYORS.

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 PM35953 E727183.306 N6185234.235 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 19/12/2024.

THE ORIGIN OF LEVELS COMES FROM PM35953 RL904.891 CLASS LB POSITIONAL UNCERTAINTY (PU) 0.41 ADOPTED FROM SCIMS DATED 19/12/2024.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY A COORDINATE JOIN BETWEEN PM35953 AND PM61189.

CERTIFICATE OF TITLE NOTES

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

- LOT 2 IN DP702788
  (CT EDITION 14 DATED 17/04/2024 SEARCH DATE 06/01/2025)
  - AFFECTED BY:
    - EASEMENT FOR WATER SUPPLY APPURTANANT TO THE LAND DESCRIBED (DP614271)
    - COVENANT (V236534)

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 5488.1:2022.

UNDERGROUND SERVICES HAVE BEEN PLOTTED WITHIN THE AREAS OF DIAGRAMS A AND B ONLY FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2022 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
BK	BACK OF KERB
CL	CENTERLINE OF ROAD
COM	COMMUNICATIONS PIT
CPIL	COMMUNICATIONS PILLAR
D.S.H	DIAMETER, SPREAD, HEIGHT
EB	EDGE OF BITUMENT
ELP	ELECTRICITY PILLAR
EOG	EDGE OF GRAVEL
GUT	GUTTER OF KERB
HYD	HYDRANT
LIP	LIP OF KERB
PP	POWER POLE
SMH	SEWER MANHOLE
SS	STREET SIGN
SV	STOP VALVE
TB	TOP OF BANK

PROJECT:

DETAIL AND LEVEL SURVEY OF
LOT 2 IN DP702788

3 MEMORY AVENUE
CROOKWELL

CLIENT: OLIVER WEHBE

FILE: 9293-Detail-Issue A-3 Memory Avenue Crookwell.dwg

LGA: UPPER LACHLAN SHIRE

REF: 9293	CONTOURS: 0.5m
ISSUE: A	DATUM: AHD
SURVEY DATE: 17/12/2024	AZIMUTH: MGA2020
SCALE: 1:400	SHEET 1 OF 2 SHEETS

UNDERGROUND SERVICES LEGEND
QUALITY LEVEL D (AS 5488.1:2022)

- W — POTABLE WATER MAIN
- D — STORMWATER PIPE
- C — COMMUNICATIONS CABLES
- E — ELECTRICITY CABLES

CAUTION: FIBRE OPTIC CABLES ARE PRESENT IN THIS AREA

APPROXIMATE POSITION ONLY VIDE 'DIAL-BEFORE-YOU-DIG' PLANS JOB No. 38283272 SEARCH DATE16/12/2024. 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 '+ *89.8*' ARE QUALITY LEVEL A AS DEFINED BY AS 5488.1:2022. 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 5488.1:2022 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.

ISSUE	DATE	AMENDMENT	SURV	CHK
A	17/12/24	ORIGINAL ISSUE	JM	MP

BEFORE YOU DIG www.byda.com.au

GDA2020

MATTHEW PLOWMAN ID: SU005915
REGISTERED LAND SURVEYOR

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved
under Professional Standards Legislation

A1

DIAGRAM 'A'
SCALE 1:100

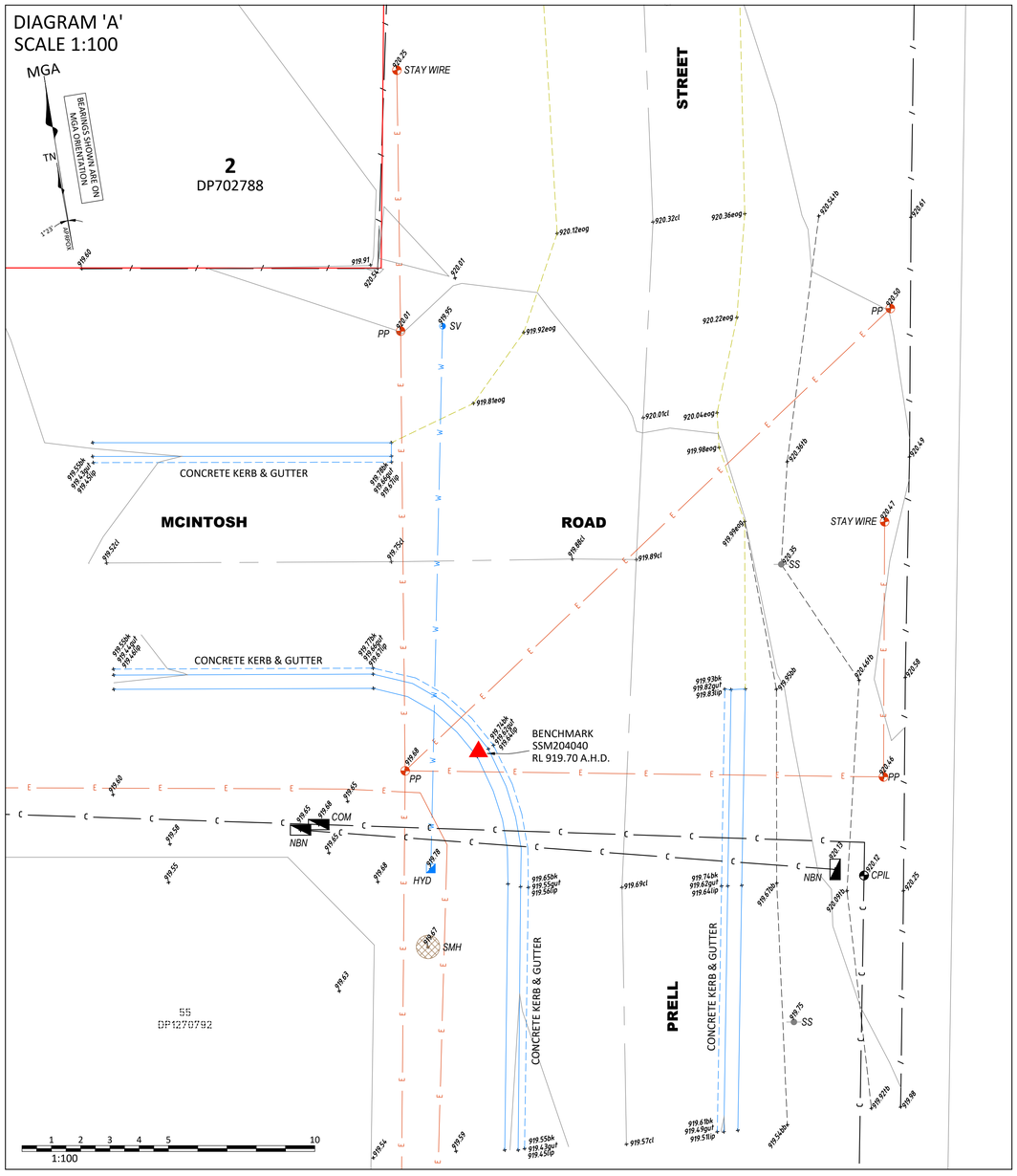
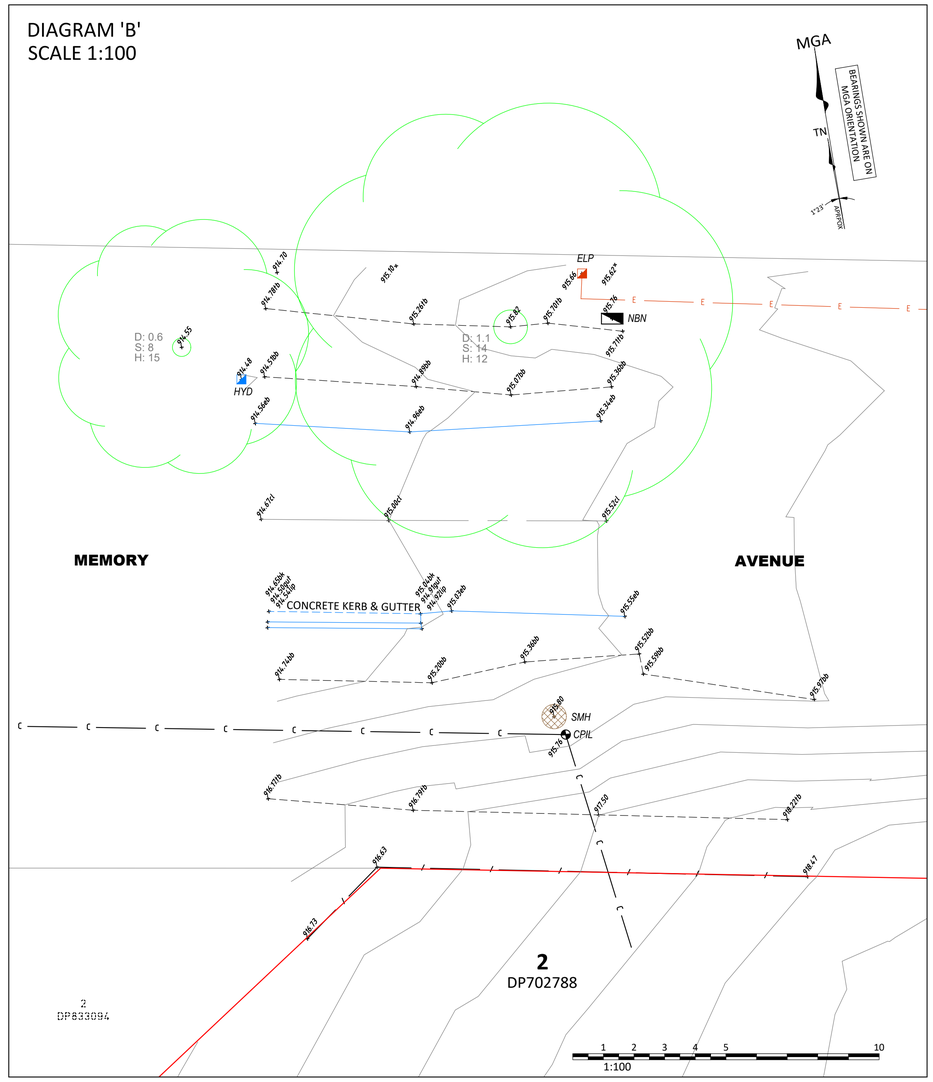
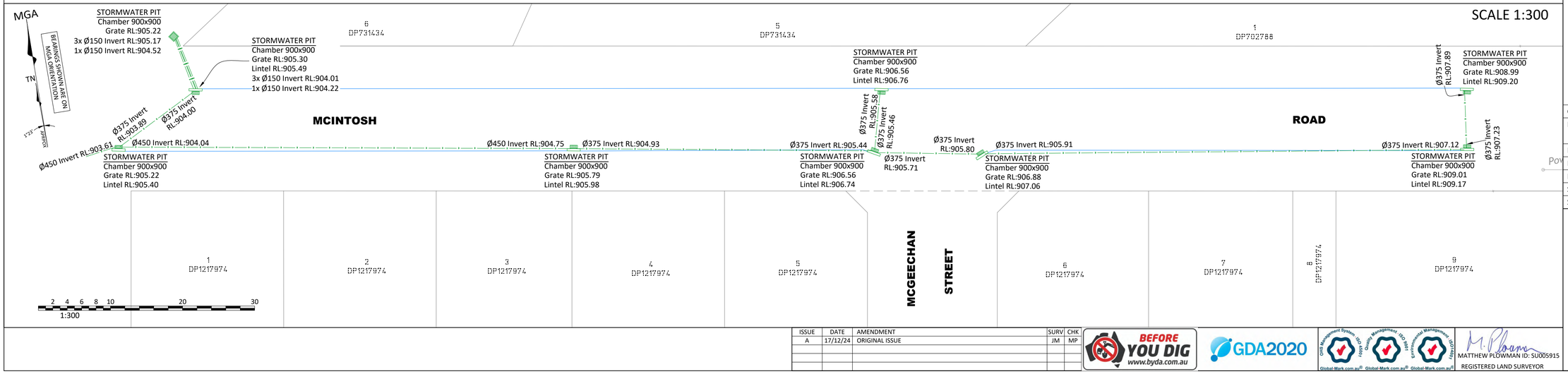


