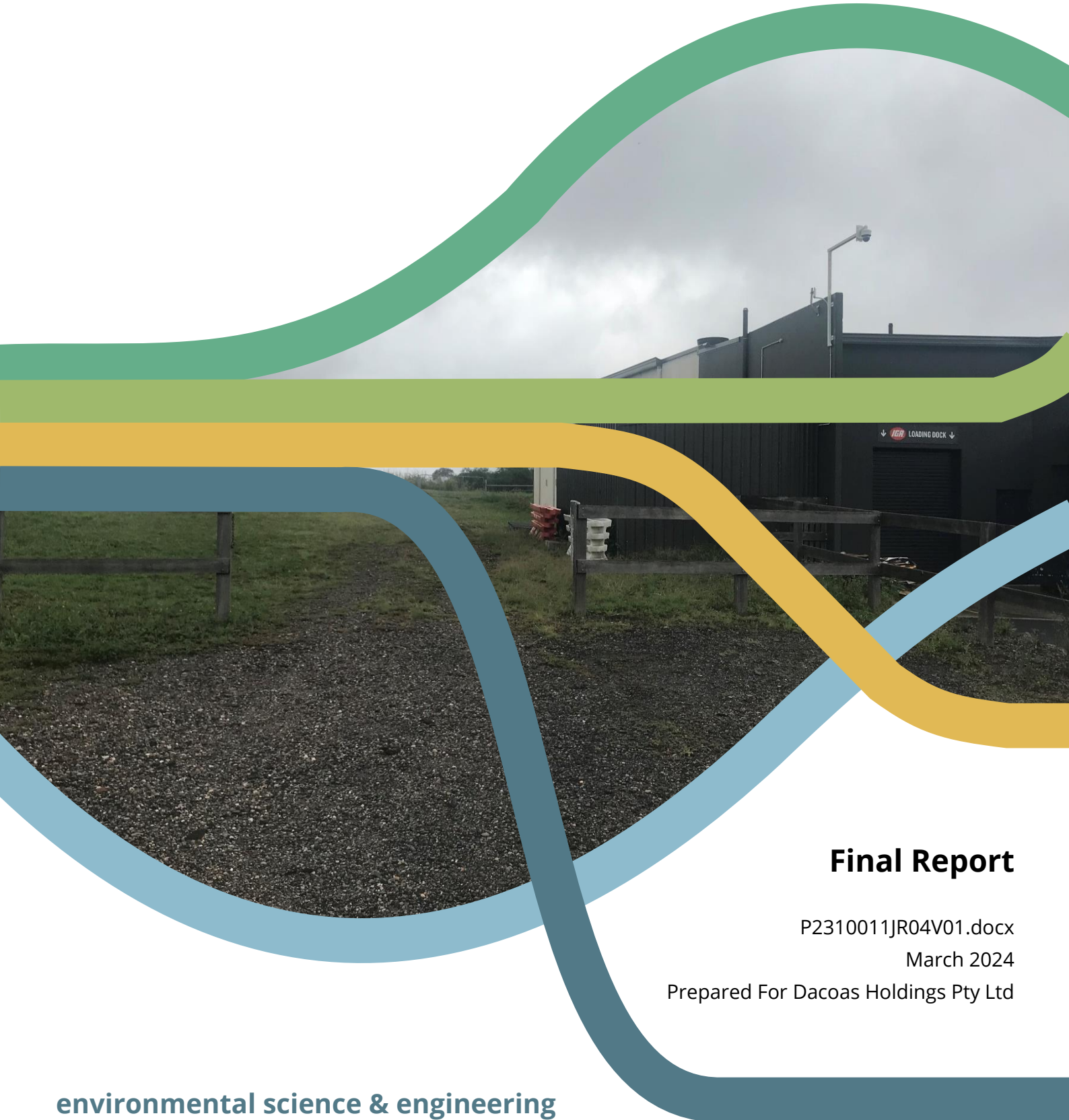


# Remedial Action Plan

69 – 75 George Street, Marulan, NSW



## Final Report

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March 2024

Prepared For Dacoas Holdings Pty Ltd

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| <b>Director</b>         | Daniel Martens  |
| <b>Manager</b>          | Gray Taylor   |
| <b>Principal Author</b> | William Xu  |

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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