DIAGRAM 'B'
SCALE 1:100



SCALE 1:300



GENERAL NOTES

THE OVERALL SURVEY OF LOT 2 DP702788 SHOWN IS FROM A SURVEY BY SOUTHERN CROSS CONSULTING SURVEYORS DATED 25/11/2022 REF 24884C.

SDG HAS SURVEYED THE AREAS WITHIN DIAGRAMS A AND B AND THE DRAINAGE INFORMATION SHOWN ALONG McINTOSH ROAD ONLY.

THE ORIGINAL 3D DTM MESH BY SOUTHERN CROSS CONSULTING SURVEYORS WITHIN THE AREAS OF DIAGRAMS A AND B HAS BEEN DELETED AND THE SDG 3D MESH HAS BEEN SPLICED IN.

SDG HAS NOT CHECKED THE OVERALL SURVEY BY SOUTHERN CROSS CONSULTING SURVEYORS.

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 PM35953 E727183.306 N6185234.235 CLASS B POSITIONAL UNCERTAINTY (PU) 0.02 (MGA2020) ADOPTED FROM SCIMS DATED 19/12/2024.

THE ORIGIN OF LEVELS COMES FROM PM35953 RL904.891 CLASS LB POSITIONAL UNCERTAINTY (PU) 0.41 ADOPTED FROM SCIMS DATED 19/12/2024.

THE ORIENTATION OF THIS PLAN IS MGA NORTH WHICH HAS BEEN DETERMINED BY A COORDINATE JOIN BETWEEN PM35953 AND PM61189.

CERTIFICATE OF TITLE NOTES

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

- LOT 2 IN DP702788
  (CT EDITION 14 DATED 17/04/2024 SEARCH DATE 06/01/2025)
  - AFFECTED BY:
    - EASEMENT FOR WATER SUPPLY APPURTANANT TO THE LAND DESCRIBED (DP614271)
    - COVENANT (V236534)

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 5488.1:2022.

UNDERGROUND SERVICES HAVE BEEN PLOTTED WITHIN THE AREAS OF DIAGRAMS A AND B ONLY FROM 'DIAL-BEFORE'YOU-DIG' PLANS, ARE QUALITY LEVEL D AS DEFINED BY AS 5488.1:2022 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
BK	BACK OF KERB
CL	CENTERLINE OF ROAD
COM	COMMUNICATIONS PIT
CPIL	COMMUNICATIONS PILLAR
D.S.H	DIAMETER, SPREAD, HEIGHT
EB	EDGE OF BITUMENT
ELP	ELECTRICITY PILLAR
EOG	EDGE OF GRAVEL
GUT	GUTTER OF KERB
HYD	HYDRANT
LIP	LIP OF KERB
PP	POWER POLE
SMH	SEWER MANHOLE
SS	STREET SIGN
SV	STOP VALVE
TB	TOP OF BANK

PROJECT:
DETAIL AND LEVEL SURVEY OF
LOT 2 IN DP702788

3 MEMORY AVENUE
CROOKWELL

CLIENT: OLIVER WEHBE

FILE: 9293-Detail-Issue A-3 Memory Avenue Crookwell.dwg

LGA: UPPER LACHLAN SHIRE

REF: 9293	CONTOURS: 0.5m
ISSUE: A	DATUM: AHD
SURVEY DATE: 17/12/2024	AZIMUTH: MGA2020
SCALE: AS SHOWN	SHEET 2 OF 2 SHEETS

ISSUE	DATE	AMENDMENT	SURV	CHK
A	17/12/24	ORIGINAL ISSUE	JM	MP

BEFORE YOU DIG www.byda.com.au

GDA2020

Global-Mark.com.au® Global-Mark.com.au® Global-Mark.com.au®

MATTHEW PLOWMAN ID: SU005915
REGISTERED LAND SURVEYOR

SDG Pty Ltd
abn 85 213 523 621
Suite 1, 3 Railway Street, Baulkham Hills NSW 2153
t: (02) 9630 7955 w: sdg.net.au
Liability limited by a scheme approved under Professional Standards Legislation

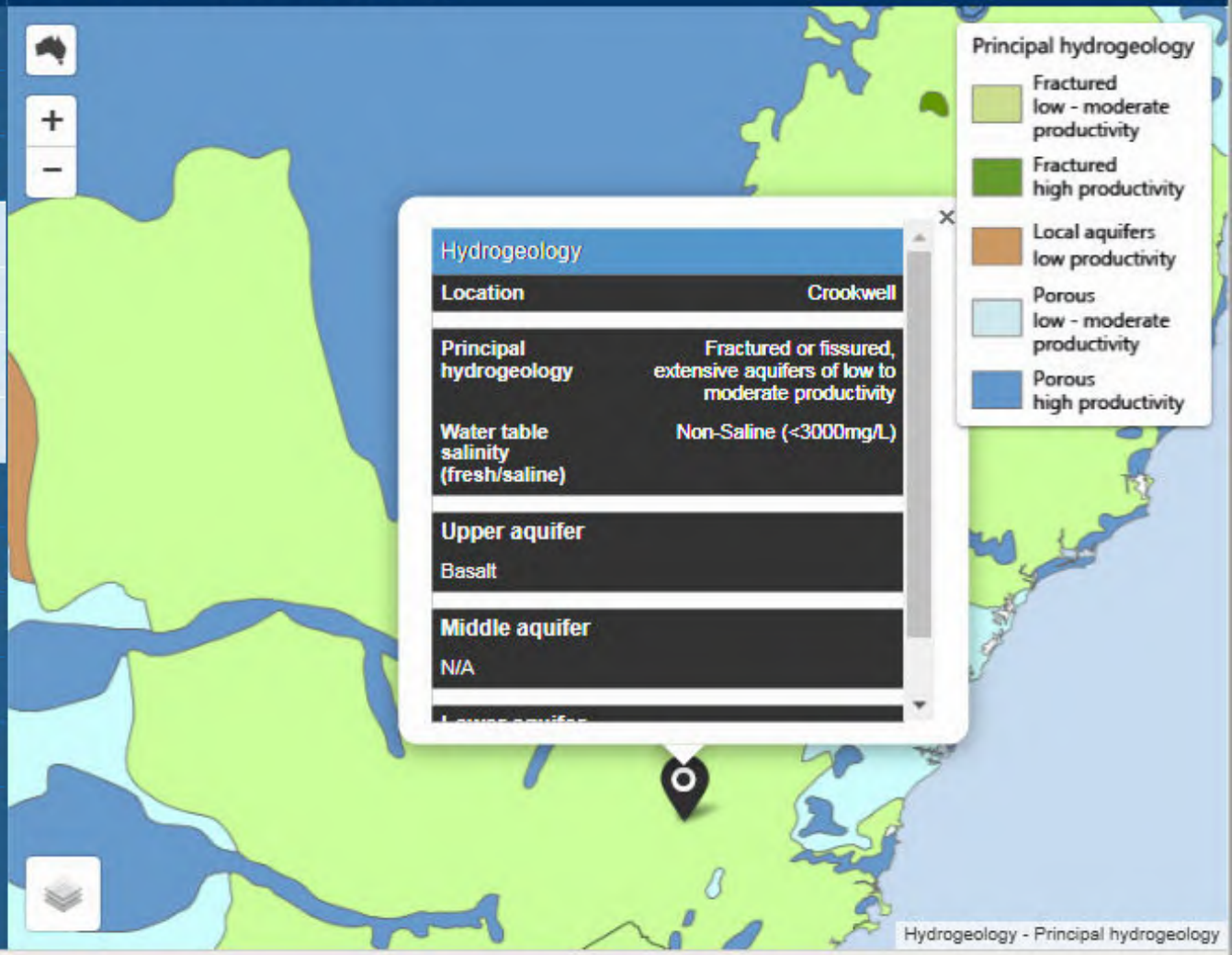
Appendix C – Groundwater Bore Information

Australian Groundwater Insight

About | FAQ | Feedback

Hydrogeology - Principal hydrogeology

- Overview
- Bore information
- Hydrogeology
  - Summary
  - Principal hydrogeology
  - Aquifer boundaries
  - Water table salinity
- Groundwater entitlement
- Groundwater management
- Groundwater level status
- Groundwater level trend
- Groundwater salinity



State Overview
State Overview

Rivers and Streams
favourites search download sites find a site
⊞ Real Time Data - Rivers And Streams

Daily River Reports
⊞ Daily River Reports

Dams
favourites search download sites find a site
⊞ Real Time Data - Major Dams

Groundwater (Telemetered data)
favourites search download sites find a site
⊞ Real Time Data - Bores

All Groundwater Site details
search download sites find a site
search by licence
⊞ All Groundwater Map

Meteorology
favourites search download sites find a site
⊞ Real Time Data - Weather Stations

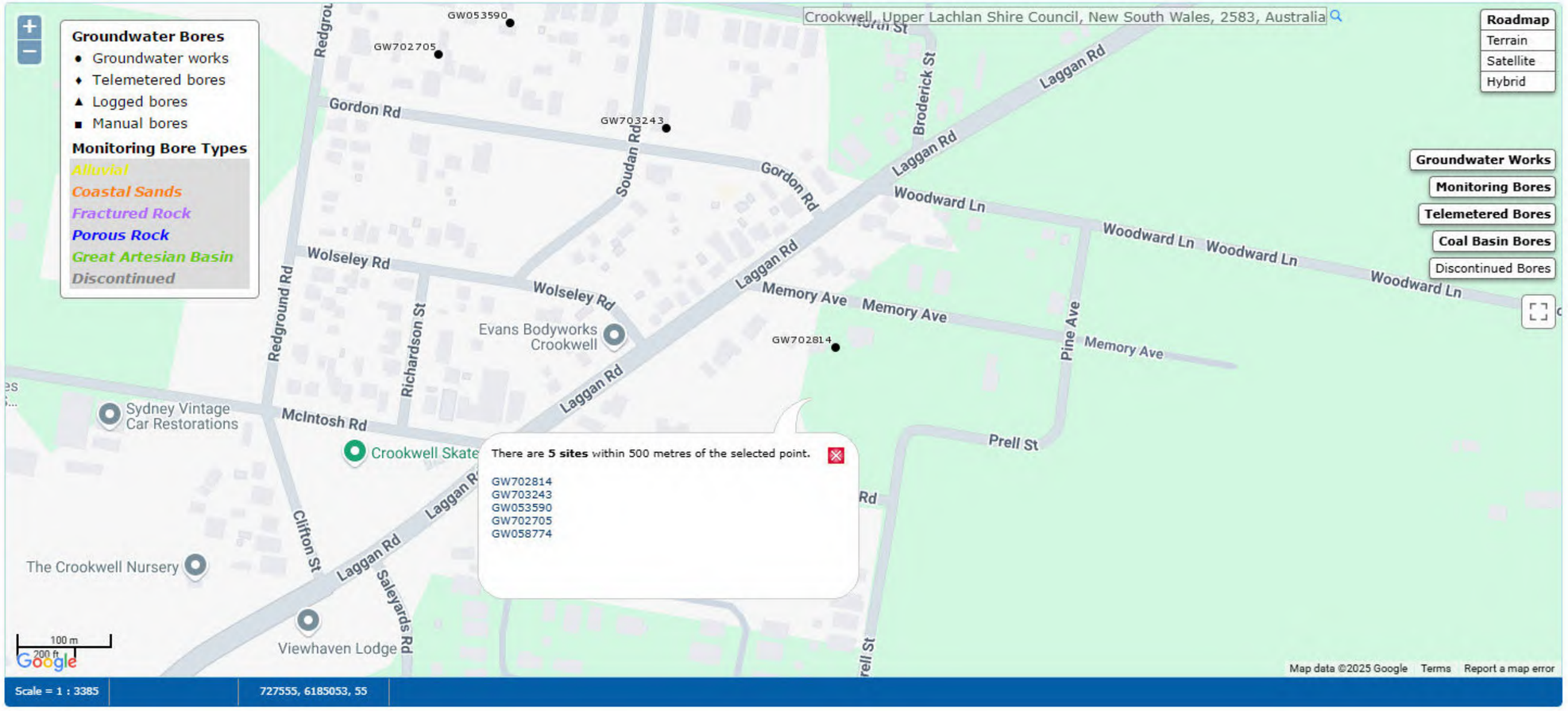
Hunter River Salinity Trading Scheme
Hunter River Salinity Trading Scheme

ALL GROUNDWATER MAP

bookmark this page

All data times are Eastern Standard Time

Map Info



WaterNSW
Work Summary

GW702705

Licence: 70BL231195
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date:
Completion Date: 04/07/2006
Final Depth: 30.00 m
Drilled Depth: 30.00 m

Contractor Name: Bungendore Water Bores
Driller: Daniel Robert Hill
Assistant Driller: Gerrard Hill

Property: LOT 9 Gordon St CROOKWELL 2583 NSW
GWMA:
GW Zone:
Standing Water Level (m): 3.000
Salinity Description:
Yield (L/s): 3.375

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GEORGIANA	KIAMMA	9/4/1809
Licensed:	GEORGIAN	KIAMMA	Whole Lot 9/4/1809

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8729-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6185655.000
Easting: 727226.000
Latitude: 34°26'44.3"S
Longitude: 149°28'23.7"E

GS Map: -
MGA Zone: 55
Coordinate Source: GPS - Global

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	30.00	200			Rotary Air
1		Annulus	Waterworn/Rounded	0.00	30.00	200	160		Graded, Q:1.000m3, PL:Poured/Shovelled
1	1	Casing	Pvc Class 9	-0.40	30.00	160	152		Driven into Hole, Screwed and Glued, S: 24.00-30.00m
1	1	Opening	Slots - Vertical	12.00	30.00	160		0	Sawn, PVC Class 9, Screwed and Glued, SL: 120.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
12.00	14.00	2.00	Unknown	3.00		0.12		00:15:00	
16.00	18.00	2.00	Unknown	3.00		0.50		00:15:00	
22.00	24.00	2.00	Unknown	3.00		2.75		01:30:00	

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

0.00	1.50	1.50	Soil & Clay, light brown	Soil	
1.50	6.00	4.50	Basalt, hard, black	Basalt	
6.00	12.00	6.00	Basalt, light brown, soft	Basalt	
12.00	30.00	18.00	Volcanic, blue, ironstone bands, brown	Volcanic	

Remarks

04/07/2006: Form A Remarks:
Nat Carling, 18-Aug-2006.

***** End of GW702705 *****

WaterNSW
Work Summary

GW702814

Licence: 70WA609251 **Licence Status:** CURRENT

Authorised Purpose(s): DOMESTIC,STOCK
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: New Bore
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date:
Completion Date: 02/12/2006
Final Depth: 49.00 m
Drilled Depth: 49.00 m

Contractor Name: Watermin Drillers Pty Ltd
Driller: Allan Ross Jones
Assistant Driller:

Property: N/A 2 Memory Ave CROOKWELL 2583 NSW
GWMA:
GW Zone:
Standing Water Level (m): 9.000
Salinity Description:
Yield (L/s): 3.791

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GEORGIANA	KIAMMA	2/833094
Licensed:	GEORGIAN	KIAMMA	Whole Lot 2//833094

Region: 70 - Lachlan
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6185382.000
Easting: 727581.000
Latitude: 34°26'52.9"S
Longitude: 149°28'37.9"E

GS Map: -
MGA Zone: 55
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	49.00	150			Rotary Air
1		Annulus	Waterworn/Rounded	0.00	49.00				Graded
1	1	Casing	Pvc Class 9	-0.30	49.00	140	131		Seated on Bottom, Glued
1	1	Opening	Slots - Horizontal	21.00	22.00	140		0	Casing - Machine Slotted, Aluminium, Glued, SL: 60.0mm, A: 2.00mm
1	1	Opening	Slots - Horizontal	30.00	31.00	140		0	Casing - Machine Slotted, Aluminium, Glued, SL: 60.0mm, A: 2.00mm
1	1	Opening	Slots - Horizontal	40.00	42.00	140		0	Casing - Machine Slotted, Aluminium, Glued, SL: 60.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
21.00	21.50	0.50	Unknown	9.00		0.19			
30.00	31.50	1.50	Unknown			0.44			
41.00	42.00	1.00	Unknown			3.16			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	topsoil	Topsoil	
1.00	7.00	6.00	clay	Clay	
7.00	20.00	13.00	soft shale	Invalid Code	
20.00	25.00	5.00	basalt	Basalt	
25.00	32.00	7.00	clay	Clay	
32.00	49.00	17.00	basalt	Basalt	

***** End of GW702814 *****

WaterNSW
Work Summary

GW703243

Licence: 70BL231550
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date:
Completion Date: 18/02/2007
Final Depth: 65.00 m
Drilled Depth: 65.00 m

Contractor Name: Watermin Drillers Pty Ltd
Driller: Allan Ross Jones
Assistant Driller: E. Dixon

Property: LOT 20 Gordon Rd CROOKWELL 2583 NSW
GWMA:
GW Zone:
Standing Water Level (m): 12.000
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GEORGIANA	KIAMMA	20/3/1809
Licensed:	GEORGIAN	KIAMMA	Whole Lot 20/3/1809