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|       |   |
|-------|---|
| ABC   | Ambient background concentrations                               |
| ACL   | Added contaminant level   |
| ACM   | Asbestos containing material                                    |
| AEC   | Area of environmental concern                                   |
| AS    | Australian Standards  |
| ASLP  | Australian Standard Leaching Procedure                          |
| BGL   | Below ground level  |
| BH    | Borehole  |
| BTEXN | Benzene, toluene, ethylbenzene, xylene, naphthalene             |
| CEMP  | Construction Environmental Management Plan                      |
| COC   | Chain of custody  |
| COPC  | Contaminants of potential concern                               |
| CSM   | Conceptual site model   |
| DA    | Development application   |
| DCP   | Development Control Plan  |
| DP    | Deposited Plan  |
| DQI   | Data quality indicators   |
| DQO   | Data quality objectives   |
| DSI   | Detailed Site Investigation                                     |
| EIL   | Ecological investigation level                                  |
| EPA   | NSW Environmental Protection Authority                          |
| EQL   | Estimated quantitation limit (interchangeable with PQL and LOR) |
| ESL   | Ecological screening level                                      |
| HIL   | Health investigation level                                      |
| HSL   | Health screening level  |
| IA    | Investigation area  |
| LEP   | Local Environmental Plan  |
| LGA   | Local government area   |
| LOR   | Limit of reporting (interchangeable with EQL and PQL)           |
| MA    | Martens & Associates Pty Ltd                                    |
| mAHD  | Metres, Australian Height Datum                                 |
| mBGL  | Metres Below Ground Level                                       |
| NATA  | National Association of Testing Authorities                     |
| NEPC  | National Environment Protection Council                         |
| NEPM  | National Environment Protection Measure                         |
| OCP   | Organochloride pesticides                                       |
| OPP   | Organophosphorus pesticides                                     |
| PACM  | Potential asbestos containing material                          |
| PAH   | Polycyclic aromatic hydrocarbons                                |
| PCB   | Polychlorinated biphenyl  |
| PQL   | Practical quantitative limit (interchangeable with EQL and LOR) |
| QA/QC | Quality assurance / quality control                             |

|      |  |
|------|--|
| RAC  | Remediation Acceptance Criteria            |
| RAP  | Remedial Action Plan                       |
| RPD  | Relative percentage difference             |
| SAC  | Site assessment criteria                   |
| SAQP | Sampling, Analysis and Quality Plan        |
| SEPP | State Environmental Planning Policy        |
| SOP  | Standard operating procedure               |
| SWMS | Safe Work Method Statement                 |
| TB   | Trip blank                                 |
| TCLP | Toxicity Characteristic Leaching Procedure |
| TOC  | Table of contents                          |
| TP   | Test pit                                   |
| TPH  | Total petroleum hydrocarbons               |
| TRH  | Total recoverable hydrocarbons             |
| TS   | Trip spike                                 |
| UST  | Underground storage tank                   |
| WHSP | Work health and safety plan                |

# 1 Introduction

---

## 1.1 Background

This Remedial Action Plan (RAP) has been prepared by Martens and Associates Pty Ltd (MA) on behalf of Dacoas Holdings Pty Ltd (the Client) for land located at 69 – 75 George Street, Marulan, NSW (the Site). This RAP has been prepared to support a development application (DA) to Goulburn Mulwaree Council (GMC) for a proposed childcare development at the site.

The preparation of this RAP is the result of previous investigation findings made by a Detailed Site Investigation (DSI) completed by at the Site. The DSI (MA 2024) identified TRH F3 (>C16-C34 benzo(a)pyrene TEQ contamination and recommended that a RAP be prepared to establish a remedial strategy to guide the remediation required to make the land suitable for the proposed childcare development.

The investigation area (IA) for this RAP is defined by the cadastral boundary of the Site, which is outlined in Appendix A.

## 1.2 Proposed Development

Based on the proposed development plans (CDS, 2023) indicate that the proposed development will include:

- A single storey childcare centre across the majority of the northern portion of the property.
- Landscaping at the eastern portion of the Site.
- Bulk excavation up to approximately 3.0 metres below ground level (mbgl) will be required for Site levelling purposes.

Proposed development plans are provided in Appendix B.

## 1.3 Scope of Work

This RAP has been prepared with reference to the NSW EPA (2020) *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines*.

The scope of work for the preparation of this RAP includes:

- Development of remediation goals and remediation criteria.
- Discussion of the extent of remediation required at the Site.
- Discussion of possible remediation options.



- Rationale for the selection of the preferred remediation option.
- Process to validate the site after remediation.
- A remediation plan to implement and validate the preferred remediation option.
- A site management plan for the remediation works.
- Identification of regulatory compliance requirements.
- Contact details of site staff.
- Contingency plans to protect the surrounding environment and community during remediation.

## 2 Roles and Responsibilities

The remediation management team (RMT) will be responsible for decision making and ultimately, the success of the remediation work required to make the site suitable for the proposed development. Table 1 identifies key roles and responsibilities required for site remediation, however as MA are not directly involved with the engagement of contractors, not all details can be provided at this stage. Details of the RMT should be updated in the RAP upon availability, and for the duration of the work.

**Table 1:** Remediation management team

| Team Member                       | Organisation            | Responsibilities   |
|-----------------------------------|-------------------------|--|
| Property Owner or Site Developer  | Dacoas Holdings Pty Ltd | Overall responsibility of site and key liaison for Council. Appoints site contractors, including all other members of the RMT.   |
| Project Manager – Site Operations | TBC                     | <ul style="list-style-type: none"> <li>Overall site management and day to day decision maker. Key communicator between site and owner / developer</li> <li>Ensure relevant control plans are developed and implemented.</li> </ul>   |
| Remediation Contractor            | TBC                     | <ul style="list-style-type: none"> <li>Site preparation including establishment of management plan requirements, importation of suitable landscaping material (if required) waste classification and disposal, as well as ensuring the remediation is conducted in accordance with this plan.</li> <li>Ensure consultant is up to date with work schedules and is engaged to complete key components of the work (i.e., waste classification).</li> <li>Implementation of measures required to mitigate any adverse effects resulting from the remediation.</li> <li>Ensure all spoil removed from site is classified by the environmental consultant and is disposed at a suitable facility.</li> <li>Tracking of waste between site and deposition facility, including collection of all waste documentation to be provided to the environmental consultant.</li> <li>Reporting any environmental issues, complaints or unexpected finds to the project manager and environmental consultant.</li> </ul> |
| Environmental Consultant          | TBC                     | <ul style="list-style-type: none"> <li>Development of the remediation objectives and strategy.</li> <li>Support all other members of RMT in understanding the requirements of the RAP and the potential risk posed should measures not be implemented.</li> <li>Supervision of key remediation components, collection of all environmental samples, and provide guidance to ensure the remediation is understood, and effective.</li> <li>Complete validation tasks and detail the works in a validation report concluding on site suitability.</li> </ul>   |

| <b>Team Member</b>         | <b>Organisation</b>       | <b>Responsibilities</b>   |
|----------------------------|---------------------------|---|
| Local Government Authority | Goulburn Mulwaree Council | Responsible for the granting of all consents and ensuring the recommendations of environmental reports are implemented. |

## 3 Site Setting

### 3.1 Site Identification

Site identification details and associated information is summarised in Table 2. The location of the site and general surrounding area are shown in Appendix A.

**Table 2:** Site identification information

| Item                    | Description / Comment   |
|-------------------------|---|
| Site address            | 69 – 75 George Street, Marulan, NSW 2579  |
| Legal identifiers       | Lot 1 DP 1268661 (1/-/DP1268661)  |
| Surveyed site area      | Area of the lot: 6774 m <sup>2</sup> (SIX maps, 2024)<br>Area of the 'Site': 1363.26 m <sup>2</sup> (QGIS)  |
| Local Government Area   | Goulburn Mulwaree Council   |
| Current zoning          | Zoned E1 – Local Centre (ePlanning Spatial Viewer, 2024).<br>Currently, the western half of the Site is used as a car park and the eastern half has small structures to support economic activity in the remainder of the Lot.  |
| Site description        | At the time of the investigation, the Site was used as a car park at the western portion, while the eastern portion was grassland, which consisted of a shed housing a generator along the central southern boundary, with two soil stockpiles and a shipping container located at the north eastern corner of the Site.                                    |
| Surrounding land uses   | Low density residential developments in all directions, apart for grassland area to the east.   |
| Topography              | The site is relatively flat with grades < 5%.<br>Site elevation ranges between approximately 649.8 mAHD in the western corner and 646 mAHD in the eastern corner (ICSM, 2024).  |
| Expected geology        | The site is located on the Barrallier Ignimbrite (Dbib) stratigraphic unit. It is derived from the Bindook Group parent unit (MinView, 2024). This is a dark blue-grey, massive, welded, crystal-rich, compositionally uniform dacitic ignimbrite. Whole and fractured phenocrysts are set in a cryptocrystalline to recrystallised matrix (MinView, 2024). |
| Expected soil landscape | The NSW Office of Environment and Heritage's (OEH) information system (eSPADE) indicates the site is underlain by the Marulan (mly) soil landscape.<br>Marulan soil landscape typically comprises red and brown residual soils with granite tors (rounded boulders) commonly outcropping.   |
| Surface hydrology       | Drainage of the site is via overland flow to the Council stormwater network on George Street.   |

### 3.2 Previous Investigation

The following investigation reports completed at the Site by MA identified areas of land which pose a risk to future site users:

- MA (2024a) Preliminary Site Investigation, 69 – 75 George Street, Marulan, NSW. Report Ref: P2310074JR01V01.
- MA (2024b) Detailed Site Investigation, 69 – 75 George Street, Marulan, NSW. Report Ref: P2310074JR03V01.

A summary of the pertinent findings from the investigation is provided in Table 3.