Region: 70 - Lachlan
River Basin: - Unknown
Area/District:
CMA Map:
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6185584.000
Easting: 727432.000
Latitude: 34°26'46.5"S
Longitude: 149°28'31.9"E

GS Map: -
MGA Zone: 55
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	65.00	160			Rotary Air
1		Annulus	Waterworn/Rounded	0.00	65.00	160	140		Graded
1	1	Casing	Pvc Class 9	-0.30	65.00	140	129		Seated on Bottom, Glued
1	1	Opening	Slots - Horizontal	25.00	51.00	140		0	Casing - Machine Slotted, PVC Class 9, Glued, SL: 60.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
25.00	25.10	0.10	Unknown	12.00					
48.00	48.10	0.10	Unknown						
50.00	51.00	1.00	Unknown			2.27			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	topsoil	Topsoil	

1.00	8.00	7.00	clay	Clay	
8.00	24.00	16.00	soft shale	Shale	
24.00	65.00	41.00	basalt	Basalt	

Remarks

18/02/2007: Form A Remarks:
Entered by H. Lester

***** End of GW703243 *****

WaterNSW
Work Summary

GW053590

Licence: 70WA608043 **Licence Status:** CURRENT

Authorised Purpose(s): DOMESTIC,STOCK
Intended Purpose(s): IRRIGATION

Work Type: Bore
Work Status:
Construct.Method: Rotary Air
Owner Type: Private

Commenced Date: **Final Depth:** 22.30 m
Completion Date: 01/06/1981 **Drilled Depth:** 22.30 m

Contractor Name: (None)
Driller:
Assistant Driller:

Property: N/A NSW **Standing Water Level (m):**
GWMA: **Salinity Description:** Good
GW Zone: **Yield (L/s):**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GEORGIANA	KIAMMA	L12 (SEC 4)
Licensed:	GEORGIAN	KIAMMA	Whole Lot 23/4/1809

Region: 70 - Lachlan **CMA Map:** 8729-S
River Basin: 412 - LACHLAN RIVER **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6185683.000 **Latitude:** 34°26'43.4"S
Elevation Source: (Unknown) **Easting:** 727292.000 **Longitude:** 149°28'26.3"E

GS Map: - **MGA Zone:** 55 **Coordinate Source:** GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Welded Steel	-0.30	22.30	165			Seated on Bottom
1	1	Opening	Slots - Vertical	16.20	22.30	165		1	Oxy-Acetylene Slotted, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
21.30	21.60	0.30	Fractured			2.53			

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.30	0.30	Topsoil	Topsoil	
0.30	3.00	2.70	Clay	Clay	
3.00	15.20	12.20	Basalt	Basalt	
15.20	22.30	7.10	Basalt Decomposed	Basalt	

Remarks

01/11/1983: LOT 12 SECTION 4 CROOKWELL

***** End of GW053590 *****

WaterNSW
Work Summary

GW058774

Licence: 70BL123928
Licence Status: CONVERTED

Authorised Purpose(s): DOMESTIC,STOCK
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Rotary
Owner Type: Private

Commenced Date:
Completion Date: 01/02/1983
Final Depth: 30.50 m
Drilled Depth:

Contractor Name: (None)
Driller:
Assistant Driller:

Property: KILOREN NSW
GWMA:
GW Zone:
Standing Water Level (m):
Salinity Description: Domestic
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	GEORGIANA	KIAMMA	173
Licensed:	GEORGIAN	KIAMMA	Whole Lot

Region: 70 - Lachlan
River Basin: 412 - LACHLAN RIVER
Area/District:
CMA Map: 8729-S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6184845.000
Easting: 727501.000
Latitude: 34°27'10.4"S
Longitude: 149°28'35.3"E

GS Map: -
MGA Zone: 55
Coordinate Source: GD.,ACC.MAP

***** End of GW058774 *****

Appendix D – Test Pit Logs

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP101**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176362.124	RL SURFACE	920	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182419.11	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A			P2410601/TP101/0.0-0.1 + DUP01	ML	Clayey SILT: light brown.	Trace rootlets. No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered					**TP101 Terminated at 0.2m**	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

martens

MARTENS & ASSOCIATES PTY LTD
Suite 201, 20 George St. Homsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP102**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176340.867	RL SURFACE	919	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182419.2	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A			P2410601/TP102/0.0-0.1	ML	Clayey SILT: light brown.	Trace rootlets. No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered					**TP102 Terminated at 0.2m (on natural rock)**	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

martens
MARTENS & ASSOCIATES PTY LTD
Suite 201, 20 George St. Homsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP103**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176347.121	RL SURFACE	919	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182454.23	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A					Clayey SILT: brown.	
	Not Encountered			P2410601/TP103/0.1-0.2	ML		Trace rootlets. No odour, no staining, no observed ACM, no anthropogenics.
						TP103 Terminated at 0.3m (on natural rock)	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

martens

MARTENS & ASSOCIATES PTY LTD
Suite 201, 20 George St. Homsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP104**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176352.002	RL SURFACE	920	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182436.01	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A			P2410601/TP104/0.0-0.1	ML	Clayey SILT: brown.	With rock fragments. No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered					**TP104 Terminated at 0.1m (on natural rock)**	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

MARTENS & ASSOCIATES PTY LTD
Suite 201, 20 George St. Homsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP105**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176341.908	RL SURFACE	919	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182434.71	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A				ML	Clayey SILT: light brown.	With rock fragments. No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered			P2410601/TP105/0.1-0.2			
						TP105 Terminated at 0.2m (on natural rock)	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

martens

MARTENS & ASSOCIATES PTY LTD
Suite 201, 20 George St. Homsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP106**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176364.686	RL SURFACE	920	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182428.74	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A			P2410601/TP106/0.0-0.1	ML	Clayey SILT: light brown.	With rock fragments. No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered					**TP106 Terminated at 0.1m (on natural rock)**	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP107**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176364.086	RL SURFACE	920	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182438.83	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A			P2410601/TP107/0.0-0.1	ML	Clayey SILT: light brown.	With rock fragments. No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered					**TP107 Terminated at 0.1m (on natural rock)**	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

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Suite 201, 20 George St. Homsby, NSW 2077 Australia
Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

CLIENT	BlueSox Pty Ltd	COMMENCED	01/05/2025	COMPLETED	01/05/2025	**REF TP108**	
PROJECT	Detailed Site Investigation	LOGGED	JH	CHECKED	BM		
SITE	3 Memory Avenue, Crookwell NSW	GEOLOGY	Crookwell Basalt	VEGETATION	Grass	PROJECT NO. P2410601	
EQUIPMENT	Hand Auger	LONGITUDE	176361.457	RL SURFACE	920	DATUM	GDA2020 MGA56
OPERATOR	-	LATITUDE	6182452.7	ASPECT	West	SLOPE	<2%

Drilling Method	Water	Elevation / Depth (m)	Graphic Log	Samples: Jar Sample	Classification Code	Material Description	Comments and Observations
Hand Auger	N/A				ML	Clayey SILT: light brown.	No odour, no staining, no observed ACM, no anthropogenics.
	Not Encountered			P2410601/TP108/0.1-0.2			
						TP108 Terminated at 0.2m (on natural rock)	

EXCAVATION LOG TO BE READ IN CONJUNCTION WITH ACCOMPANYING REPORT NOTES AND ABBREVIATIONS

martens

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Phone: (02) 9476 9999 Fax: (02) 9476 8767
mail@martens.com.au WEB: http://www.martens.com.au

Engineering Log - TESTPIT

Appendix E – Data Quality Assessment

Data Quality Assessment

An assessment of the quality of data acquired by the investigation, compared to designated investigation data quality indicators (DQI) defined in Section 6.2, is provided in the table below.

Completeness			
Field Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Critical locations in sampling, analysis, and quality plan (SAQP) sampled?	Yes	Yes	Pass
Critical samples in SAQP collected?	Yes	Yes	Pass
Sampling methods and equipment in SAQP used and complied with?	Yes	Yes	Pass
Sampling by experienced environmental consultant(s)?	Yes	Yes	Pass
Field documentation complete?	Yes	Yes	Pass Test pit logs are provided in Appendix D.
Chain of Custody (COC) complete?	Yes	Yes	Pass
Laboratory Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Critical samples analysed according to SAQP?	Yes	Yes	Pass
Analysis of samples for COPC according to SAQP?	Yes	Yes	Pass
Appropriate laboratory analytical methods and LOR used by laboratory?	Yes	Yes	Pass
Sample Receipt Advice (SRA) and COC complete?	Yes	Yes	Pass SRA and COC are provided in Appendix H.
Sample extraction and holding times complied with?	Yes	Yes	Pass
Comparability			
Field Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Same SAQP used on each occasion?	Yes	Yes	Pass
Sampling by same environmental consultant(s)?	Yes	Yes	Pass
Climatic conditions conducive for sampling?	Yes	Yes	Pass
Same types of samples collected, handled, and preserved in same manner?	Yes	Yes	Pass

Laboratory Considerations	Target	Result	Pass | Fail | Comment
Same laboratory used for primary sample analysis?	Yes	Yes	Pass
Same analytical methods used by primary laboratory?	Yes	Yes	Pass
Same LOR adopted by primary laboratory?	Yes	Yes	Pass
Same analytical measurement units adopted?	Yes	Yes	Pass
Representativeness			
Field Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Media sampled according to SAQP?	Yes	Yes	Pass
All identified media in SAQP sampled?	Yes	Yes	Pass
Min. 10 % field duplicates collected and analysed?	Yes	Yes	Pass >10% field duplicates collected.
Logs / records for each sample collected?	Yes	Yes	Pass Test pit logs are provided in Appendix D.
Laboratory Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Samples analysed according to SAQP?	Yes	Yes	Pass
Precision			
Field Considerations	**Target**	**Result**	**Pass | Fail | Comment**
SAQP used and complied with?	Yes	Yes	Pass
Field duplicate relative percentage difference (RPD) (%) values within acceptance limits? • No limit for analytical results <10 x LOR • 50% for analytical results 10-30 x LOR • 30% for analytical results >30 x LOR	Yes	Yes	Pass
Laboratory Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Laboratory duplicate RPD values within acceptance limits?	Yes	Yes	Pass
Accuracy			
Field Considerations	**Target**	**Result**	**Pass | Fail | Comment**
Laboratory prepared trip spike(s) used and analysed? (Recoveries between 60% and 140%)	Yes	Yes	Pass
Trip blank(s) used and analysed? (Analyte concentration below LOR)	Yes	Yes	Pass