**Table 3:** Previous Report Findings

| Item                                 | Description / Comment  |
|--------------------------------------|--|
| Site history and land use            | <p>Historical aerials reveals an absence of substantial dwellings on the land from 1987 to 2015. The predominant land surface throughout most of the site is characterized by grass, with sporadic patches of vegetation and bare soil. Notably, a seemingly temporary structure was identified in the 2018 aerial imagery, preceding the commencement of construction for the current dwellings in the remaining portion of the lot. This structure ceased to exist upon the completion of the development in 2020. Subsequent aerial images also disclose additional small structures on the Site and partial use of the site as a car park.</p> <p>Site walkover inspection was undertaken on 1 December 2023 which confirmed that the Site was used as a car park at the western portion, while the eastern portion was grassland which consisted of a shed housing a generator along the central southern boundary, with two soil stockpiles and a shipping container located at the north eastern corner of the Site. No evidence of soil staining and odour were observed at the Site. Some minor building materials (cinder blocks, wooded pallets and PVC pipes) were observed scattered at the Site surface.</p> |
| Areas of environmental concern (AEC) | <p>Three AECs were recognised at the Site by the previous investigations, and these relate to:</p> <ul style="list-style-type: none"> <li>• Presence of fill material in site soils.</li> <li>• Former Site structures.</li> <li>• Electrical generator present on Site.</li> </ul>  |
| Ground conditions                    | <p>Site soils were reported by MA (2024b) indicated fill material consisting of sandy clayey gravel and silty clay were observed in all testing locations up to a depth of 1.0 mbgl, and glass and plastic fragments were observed TP206 and TP208. No other forms of contamination (hydrocarbon odour or staining, or other anthropogenic inclusions) were observed. Perched WBZ was encountered at 0.4 mbgl during drilling works for TP208 and no hydrocarbon odours nor sheen were observed.</p>   |
| Sample analytical results            | <p>Previous investigation by MA (2023) reported the following sample analytical results:</p> <ul style="list-style-type: none"> <li>• Asbestos was not detected in laboratory analysed soil samples using AS4964 testing methodology.</li> <li>• Concentrations of analytes were below human health and ecological assessment criteria in most soil samples, except for: <ul style="list-style-type: none"> <li>- TRH F3 (&gt;C16-C34) exceeding the ecological screening levels (ESL) at 4 investigation locations.</li> <li>- Benzo(a)pyrene TEQ exceeding HIL - A collected at the TP204/0.3-0.5.</li> </ul> </li> </ul>  |

| Item                   | Description / Comment   |
|------------------------|---|
| Investigation findings | MA concluded that the above soil exceedances poses a risk to future human and ecological receptors, which will require some form of remediation prior to the proposed future site use. As proposed development works are to include the removal of most of the existing soil material as part of bulk excavation works for Site levelling purposes, the preferred remediation strategy will likely be offsite removal of the fill material containing elevated contaminants.  |
| Recommendations        | <p>MA recommends the following site works to be completed to address current site data gaps and ensure that site contamination risks are low and acceptable both during construction works and following completion of the proposed development:</p> <ul style="list-style-type: none"> <li>• Implementation of a Remedial Action Plan (RAP) to guide proposed development works and complete data gap works within existing structure footprints and areas not accessible during this DSI. Following implementation of the RAP, a site validation report will be required to confirm completion of remediation works and confirm site suitability for the proposed future land use.</li> <li>• 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 bulk excavation works.</li> <li>• Completion of a formal waste classification assessment and preparation of formal waste classification documentation to facilitate the offsite disposal of soils during proposed bulk excavation works. This process shall be documented in the site RAP.</li> </ul> |

### 3.3 Summary of Remediation Requirements

Based on the findings of previous investigation completed at the Site, the following samples and sampling locations outlined in Table 4 require remediation for the project.

**Table 4:** Summary of samples and sample locations requiring remediation

| Contaminant        | Sample Identifier - Concentration (mg/kg)  | Criteria Exceeded | Adopted SAC Concentration (mg/kg) |
|--------------------|--|-------------------|-----------------------------------|
| TRH F3 (>C16-C34)  | SS02 - 2100 mg/kg<br>TP202/0-0.2 - 490 mg/kg<br>TP204/0.3-0.5 - 1,100 mg/kg<br>TP205/0-0.2 - 750 mg/kg | ESL               | 300                               |
| Benzo(a)pyrene TEQ | TP204/0.3-0.5 - 13 mg/kg   | HIL - A           | 3                                 |

## 4 Data Gap Closure

### 4.1 Data Gap Extent

Based on the review of the previous site investigation (Section 3.3), soil quality beneath the shed that contains the electrical generator is considered as a data gap, and will require further assessment to delineate the extent of the remediation area.

The following Sections outline data gap closure requirements which are to be completed following demolition / removal of the existing generator and shed infrastructure.

The approximate extent of the data gap area is shown in Appendix A.

### 4.2 Data Gap Closure Investigation Criteria

Data gap closure investigation criteria are to be adopted in accordance with the SAC adopted in the DSI prepared for the site (MA, 2024b), as summarised in Table 5. Areas are to be visually checked for potential asbestos containing material and signs of contamination.

**Table 5:** Soil acceptance criteria SAC for soils

| Adopted Guidelines        | Applicability  |
|---------------------------|--|
| ASC NEPM<br>(NEPC, 2013a) | <p><u>Health investigation levels (HIL)</u></p> <p>Samples are assessed against NEPC (2013a) HIL A – Residential land use with access to soil for coarse soils.</p>  |
| CRC CARE (2017)           | <p><u>Health screening levels (HSL)</u></p> <p><i>Petroleum hydrocarbons</i></p> <p>Samples are assessed against NEPC (2013a) HSL A&amp;B – Residential land use for sand dominant soils.</p> <p><u>Ecological Investigation Levels (EIL)</u></p> <p>EILs for select metals, DDT, and naphthalene are derived from the methodology detailed in NEPC (2013a) for the protection of terrestrial ecosystems for urban residential &amp; public open space. EILs are calculated by using the Added Contaminant Levels (ACL) for respective contaminants presented in Table 1B(1), Table 1B(2), Table 1B(3), Table 1B(4) and Table 1B(5) from Schedule B1 of NEPC (2013a), with due respect to site specific pH, CEC, clay content data available on the eSPADE database. Ambient Background Concentrations (ABC) used for calculation of EIL are derived from ABC concentrations for NSW - old suburb / low traffic, as tabulated in Schedule B5c of NEPC (2013c) for respective contaminants.</p> <p>For the calculation of EILs, the following conservative physiochemical properties and considerations were applied:</p> <ul style="list-style-type: none"> <li>• pH: pH 8.35</li> <li>• CEC: 24.5 cmol(+)/kg</li> <li>• Contamination considered as 'aged' (&gt;2 years)</li> </ul> |