Laboratory Considerations	Target	Result	Pass | Fail | Comment
Laboratory method blank(s) within acceptable limits?	Yes	Yes	Pass
Matrix spike recovery within acceptable limits?	Yes	Yes	Pass
Surrogate spike recovery within acceptable limits?	Yes	Yes	Pass
Laboratory control sample recovery within acceptable limits?	Yes	Yes	Pass

Appendix F – Summary Laboratory Results Tables

	Metals								Halogenated Benzenes	Other	Pesticides		
	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Hexachlorobenzene	Phosalone	Fenamiphos	Mirex	Parathion
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	4	0.4	1	1	1	0.1	1	1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil													
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt													
NEPM 2013 Table 1B(5) Generic EIL Urban Res & Public Open Space	100												
NEPM 2013 Table 1B(5) Site-Specific EIL Urban Res & Public Open Space			580 *(III)	220			220	590					
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil													
NEPM 2013 Table 1A(1) HILs Res A Soil	100	20	100 *(VI)	6,000	300	40	400	7,400	10			10	
Field ID	**Date**	**Lab Report Number**											
10601/TP101/0.00.1	**01 May 2025**	**379564**	<4	<0.4	**180**	**24**	**15**	<0.1	**44**	**44**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP102/0.00.1	**01 May 2025**	**379564**	<4	<0.4	**170**	**26**	**15**	<0.1	**64**	**45**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP103/0.10.2	**01 May 2025**	**379564**	<4	<0.4	**210**	**28**	**15**	<0.1	**66**	**47**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP104/0.00.1	**01 May 2025**	**379564**	<4	<0.4	**190**	**27**	**14**	<0.1	**58**	**51**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP105/0.10.2	**01 May 2025**	**379564**	<4	<0.4	**240**	**28**	**14**	<0.1	**51**	**42**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP106/0.00.1	**01 May 2025**	**379564**	<4	<0.4	**160**	**23**	**13**	<0.1	**47**	**43**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP107/0.00.1	**01 May 2025**	**379564**	<4	<0.4	**220**	**27**	**15**	<0.1	**61**	**53**	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP108/0.10.2	**01 May 2025**	**379564**	<4	<0.4	**180**	**27**	**14**	<0.1	**53**	**42**	<0.1	<0.1	<0.1	<0.1	<0.1
Statistics													
Number of Results			**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Number of Detects			**0**	**0**	**8**	**8**	**8**	**0**	**8**	**8**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<4**	**<0.4**	**160**	**23**	**13**	**<0.1**	**44**	**42**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
Maximum Concentration			**<4**	**<0.4**	**240**	**28**	**15**	**<0.1**	**66**	**53**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% of Detects			**0**	**0**	**100**	**100**	**100**	**0**	**100**	**100**	**0**	**0**	**0**	**0**	**0**

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

	Organophosphorous Pesticides																	
	Azinophos methyl	Bromophosethyl	Chlorpyrifos	Chlorpyrifosmethyl	Coumaphos	Diazinon	Dichlorvos	Dimethoate	Disulfoton	Ethion	Fenitrothion	Fenthion	Malathion	Methidathion	Methyl parathion	Mevinphos (Phosdrin)	Phorate	Ronnel
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																		
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																		
NEPM 2013 Table 1B(5) Generic EIL Urban Res & Public Open Space																		
NEPM 2013 Table 1B(5) Site-Specific EIL Urban Res & Public Open Space																		
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																		
NEPM 2013 Table 1A(1) HILs Res A Soil			160															
Field ID	**Date**	**Lab Report Number**																
10601/TP101/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP102/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP103/0.10.2	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP104/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP105/0.10.2	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP106/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP107/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP108/0.10.2	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Statistics

Number of Results	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Number of Detects	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
Maximum Concentration	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% of Detects	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

	Organochlorine Pesticides																			
	4,4DDE	aBHC	Aldrin	Aldrin + Dieldrin	bBHC	Chlordane (cis)	Chlordane (trans)	dBHC	DDD	DDT	DDT+DDE+DDD	Dieldrin	Endosulfan (total)	Endosulfan sulphate	Endrin	Endrin aldehyde	gBHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																				
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt																				
NEPM 2013 Table 1B(5) Generic EIL Urban Res & Public Open Space										180										
NEPM 2013 Table 1B(5) Site-Specific EIL Urban Res & Public Open Space																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil																				
NEPM 2013 Table 1A(1) HILs Res A Soil				6							240		270		10			6		300
Field ID	**Date**	**Lab Report Number**																			
10601/TP101/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP102/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP103/0.10.2	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP104/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP105/0.10.2	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP106/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP107/0.00.1	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
10601/TP108/0.10.2	**01 May 2025**	**379564**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Statistics																					
Number of Results			**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**	**8**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
Maximum Concentration			**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

	Asbestos	BTEX							TRH							TPH					
	Asbestos fibres	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	C6C10 Fraction (F1)	C6C10	>C10C16 Fraction (F2)	>C10C16 Fraction (F2 minus Naphthalene)	>C16C34 Fraction (F3)	>C34C40 Fraction (F4)	>C10C40 Fraction (Sum)	C6C9 Fraction	C10C14 Fraction	C15C28 Fraction	C29C36 Fraction	C10C36 Fraction (Sum)
	Detect	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		1	0.2	0.5	1	2	1	1	25	25	50	50	100	100	50	25	50	100	100	50
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil									700		1,000		2,500	10,000						
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt		4	0.6	390				95		40		230								
NEPM 2013 Table 1B(5) Generic EIL Urban Res & Public Open Space		170																		
NEPM 2013 Table 1B(5) Site-Specific EIL Urban Res & Public Open Space																				
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil			50	85	70			105		180	120	120	300	2,800						
NEPM 2013 Table 1A(1) HILs Res A Soil																				
Field ID	**Date**	**Lab Report Number**																				
10601/TP101/0.00.1	**01 May 2025**	**379564**																				
10601/TP102/0.00.1	**01 May 2025**	**379564**																				
10601/TP103/0.10.2	**01 May 2025**	**379564**																				
10601/TP104/0.00.1	**01 May 2025**	**379564**	0	<1	<0.2	<0.5	<1	<2	<1	<1	<25	<25	<50	<50	**100**	<100	**100**	<25	<50	<100	**100**	**100**
10601/TP105/0.10.2	**01 May 2025**	**379564**																				
10601/TP106/0.00.1	**01 May 2025**	**379564**																				
10601/TP107/0.00.1	**01 May 2025**	**379564**																				
10601/TP108/0.10.2	**01 May 2025**	**379564**																				
Statistics																						
Number of Results			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**1**	**0**	**0**	**0**	**0**	**1**	**1**
Minimum Concentration			**0**	**<1**	**<0.2**	**<0.5**	**<1**	**<2**	**<1**	**<1**	**<25**	**<25**	**<50**	**<50**	**100**	**<100**	**100**	**<25**	**<50**	**<100**	**100**	**100**
Maximum Concentration			**0**	**<1**	**<0.2**	**<0.5**	**<1**	**<2**	**<1**	**<1**	**<25**	**<25**	**<50**	**<50**	**100**	**<100**	**100**	**<25**	**<50**	**<100**	**100**	**100**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**100**	**0**	**100**	**0**	**0**	**0**	**100**	**100**

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

	PAH																		
	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.2	0.1	0.1	0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5	0.5	0.5	0.05
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil																			
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt													4						
NEPM 2013 Table 1B(5) Generic EIL Urban Res & Public Open Space													170						
NEPM 2013 Table 1B(5) Site-Specific EIL Urban Res & Public Open Space																			
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil						0.7													
NEPM 2013 Table 1A(1) HILs Res A Soil																3	3	3	300
Field ID	**Date**	**Lab Report Number**																	
10601/TP101/0.00.1	**01 May 2025**	**379564**																	
10601/TP102/0.00.1	**01 May 2025**	**379564**																	
10601/TP103/0.10.2	**01 May 2025**	**379564**																	
10601/TP104/0.00.1	**01 May 2025**	**379564**	<0.2	<0.1	<0.1	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.5	<0.5	<0.5	<0.05
10601/TP105/0.10.2	**01 May 2025**	**379564**																	
10601/TP106/0.00.1	**01 May 2025**	**379564**																	
10601/TP107/0.00.1	**01 May 2025**	**379564**																	
10601/TP108/0.10.2	**01 May 2025**	**379564**																	
Statistics																			
Number of Results			**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Number of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Minimum Concentration			**<0.2**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.5**	**<0.5**	**<0.5**	**<0.05**
Maximum Concentration			**<0.2**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.05**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.5**	**<0.5**	**<0.5**	**<0.05**
% of Detects			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