| Adopted Guidelines | Applicability  |
|--------------------|--|
|                    | <p>Application of EILs is only applicable to the top 2 m of soils in accordance with NEPM (2013) guidance.</p> <p><u>Ecological Screening Levels (ESL)</u></p> <p>TRH and BTEX are assessed against ESLs for urban residential – coarse textured soils presented in NEPC (2013a).</p> <p>High reliability benzo(a)pyrene ESL criteria for urban residential settings, from Table 11 of CRC CARE (2017), are adopted for ecological assessment purposes over low reliability benzo(a)pyrene ESL criteria presented in NEPC (2013a).</p> <p>Application of ESLs is only applicable to the top 2 m of soils in accordance with NEPM (2013) guidance.</p> <p><u>Management Limits</u></p> <p>Petroleum hydrocarbons management limits for residential / parkland – coarse-textured soils.</p> <p><u>Asbestos</u></p> <p>Assessed on a detect / non-detect basis.</p> |

### 4.3 Assessment of Soil Beneath Shed

Following demolition of the existing shed, the following works are to be completed:

1. Walkover and inspection of the data gap area.
2. Collection of four near surface soil samples from within the generator shed footprint.
3. Laboratory analysis of near surface samples for heavy metals, OC and OP, hydrocarbons (BTEXN, TRH and PAH) in accordance with the established CSM.
4. Laboratory results are to be compared to data gap site assessment criteria (SAC) outlined in Table 5.

### 4.4 Data Gap Closure Reporting

Data gap closure investigation work and results are to be documented in a data gap closure report which is to be included as part of the site validation reporting requirements. Where data gap closure investigation results exceed SAC, an amendment to this RAP or a RAP addendum is to be prepared outlining any additional remediation and or management requirements.

Based on the proposed extensive excavation works proposed for site levelling purposes, it is anticipated that a likely remediation strategy for any additional contamination identified would include excavation and offsite disposal to a licensed waste facility. Methodology to complete additional works is expected to be similar to what is outlined in the following sections of this RAP.



# 5 Remediation Options Assessment and Strategy

---

## 5.1 Remediation Area

Remediation requirements outlined in this RAP have been developed on the basis of the extent of the known contamination, coupled with the proposed development layout detailed in proposed development plans (Appendix B). Previous investigation completed at the Site by MA (2024b) identified TRH F3 (>C16-C34) and PAH (benzopyrene TEQ) contamination at localised sampling locations of the site (Appendix A), in which concentrations exceeded both human health and ecological acceptance criteria for a Residential – A (with soil access) land use setting.

In order to render the land suitable for the proposed development, remediation and management of contaminated soils is required to remove potential risks to human health and ecological receptors.

## 5.2 Remediation Goals

The goal of remediation is to render the land suitable for the proposed development land use settings of residential land use (with access to soil) by removing and / or managing reported contamination risks identified within Site soils.

## 5.3 Remediation Options Assessment

Soil remediation options were considered with regards to ASC NEPM (2013) preferred hierarchy of options for clean-up and / or management, namely:

1. Onsite treatment of the contamination so that it is destroyed or nullified, and the associated risk is reduced to an acceptable level.
2. Removal of contaminated material to an approved facility, followed, where necessary, by replacement with appropriate material.
3. Retention of soils onsite by capping and containing material onsite below an appropriately designed barrier.

Review of available soil remediation strategies and technology considered on the basis of:

- Effectiveness at achieving remediation objectives.
- Suitability considering the proposed development.
- Anticipated costs.

- Ongoing environmental and public health adequacy.

A review of remediation options is presented in Table 6.