	PCBs								Inorganics						
	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	Moisture Content	Exchangeable Calcium	pH 1:5 soil:water	Exchangeable Magnesium	Exchangeable Potassium	Exchangeable Sodium	Cation Exchange Capacity
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	meq/100g		meq/100g	meq/100g	meq/100g	meq/100g
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1		0.1	0.1	0.1	1
NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil															
NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt															
NEPM 2013 Table 1B(5) Generic EIL Urban Res & Public Open Space															
NEPM 2013 Table 1B(5) Site-Specific EIL Urban Res & Public Open Space															
NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil															
NEPM 2013 Table 1A(1) HILs Res A Soil								1							
Field ID	**Date**	**Lab Report Number**													
10601/TP101/0.00.1	01 May 2025	379564							17						
10601/TP102/0.00.1	01 May 2025	379564							18						
10601/TP103/0.10.2	01 May 2025	379564							15						
10601/TP104/0.00.1	01 May 2025	379564	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	12						
10601/TP105/0.10.2	01 May 2025	379564							20	13	6.2	4.8	2.1	<0.1	20
10601/TP106/0.00.1	01 May 2025	379564							22						
10601/TP107/0.00.1	01 May 2025	379564							21						
10601/TP108/0.10.2	01 May 2025	379564							18	9.8	6.3	3.0	2.0	<0.1	15
Statistics															
Number of Results			1	1	1	1	1	1	1	1	8	2	2	2	2	2	2
Number of Detects			0	0	0	0	0	0	0	0	8	2	2	2	2	0	2
Minimum Concentration			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	12	9.8	6.2	3	2	<0.1	15
Maximum Concentration			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	22	13	6.3	4.8	2.1	<0.1	20
% of Detects			0	0	0	0	0	0	0	0	100	100	100	100	100	0	100

Environmental Standards
NEPM, NEPM 2013 Table 1B(7) Management Limits in Res / Parkland, Coarse Soil
2013, NEPM 2013 Table 1A(3) Res A/B Soil HSL for Vapour Intrusion, Silt
2013, NEPM 2013 Table 1B(6) ESLs for Urban Res, Coarse Soil
2013, NEPM 2013 Table 1A(1) HILs Res A Soil

Appendix G – Laboratory Analytical Documentation

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 379564

Client Details

Client	Martens & Associates Pty Ltd
Attention	Gray Taylor
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2410601 Detailed Site Investigation: 3 Memory Ave**
Number of Samples	11 Soil
Date samples received	02/05/2025
Date completed instructions received	02/05/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Please refer to the last page of this report for any comments relating to the results.

Report Details

Date results requested by	09/05/2025
Date of Issue	09/05/2025

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Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Asbestos Approved By
Analysed by Asbestos Approved Analyst: Lucy Zhu
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Inorganics Supervisor
Dragana Tomas, Senior Chemist
Giovanni Agosti, Group Technical Manager
Jack Wallis, Senior Chemist
Loren Bardwell, Development Chemist
Lucy Zhu, Asbestos Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		379564-4	379564-10	379564-11
Your Reference	UNITS	10601/TP104/0.0 -0.1	Trip Spike	Trip Blank
Date Sampled		01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	06/05/2025	06/05/2025	06/05/2025
TRH C_6 - C_9	mg/kg	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25
vTRH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25
Benzene	mg/kg	<0.2	111%	[NA]
Toluene	mg/kg	<0.5	110%	[NA]
Ethylbenzene	mg/kg	<1	111%	[NA]
m+p-xylene	mg/kg	<2	111%	[NA]
o-Xylene	mg/kg	<1	111%	[NA]
Naphthalene	mg/kg	<1	[NA]	[NA]
Total +ve Xylenes	mg/kg	<1	[NA]	[NA]
Surrogate aaa-Trifluorotoluene	%	123	111	103

svTRH (C10-C40) in Soil		
Our Reference		379564-4
Your Reference	UNITS	10601/TP104/0.0 -0.1
Date Sampled		01/05/2025
Type of sample		Soil
Date extracted	-	05/05/2025
Date analysed	-	06/05/2025
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	mg/kg	100
Total +ve TRH (C10-C36)	mg/kg	100
TRH >C_{10} -C_{16}	mg/kg	<50
TRH >C_{10} -C_{16} less Naphthalene (F2)	mg/kg	<50
TRH >C_{16} -C_{34}	mg/kg	100
TRH >C_{34} -C_{40}	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	100
Surrogate o-Terphenyl	%	101

PAHs in Soil		
Our Reference		379564-4
Your Reference	UNITS	10601/TP104/0.0 -0.1
Date Sampled		01/05/2025
Type of sample		Soil
Date extracted	-	05/05/2025
Date analysed	-	07/05/2025
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate p-Terphenyl-d14	%	93

Organochlorine Pesticides in soil						
Our Reference		379564-1	379564-2	379564-3	379564-4	379564-5
Your Reference	UNITS	10601/TP101/0.0-0.1	10601/TP102/0.0-0.1	10601/TP103/0.1-0.2	10601/TP104/0.0-0.1	10601/TP105/0.1-0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/05/2025	05/05/2025	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	07/05/2025	07/05/2025	07/05/2025	07/05/2025	07/05/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	88	89	95	88	91

Organochlorine Pesticides in soil				
Our Reference		379564-6	379564-7	379564-8
Your Reference	UNITS	10601/TP106/0.0-0.1	10601/TP107/0.0-0.1	10601/TP108/0.1-0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	07/05/2025	07/05/2025	07/05/2025
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Mirex	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Total Positive Aldrin+Dieldrin	mg/kg	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	91	90	94

Organophosphorus Pesticides in Soil						
Our Reference		379564-1	379564-2	379564-3	379564-4	379564-5
Your Reference	UNITS	10601/TP101/0.0-0.1	10601/TP102/0.0-0.1	10601/TP103/0.1-0.2	10601/TP104/0.0-0.1	10601/TP105/0.1-0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	05/05/2025	05/05/2025	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	07/05/2025	07/05/2025	07/05/2025	07/05/2025	07/05/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	88	89	95	88	91

Organophosphorus Pesticides in Soil				
Our Reference		379564-6	379564-7	379564-8
Your Reference	UNITS	10601/TP106/0.0-0.1	10601/TP107/0.0-0.1	10601/TP108/0.1-0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil
Date extracted	-	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	07/05/2025	07/05/2025	07/05/2025
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Mevinphos	mg/kg	<0.1	<0.1	<0.1
Phorate	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Disulfoton	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1
Parathion-Methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Fenthion	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Methidathion	mg/kg	<0.1	<0.1	<0.1
Fenamiphos	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Phosalone	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Coumaphos	mg/kg	<0.1	<0.1	<0.1
Surrogate 4-Chloro-3-NBTF	%	91	90	94

PCBs in Soil		
Our Reference		379564-4
Your Reference	UNITS	10601/TP104/0.0 -0.1
Date Sampled		01/05/2025
Type of sample		Soil
Date extracted	-	05/05/2025
Date analysed	-	07/05/2025
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate 2-Fluorobiphenyl	%	95

Acid Extractable metals in soil						
Our Reference		379564-1	379564-2	379564-3	379564-4	379564-5
Your Reference	UNITS	10601/TP101/0.0-0.1	10601/TP102/0.0-0.1	10601/TP103/0.1-0.2	10601/TP104/0.0-0.1	10601/TP105/0.1-0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/05/2025	05/05/2025	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	06/05/2025	06/05/2025	06/05/2025	06/05/2025	06/05/2025
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	180	170	210	190	240
Copper	mg/kg	24	26	28	27	28
Lead	mg/kg	15	15	15	14	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	44	64	66	58	51
Zinc	mg/kg	44	45	47	51	42

Acid Extractable metals in soil					
Our Reference		379564-6	379564-7	379564-8	379564-9
Your Reference	UNITS	10601/TP106/0.0-0.1	10601/TP107/0.0-0.1	10601/TP108/0.1-0.2	10601/DUP01
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	05/05/2025	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	06/05/2025	06/05/2025	06/05/2025	06/05/2025
Arsenic	mg/kg	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	160	220	180	180
Copper	mg/kg	23	27	27	26
Lead	mg/kg	13	15	14	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	47	61	53	45
Zinc	mg/kg	43	53	42	45

Moisture						
Our Reference		379564-1	379564-2	379564-3	379564-4	379564-5
Your Reference	UNITS	10601/TP101/0.0-0.1	10601/TP102/0.0-0.1	10601/TP103/0.1-0.2	10601/TP104/0.0-0.1	10601/TP105/0.1-0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	05/05/2025	05/05/2025	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	06/05/2025	06/05/2025	06/05/2025	06/05/2025	06/05/2025
Moisture	%	17	18	15	12	20

Moisture					
Our Reference		379564-6	379564-7	379564-8	379564-9
Your Reference	UNITS	10601/TP106/0.0-0.1	10601/TP107/0.0-0.1	10601/TP108/0.1-0.2	10601/DUP01
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	05/05/2025	05/05/2025	05/05/2025	05/05/2025
Date analysed	-	06/05/2025	06/05/2025	06/05/2025	06/05/2025
Moisture	%	22	21	18	17

Asbestos ID - soils		
Our Reference		379564-4
Your Reference	UNITS	10601/TP104/0.0 -0.1
Date Sampled		01/05/2025
Type of sample		Soil
Date analysed	-	09/05/2025
Sample mass tested	g	Approx. 35g
Sample Description	-	Brown coarse-grained soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Asbestos comments	-	Nil
Trace Analysis	-	No asbestos detected

CEC			
Our Reference		379564-5	379564-8
Your Reference	UNITS	10601/TP105/0.1-0.2	10601/TP108/0.1-0.2
Date Sampled		01/05/2025	01/05/2025
Type of sample		Soil	Soil
Date prepared	-	09/05/2025	09/05/2025
Date analysed	-	09/05/2025	09/05/2025
Exchangeable Ca	meq/100g	13	9.8
Exchangeable K	meq/100g	2.1	2.0
Exchangeable Mg	meq/100g	4.8	3.0
Exchangeable Na	meq/100g	<0.1	<0.1
Cation Exchange Capacity	meq/100g	20	15

Misc Inorg - Soil			
Our Reference		379564-5	379564-8
Your Reference	UNITS	10601/TP105/0.1-0.2	10601/TP108/0.1-0.2
Date Sampled		01/05/2025	01/05/2025
Type of sample		Soil	Soil
Date prepared	-	07/05/2025	07/05/2025
Date analysed	-	07/05/2025	07/05/2025
pH 1:5 soil:water	pH Units	6.2	6.3

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
Inorg-001	pH - Measured using pH meter and electrode. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES. Total Phosphate determined stochiometrically from Phosphorus (assumed to be present as Phosphate). Where salts (oxides, chlorides etc.) are calculated from the element concentration stoichiometrically there is no guarantee that the salt form is completely soluble in the acids used in the preparation.
Metals-020	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-OES analytical finish.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD and/or GC-MS/GC-MSMS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.

Method ID	Methodology Summary
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL'values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero'values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL'values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			5/05/2025	4	05/05/2025	05/05/2025		5/05/2025	[NT]
Date analysed	-			06/05/2025	4	06/05/2025	06/05/2025		06/05/2025	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	4	<25	<25	0	97	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	4	<25	<25	0	97	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	4	<0.2	<0.2	0	101	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	4	<0.5	<0.5	0	99	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	4	<1	<1	0	98	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	4	<2	<2	0	94	[NT]
o-Xylene	mg/kg	1	Org-023	<1	4	<1	<1	0	97	[NT]
Naphthalene	mg/kg	1	Org-023	<1	4	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	85	4	123	112	9	100	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/05/2025	4	05/05/2025	05/05/2025		05/05/2025	[NT]
Date analysed	-			06/05/2025	4	06/05/2025	06/05/2025		06/05/2025	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	4	<50	<50	0	129	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	4	<100	<100	0	106	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	4	100	140	33	100	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	4	<50	<50	0	129	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	4	100	140	33	106	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	4	<100	<100	0	100	[NT]
Surrogate o-Terphenyl	%		Org-020	117	4	101	99	2	121	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/05/2025	4	05/05/2025	05/05/2025		05/05/2025	[NT]
Date analysed	-			07/05/2025	4	07/05/2025	07/05/2025		07/05/2025	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	74	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	84	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	90	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	92	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	106	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	4	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	4	<0.05	<0.05	0	80	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	102	4	93	99	6	94	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/05/2025	4	05/05/2025	05/05/2025		05/05/2025	[NT]
Date analysed	-			07/05/2025	4	07/05/2025	07/05/2025		07/05/2025	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	80	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	76	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	96	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	102	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	86	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	104	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	82	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	96	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	74	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Mirex	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	97	4	88	90	2	92	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/05/2025	4	05/05/2025	05/05/2025		05/05/2025	[NT]
Date analysed	-			07/05/2025	4	07/05/2025	07/05/2025		07/05/2025	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	102	[NT]
Mevinphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Phorate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Disulfoton	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Parathion-Methyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	100	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	102	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	114	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	104	[NT]
Fenthion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	80	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Methidathion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Fenamiphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	100	[NT]
Phosalone	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Coumaphos	mg/kg	0.1	Org-022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate 4-Chloro-3-NBTF	%		Org-022/025	97	4	88	90	2	92	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			05/05/2025	4	05/05/2025	05/05/2025		05/05/2025	[NT]
Date analysed	-			07/05/2025	4	07/05/2025	07/05/2025		07/05/2025	[NT]
Aroclor 1016	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	101	[NT]
Aroclor 1260	mg/kg	0.1	Org-021/022/025	<0.1	4	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-Fluorobiphenyl	%		Org-021/022/025	96	4	95	92	3	97	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	379564-5
Date prepared	-			05/05/2025	4	05/05/2025	05/05/2025		05/05/2025	05/05/2025
Date analysed	-			06/05/2025	4	06/05/2025	06/05/2025		06/05/2025	06/05/2025
Arsenic	mg/kg	4	Metals-020	<4	4	<4	<4	0	115	73
Cadmium	mg/kg	0.4	Metals-020	<0.4	4	<0.4	<0.4	0	103	80
Chromium	mg/kg	1	Metals-020	<1	4	190	180	5	107	#
Copper	mg/kg	1	Metals-020	<1	4	27	26	4	111	106
Lead	mg/kg	1	Metals-020	<1	4	14	14	0	106	87
Mercury	mg/kg	0.1	Metals-021	<0.1	4	<0.1	<0.1	0	110	126
Nickel	mg/kg	1	Metals-020	<1	4	58	57	2	105	86
Zinc	mg/kg	1	Metals-020	<1	4	51	53	4	107	81

QUALITY CONTROL: CEC					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			09/05/2025	[NT]	[NT]	[NT]	[NT]	09/05/2025	[NT]
Date analysed	-			09/05/2025	[NT]	[NT]	[NT]	[NT]	09/05/2025	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	99	[NT]
Exchangeable K	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Exchangeable Na	meq/100g	0.1	Metals-020	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			07/05/2025	[NT]	[NT]	[NT]	[NT]	07/05/2025	[NT]
Date analysed	-			07/05/2025	[NT]	[NT]	[NT]	[NT]	07/05/2025	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

Report Comments

8 metals in soil - # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos: A portion of the supplied sample was sub-sampled for asbestos according to ASB-001 asbestos subsampling procedure. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab/MPL recommends supplying 40-60g or 500ml of sample in its own container.
Note: Sample 379564-4 was sub-sampled from jar provided by the client.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 379564-A

Client Details

Client	Martens & Associates Pty Ltd
Attention	Ben McGiffin
Address	Suite 201, 20 George St, Hornsby, NSW, 2077

Sample Details

Your Reference	**P2410601 Detailed Site Investigation: 3 Memory Ave**
Number of Samples	Additional analysis
Date samples received	02/05/2025
Date completed instructions received	12/05/2025

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

Date results requested by	14/05/2025
Date of Issue	14/05/2025

NATA Accreditation Number 2901. This document shall not be reproduced except in full.

Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Diego Bigolin, Inorganics Supervisor

Authorised By
Nancy Zhang, Laboratory Manager

Misc Soil - Inorg						
Our Reference		379564-A-1	379564-A-2	379564-A-3	379564-A-4	379564-A-5
Your Reference	UNITS	10601/TP101/0.0 -0.1	10601/TP102/0.0 -0.1	10601/TP103/0.1 -0.2	10601/TP104/0.0 -0.1	10601/TP105/0.1 -0.2
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	13/04/2025	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Date analysed	-	13/04/2025	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Hexavalent Chromium, Cr^{6+}	mg/kg	<1	<1	<1	<1	<1
Trivalent Cr	mg/kg	<1	<1	<1	<1	<1

Misc Soil - Inorg					
Our Reference		379564-A-6	379564-A-7	379564-A-8	379564-A-9
Your Reference	UNITS	10601/TP106/0.0 -0.1	10601/TP107/0.0 -0.1	10601/TP108/0.1 -0.2	10601/DUP01
Date Sampled		01/05/2025	01/05/2025	01/05/2025	01/05/2025
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Date analysed	-	13/04/2025	13/04/2025	13/04/2025	13/04/2025
Hexavalent Chromium, Cr^{6+}	mg/kg	<1	<1	<1	<1
Trivalent Cr	mg/kg	<1	<1	<1	<1

Method ID	Methodology Summary
Inorg-118	Hexavalent Chromium (Cr6+) - determined firstly by separation using ion chromatography followed by the colourimetric analytical finish. Water samples are ideally field filtered into alkali preserved containers prior to receipt for dissolved Cr6+ analysis. Unfiltered water samples into alkali preserved containers (or pH adjusted to pH 8-9 on receipt) can be classified as Total (unfiltered) Cr6+. Please note, for 'Total/Unfiltered' Trivalent Chromium in waters [calculated], these results may be exaggerated due to the digestive limitation of 'Total/Unfiltered' Hexavalent Chromium in NaOH at pH 8-9 compared to more comprehensive digestion for Total Chromium using the mineral acids HNO3 and HCl. Solid (includes soils, filters, paints, swabs for example) samples are extracted in a buffered catalysed solution prior to the analytical finish above. Water extractable options are available (e.g. as an option for filters) on request. Impingers may need pH adjusting to pH 8-9 prior to IC-colourimetric analytical finish.

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			13/04/2025	1	13/04/2025	13/04/2025		13/04/2025	[NT]
Date analysed	-			13/04/2025	1	13/04/2025	13/04/2025		13/04/2025	[NT]
Hexavalent Chromium, Cr^{6+}	mg/kg	1	Inorg-118	<1	1	<1	<1	0	101	[NT]
Trivalent Cr	mg/kg	1	Inorg-118	<1	1	<1	<1	0	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
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RPD	Relative Percent Difference
LCS	Laboratory Control Sample
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Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Air volumes are typically provided by customers (often as flow rate(s) and sampling time(s) and/or simply volumes) sampled or exposure times (determines 'volume' passive badges are exposed to)). Hence in such circumstances the volume measurement is inevitably not covered by Envirolab's NATA accreditation. An exception may occur where Envirolab Newcastle does the sampling where accreditation exists for certain types of sampling and hence volume determination(s). Note air volumes are often used to determine concentrations for dust and/or analyses on filters, sorbents and in impingers. For canister sampling, the air volume is covered by Envirolab's NATA accreditation.

Urine Analysis - The BEI values listed are taken from the 2022 edition of "TLVs and BEIs Threshold Limits" by ACGIH.