**Table 6:** Review of Remediation Options

| Remediation Option                     | Advantages   | Disadvantages   | Comments  |
|--|--|---|---|
| Containment of contaminated soils      | <ul style="list-style-type: none"> <li>No costs incurred for offsite waste disposal.</li> <li>Human health and ecological risks are mitigated by the placement of soils beneath hardstand areas (where leachability potential of contaminants is limited and non volatile contaminants are capped).</li> </ul> | <ul style="list-style-type: none"> <li>Incompatible with proposed development design.</li> <li>Will require an Environmental Management Plan (EMP) to manage ongoing human health risks associated with contaminated soils and will require a Note on Title parts of the Site.</li> <li>The geotechnical suitability of soils may constrain the placement of the material.</li> </ul> | This remediation option is not viable solution for soil remediation, as the proposed development will require bulk excavation up to approximately 3.0 mbgl for Site levelling purposes.   |
| Onsite treatment                       | <ul style="list-style-type: none"> <li>Allows for the retention of soils onsite.</li> <li>Offsite removal of soils is reduced, thereby limiting landfilling of soil and associated costs.</li> </ul>   | <ul style="list-style-type: none"> <li>Will significantly increase the time frame and cost of site remediation.</li> </ul>  | Not suitable as a remediation option.   |
| Offsite disposal of contaminated soils | <ul style="list-style-type: none"> <li>Will provide the shortest timeframe for remediation.</li> <li>Removes human health and ecological risks, and long-term management requirements by removing contamination from the site.</li> <li>Compatible with proposed development design.</li> </ul>                | <ul style="list-style-type: none"> <li>Will result in significant costs associated with material classification, transport, and disposal to licensed landfill facility.</li> </ul>  | <p>Offsite disposal of contaminated fill material is considered the most suitable remediation option as the proposed development will require bulk excavation up approximately 3.0 mbgl for Site levelling purposes.</p> <p>This option is the fastest and simplest remediation solution and removes any potential risks to human health and ecological receptors from the site and requires no long term management responsibilities post development.</p> |

## 5.4 Preferred Remediation Option

In consideration of the CSM (provided in Appendix C) and remedial options discussed in Table 6, excavation of contaminated soils and offsite disposal to a NSW EPA licensed waste facility is the preferred remediation option.

By removing identified contaminated fill material and ensuring any fill material retained on site meets the adopted assessment criteria (Table 5), all contamination pathways are removed from the CSM and exposure risk to sensitive receptors is no longer present at the site, rendering it suitable for the proposed childcare development.

Closure of site data gaps as outlined in Section 4 is also required as part of site remediation work.

Due to extensive excavation works proposed, these data gap closure works are primarily required to achieve adequate characterisation work for waste classification purposes.

## 5.5 Timing of Works

Timing of the works is dependent on the construction schedule of the development but should be completed in consultation with the appointed remediation contractor.

## 5.6 Soil Remediation Criteria

Remediation acceptance criteria (RAC) adopted to confirm remediation of soils are summarised in Table 7. The RAC are selected based on the proposed development scenario of residential (with access to soil) land use.

**Table 7:** Remediation acceptance criteria for soils

| Contaminant        | Adopted Validation Level   |
|--------------------|--|
| Adopted Guidelines | Applicability  |
| NEPC (2013a)       | <p><u>Health investigation levels (HIL)</u></p> <p>Samples are assessed against NEPC (2013a) HIL A – Residential land use with access to soil for coarse soils.</p> <p><u>Ecological Screening Levels (ESL)</u></p> <p>TRH and BTEX are assessed against ESLs for urban residential &amp; public open space – coarse-textured soils presented in NEPC (2013a).</p> <p>High reliability benzo(a)pyrene ESL criteria for urban residential and public open space settings, from Table 11 of CRC CARE (2017), are adopted for ecological assessment purposes over low reliability benzo(a)pyrene ESL criteria presented in NEPC (2013a).</p> <p>Application of ESLs is only applicable to the top 2 m of soils in accordance with NEPM (2013) guidance.</p> |

## 5.7 Deviations from the RAP

While it may be possible to vary the sequence of remediation activities to meet site constraints, a qualified Environmental Consultant should be appointed to the project to ensure:

- The critical stages of the remediation / validation process are appropriately supervised, implemented, and documented to ensure that relevant data is collected for environmental reporting purposes.
- That any deviations from the works specified in this RAP are properly documented and approved, as required under the NSW EPA (2020) *Contaminated Site Guidelines: Consultants Reporting on Contaminated Sites*.

## 6 Remedial Works Plan

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### 6.1 Works Overview

The sequence of work to complete remediation works is as follows:

- 1 Notification / Planning.
- 2 Appointment of Remediation Contractor and Environmental Consultant
- 3 Site Establishment.
- 4 Remedial Excavation.
- 5 Waste Classification.
- 6 Offsite Disposal.
- 7 Validation Reporting.

The following sections outline works required to remediate identified contamination such that the site is suitable for the proposed childcare development.

To determine the appropriate Remedial Works Category, a review of Goulburn Mulwaree Council Development Control Plan (DCP 2009) was completed. The DCP identifies the following remediation works as being Category 1 remediation works:

- Remediation works within 40m of an open drainage channel.
- Remediation works involving treatment of groundwater.
- Remediation works involving on-site treatment of contaminated soil.
- Remediation works involving on-site capping or containment of contaminated soil.
- Remediation works on a site where off site migration of contamination has occurred.
- Remediation work involving the removal of Petroleum and other Underground Storage Tanks.

Based on the findings of previous site assessment and the Remedial Works Plan outlined in the following section, none of the above scenarios will be triggered. Therefore, the remediation works are considered Category 2 (works not requiring consent) in accordance with State Environmental Planning Policy (Resilience and Hazards) 2021 (the SEPP). It is however expected that the remediation works will be approved as part of the current development proposal.

**Unless otherwise identified, activities discussed below will be the responsibility of the contractor or its representative.**

## **6.2 Stage 1 – Notifications**

The following notifications will be required:

- A notice is to be given to Council 30 days before commencement of remedial works in accordance with Clause 4.13 of the SEPP.
- A notice of completion of remediation works must be given to Council and the consent authority, within 30 days after completion of the remedial work in accordance with Clauses 4.14 and 4.15 of the SEPP.