Appendix H – COC and Sample Receipt

martens
consulting engineers since 1989

SOIL ANALYSIS CHAIN OF CUSTODY FORM

Project											
Name	P2410601 Detailed Site Investigation: 3 Memory Ave, Crookwell NSW 2583										
Martens Contact Officer	Bryson Monaghan				**Contact Email**	bmonaghan@martens.com.au					
Sampling and Shipping	**Sample Date**	01/05/2025	**Dispatch Date**		02/05/2025	**Turnaround Time**		Standard			
	Our Reference	P2410601COC01V01			**Shipping Method (X)**	**Hand**		**Post**		**Courier**	X
	On Ice (X)	X	**No Ice (X)**		**Other (X)**						

Laboratory											
Name	Envirolab Services Pty Ltd										
Sample Delivery Address	12 Ashley St, Chatswood NSW 2067										
Instructions											
Delivery Contact	**Name**	Sample Receipt	**Phone**	02 99106200	**Fax**		**Email**	Samplereceipt@envirolabservices.com.au			
Please Send Report By (X)	**Post**		**Fax**		**Email**	X	**Reporting Email Address**	bmonaghan@martens.com.au gtaylor@martens.com.au bmcgiffin@martens.com.au martens@esdat.com.au			

	Sample ID	8 HM	OCP/OPP	Combo 6a	CEC	pH	TRH	BTEX
1	10601/TP101/0.0-0.1	X	X					
2	10601/TP102/0.0-0.1	X	X					
3	10601/TP103/0.1-0.2	X	X					
4	10601/TP104/0.0-0.1			X				
5	10601/TP105/0.1-0.2	X	X		X	X		
6	10601/TP106/0.0-0.1	X	X					
7	10601/TP107/0.0-0.1	X	X					
8	10601/TP108/0.1-0.2	X	X		X	X		
9	10601/DUP01	X						

ENVIROLAB GROUP

Envirolab Services
12 Ashley St
Chatswood NSW 2067
Ph: (02) 9910 6200

Job No: 379564

Date Received: 2/5/25
Time Received: 1530
Received By: LC
Temp: Cool/Ambient 5°C
Cooling: Ice/Icepack
Security: Intact/Broken/None

Head Office
Suite 201, 20 George St
Hornsby NSW 2077, Australia
Ph 02 9476 9999 **Fax** 02 9476

> mail@martens.com.au
> www.martens.com.au
MARTENS & ASSOCIATES P/L

SOIL ANALYSIS CHAIN OF CUSTODY

	Sample ID	8 HM	OCP/OPP	Combo 6a	CEC	pH	TRH	BTEX
10	Trip Spike							X
11	Trip Blank						X	

Notes	

#379564
2/3/25
ve

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Martens & Associates Pty Ltd
Attention	Gray Taylor

Sample Login Details

Your reference	P2410601 Detailed Site Investigation: 3 Memory Ave
Envirolab Reference	379564
Date Sample Received	02/05/2025
Date Instructions Received	02/05/2025
Date Results Expected to be Reported	09/05/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	11 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	5
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metalsin soil	Asbestos ID - soils	CEC	Misc Inorg - Soil
10601/TP101/0.0-0.1				✓	✓		✓			
10601/TP102/0.0-0.1				✓	✓		✓			
10601/TP103/0.1-0.2				✓	✓		✓			
10601/TP104/0.0-0.1	✓	✓	✓	✓	✓	✓	✓	✓		
10601/TP105/0.1-0.2				✓	✓		✓		✓	✓
10601/TP106/0.0-0.1				✓	✓		✓			
10601/TP107/0.0-0.1				✓	✓		✓			
10601/TP108/0.1-0.2				✓	✓		✓		✓	✓
10601/DUP01							✓			
Trip Spike	✓									
Trip Blank	✓									

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Anna Bui

From: Ben McGiffin <bmcgiffin@martens.com.au>
Sent: Monday, 12 May 2025 1:55 PM
To: Stuart Chen; Envirolab Sydney Sample Receipt
Cc: Gray Taylor; Bryson Monaghan
Subject: RE: Results for Registration 379564 P2410601 Detailed Site Investigation: 3 Memory Ave

Thanks Stuart
Please proceed with a 2day TAT
Thank you

ENS REF: 379564-A
TAT: 2 DAY
DUE: 14/5/25
AB

Ben McGiffin
Environmental Manager, Principal Engineer

T + 61-2-9476-9999
E bmcgiffin@martens.com.au
Suite 201, 20 George Street, Hornsby, NSW 2077

www.martens.com.au

From: Stuart Chen <SChen2@envirolab.com.au>
Sent: Monday, 12 May 2025 1:54 PM
To: Ben McGiffin <bmcgiffin@martens.com.au>; Envirolab Sydney Sample Receipt <Samplereceipt@envirolab.com.au>
Cc: Gray Taylor <gtaylor@martens.com.au>; Bryson Monaghan <bmonaghan@martens.com.au>
Subject: RE: Results for Registration 379564 P2410601 Detailed Site Investigation: 3 Memory Ave

Hey Ben,

Each sample is $18 exc gst. Adding 25% surcharge for 2day tat would be $22.50.

@Envirolab Sydney Sample Receipt Please note A-job.

Kind Regards,

Stuart Chen | Report Coordinator | Envirolab Services

Great Science. Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200
E SChen2@envirolab.com.au | **W** www.envirolab.com.au

Follow us on: LinkedIn | Facebook | Twitter

Samples will be analysed per our T&C's.

From: Ben McGiffin <bmcgiffin@martens.com.au>
Sent: Monday, 12 May 2025 12:44 PM
To: Stuart Chen <SChen2@envirolab.com.au>
Cc: Envirolab Sydney Sample Receipt <Samplereceipt@envirolab.com.au>; Gray Taylor <gtaylor@martens.com.au>; Bryson Monaghan <bmonaghan@martens.com.au>
Subject: RE: Results for Registration 379564 P2410601 Detailed Site Investigation: 3 Memory Ave

Hi Stuart
Can we please book Chromium speciation for all the samples in this job please.
Can you please confirm what the price for this would be for two day turn around vs standard reporting time?
Thanks

Ben McGiffin
Environmental Manager, Principal Engineer

T + 61-2-9476-9999
E bmcgiffin@martens.com.au
Suite 201, 20 George Street, Hornsby, NSW 2077

www.martens.com.au

From: Stuart Chen <SChen2@envirolab.com.au>
Sent: Friday, 9 May 2025 5:36 PM
To: martens@esdat.com.au; Accounts <accounts@martens.com.au>; Ben McGiffin <bmcgiffin@martens.com.au>; Bryson Monaghan <bmonaghan@martens.com.au>; Gray Taylor <gtaylor@martens.com.au>
Subject: Results for Registration 379564 P2410601 Detailed Site Investigation: 3 Memory Ave

Please refer to attached for:
a copy of the Certificate of Analysis
a copy of the COC/paperwork received from you
ESDAT Extracts
an Excel or .csv file containing the results
a copy of the Invoice

Please note that a hard copy will not be posted.

Enquiries should be made directly to:
customerservice@envirolab.com.au

To view information on uncertainty guidelines click here

How did we do? Send Feedback

Kind Regards,

Stuart Chen | Report Coordinator | Envirolab Services

Great Science. Great Service.

Envirolab Services Pty Ltd
ABN 37 112 535 645
12 Ashley St Chatswood NSW 2067
ph 02 9910 6200 fax 02 9910 6201
customerservice@envirolab.com.au
www.envirolab.com.au

SAMPLE RECEIPT ADVICE

Client Details

Client	Martens & Associates Pty Ltd
Attention	Ben McGiffin

Sample Login Details

Your reference	P2410601 Detailed Site Investigation: 3 Memory Ave
Envirolab Reference	379564-A
Date Sample Received	02/05/2025
Date Instructions Received	12/05/2025
Date Results Expected to be Reported	14/05/2025

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	Additional analysis
Turnaround Time Requested	2 days
Temperature on Receipt (°C)	5
Cooling Method	Ice
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	**Phone: 02 9910 6200**
Fax: 02 9910 6201	**Fax: 02 9910 6201**
Email: ahie@envirolab.com.au	**Email: jhurst@envirolab.com.au**

Analysis Underway, details on the following page:

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Sample ID	Misc Soil - Inorg	On Hold
10601/TP101/0.0-0.1	✓	
10601/TP102/0.0-0.1	✓	
10601/TP103/0.1-0.2	✓	
10601/TP104/0.0-0.1	✓	
10601/TP105/0.1-0.2	✓	
10601/TP106/0.0-0.1	✓	
10601/TP107/0.0-0.1	✓	
10601/TP108/0.1-0.2	✓	
10601/DUP01	✓	
Trip Spike		✓
Trip Blank		✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.
Requests for longer term sample storage must be received in writing.
Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.
TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

Appendix I – EIL Calculation Sheets

Inputs
Select contaminant from list below
Zn
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
15
Enter soil pH (calcium chloride method) (values from 1 to 14)
6.3
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Zn soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	85	190
Urban residential and open public spaces	230	590
Commercial and industrial	340	870

Inputs
Select contaminant from list below
Cr_III
Below needed to calculate fresh and aged ACLs
Enter % clay (values from 0 to 100%)
30
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cr III soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	150	190
Urban residential and open public spaces	300	580
Commercial and industrial	460	960

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
15
Enter soil pH (calcium chloride method) (values from 1 to 14)
6.3
Enter organic carbon content (%OC) (values from 0 to 50%)
10
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Cu soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	70	85
Urban residential and open public spaces	130	220
Commercial and industrial	180	310

Inputs
Select contaminant from list below
Ni
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
15
Below needed to calculate fresh and aged ABCs
Measured background concentration (mg/kg). Leave blank if no measured value
or for fresh ABCs only
Enter iron content (aqua regia method) (values from 0 to 50%) to obtain estimate of background concentration
7
or for aged ABCs only
Enter State (or closest State)
NSW
Enter traffic volume (high or low)
low

Outputs		
Land use	Ni soil-specific EILs (mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	35	40
Urban residential and open public spaces	95	220
Commercial and industrial	160	380

Appendix J – Photograph of the IA

Plate 1: View adjacent to the southeast corner of the IA, facing north. Wire fence along southern and eastern boundaries. Grass, shrubs and trees indicative of entire IA. Dated 27 January 2025.

Plate 2: View in the centre of the IA, facing northeast. Grass, shrubs and trees. Dated 27 January 2025.

Plate 3: View in the centre of the IA, facing north. Grass, shrubs and trees. Dated 1 May 2025.

Plate 4: View of TP102. Soil is generally indicative of all locations across the IA. Dated 1 May 2025.