## **6.3 Stage 2 – Appointment of Remediation Service Providers**

For remedial works to be successfully completed, the appointment of a suitability licensed remedial contractor and suitably qualified environmental consultant is required.

A suitably qualified environmental consultant is to be engaged to:

- Document all stages of the excavation of contaminated soil at the Site.
- Undertake visual validation inspections and collect validation samples (Section 7).
- Complete and prepare appropriate waste classification documentation.
- Monitor and document the offsite disposal of material to the appropriately licenced waste facility.
- Prepare a Validation Report documenting, remediation works, validation results, and confirmation of the final Site status for the proposed land use settings.

Appointed remediation contractor and environmental consultant details are to be included in this RAP following engagement.

## **6.4 Stage 3 – Site Establishment**

Prior to the commencement of any remediation / construction works, the site shall be prepared for the works.

Final site requirements will need to be formalised by the appointed remediation contractor, but are expected to include the following:

- Establishment of site offices, work sheds and amenities for site workers.
- Installation of temporary site fencing, physical barriers, and site signage around the works zone.
- Installation of appropriate dust control measures.

- Establishment of a site holding area for excavated stockpiles (if required).

## 6.5 Stage 4 – Site Demolition Works and Data Gap Closure Works

Site demolition works are to be completed by an appropriately qualified contractor and include any hazardous material management requirements which may be necessary for demolition and offsite removal of the existing site generator and shed.

Following demolition works, the environmental consultant is to complete the data gap closure works outlined in Section 4.

## 6.6 Stage 5 – Remediation Works

The adopted remediation strategy for the contaminated soil area is excavation, waste classify and offsite disposal. The proposed works sequence within the remediation area is:

1. Environmental consultant to delineate remediation area as outlined in in Appendix A.
2. Excavate full depth of observed fill within limit of the remediation area. Excavated material is to be placed either:
  - i. Directly into trucks for offsite disposal if *in-situ* waste classified during data gap closure works; or
  - ii. In the designated contaminated material holding area for waste classification as per Section 6.7.
3. Transport excavated material by an appropriately licenced operator to an appropriate landfill.
4. At the completion of the excavation, the environmental consultant will examine the base and walls of the excavation for evidence of contamination.
5. Validation samples shall be collected and analysed. The appointed environmental consultant shall validate remediation excavations, in accordance with Section 7.
6. Further remedial excavation shall be completed with subsequent revalidation should validation testing fail.

## 6.7 Stage 6 – Waste Soil Management

### 6.7.1 Remedial Excavation Spoil

All spoil from remedial excavations requiring offsite disposal will require waste classification assessment in accordance with NSW EPA (2014) *Waste Classification Guidelines*, prior to being removed from the Site. Material shall either be stockpiled for waste classification or assess *in-situ* (during data gap closure works).



Fill material shall either be stockpiled for waste classification or assess *in-situ* (during data gap closure works). The sampling density required for waste classification shall be completed at a rate of 4 sample per 100 m<sup>3</sup> for either stockpile or in-situ assessment methodology. Samples are to be analysed for TRH, BTEXN, PAH, OC and OP pesticides, heavy metals and asbestos which are COPC outlined in the CSM for fill material. Results of previous investigations are to be included in the waste classification assessment.

Following testing, waste classification certificates will be prepared in accordance with the reporting requirements of NSW EPA (2020).

### **6.7.2 Removal of Natural Soil and Rock**

Following excavation and offsite disposal of overlying contaminated soil, assessment of any natural underlying soils and rock may be undertaken to determine if material may be classified as virgin excavated natural material (VENM).

VENM should be assessed visually to ascertain whether material meets the definition of VENM as outlined by NSW EPA. Additional testing of the excavated material may be required to confirm that the material has not been impacted by fill material at the site. Samples are to be analysed for TRH, BTEXN, PAH, OCP, OPP, PCB, heavy metals, and asbestos.

In the event that natural material cannot be classified as VENM, it may be possible to classify the material as excavated natural material (ENM).

ENM classifications must be completed in accordance with the requirements of *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operation (Waste) Regulation 2014*.

### **6.7.3 Excavation Considerations**

Excavation depths should be in accordance with DA conditions. If further excavation is required, it should not jeopardise the stability of adjoining properties and structures.

### **6.7.4 Loading and Transport of Contaminated Material**

Direct loading of contaminated soils to appropriate transport vehicles is preferred, with the transport of contaminated material off the site to be via a clearly distinguished haul route. Removal of waste materials from the site shall only be carried out by a recognised contractor holding the appropriate EPA NSW licenses, consents, and approvals.

A site log shall be maintained by the contractor for each discrete excavation (numbered locations) to enable the tracking of disposed loads against on-site origin and location of the materials and corresponding (validation) sample numbers.

Measures shall be implemented to ensure no contaminated material is spilled onto public roadways or tracked offsite on vehicle wheels. Such measures will include the deployment of a vehicle washing/cleaning facility, which should be placed at a location before the egress point on the site. The facility shall be able to handle all vehicles and plant operating on-site.

All trucks transporting soils from the site are to be covered with tarpaulins (or equivalent). Residue from the cleaning facility will be collected periodically and either dewatered on site in a contained bunded area or disposed as a slurry to an approved facility. Such residue will be deemed contaminated unless shown by validation to be below criteria.

The proposed waste transport route will be notified to Council and truck dispatch shall be logged and recorded by the contractor for each load leaving the site.

### **6.7.5 Disposal of Contaminated Material and Waste Tracking**

All contaminated materials excavated and removed from the site shall be disposed at an appropriately licensed landfill facility. Copies of all necessary approvals shall be provided to the remediation consultant prior to any contaminated material being removed from the site.

Details of all contaminated materials removed from the site shall be documented by the contractor with copies of weighbridge slips, trip tickets and consignment disposal confirmation (where appropriate). Such information should be provided to the remediation consultant for reporting purposes. Tracking of the excavated materials should be completed by the recording the following information:

- Origin of material
- Waste classification type
- Approximate volume and/or weight
- Transporting truck registration number
- Dates and times of waste transportation

Disposal locations will be determined by the remediation contractor. Locations, waste disposal documentation (weighbridge dockets) and the above listed information must be provided to the remediation consultant.

A reconciliation document, comparing the total volume of waste taken off site versus total volume of waste generated from the site, should also be prepared for inclusion in the Validation Report.

# 7 Validation Methodology

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## 7.1 Overview

A Sampling, Analysis and Quality Plan (SAQP) has been developed to ensure that data collected for the validation of remediation activities is representative and provides a robust basis for site assessment decisions. Preparation of the SAQP was completed in general accordance with the 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.
- Analytical QA/QC.

The DQOs and DQI developed as part of the SAQP for the project are provided in Appendix F. The validation strategy and sampling procedures portion of the SAQP is summarised in the following sections.

## 7.2 Validation Strategy

Validation of the remedial excavations is to be completed by an Environmental Consultant to verify the suitability of soil remaining once contaminated material has been remedially excavated. Validation will be considered acceptable once analytical results report concentrations below RAC.

Analytical validation for any imported material should be conducted in accordance with the procedure outlined in Table 8 and requires confirmation of suitability for proposed use.

**Table 8:** Validation sampling design

| Remediation Area and Process    | Sampling Density   | Contaminants for Analysis  |
|---------------------------------|--|--|
| Excavation and offsite disposal | <p>Following remediation excavation under supervision by the appointed environmental consultant the following samples should be collected and analysed:</p> <ul style="list-style-type: none"> <li>Excavation base – 1 sampling location per 25 m<sup>2</sup>.</li> <li>Excavation Wall – 1 sample location per 5 m (linear) of wall with a minimum of 1 sample per wall.</li> </ul> | <p>TRH – &gt;C16-C34 Fraction (F3)<br/>PAH – Benzopyrene (TEQ)</p> |

Excavation of contaminated material is to continue until the analytical results indicate compliance with the RC (i.e., either the concentrations of all contaminants are less than, or < 95% UCL average contaminant concentration for each detected parameter is less than RAC). If results indicate that additional excavation is necessary, the excavation shall be extended until the excavation surface samples indicate that the location is validated as meeting the criteria for each respective contaminant.

### 7.3 Validation Sampling Procedures

Procedures for the collection of soil samples for validation are presented in Table 9.

**Table 9:** Sampling methodology

| Action                                      | Description  |
|---|--|
| Sample Collection                           | <p>Soil sampling will be directly from within the centre of the excavator bucket or immediately from the exposed excavation surface, per the sampling density requirement outlined in Table 8.</p> <p>Each sample is to be collected with a dedicated pair of disposable nitrile gloves and / or decontaminated, non-disposable steel sampling equipment, where required.</p> <p>Sampling locations and associated data are to be adequately recorded on to field datasheets and plans. A photographic record of each remedial excavation is to be compiled upon completion of validation sampling (and from any waste classified remedial spoil stockpile) for inclusion in the Validation Report.</p>  |
| Sampling, handling, transport, and tracking | <p>Where reusable stainless steel sampling equipment (including hand tools or excavator parts) is used for sample collection, the equipment is to be washed in a 3% solution of phosphate free detergent, followed by a rinse with potable water, prior to each sample being collected.</p> <p>Sample containers are to be filled with soils and sealed with the supplied lid to eliminate cross contamination during transportation to the laboratory. Each sample is to be labelled with an individual and unique identification including, Project No., Sample No., Sampling depth, and date of sampling, then placed into a chilled, enclosed and secure container for transport to the laboratory.</p> <p>Samples are to be transported to the analytical laboratory under chain of custody (COC) conditions. COC documentation is to be provided for sample transport to ensure that sample tracking and custody can be cross-checked at any point in the handling of samples from the field to the analytical laboratory.</p> |

| Action                                 | Description   |
|--|---|
| Sample Containers & Holding Times      | All sample containers should be supplied from respective analytical laboratory. All containers are to be filled with sample to the brim, then capped and stored in ice-filled chests, until completion of the fieldwork and during sample transit to the laboratory.  |
| Field QA/QC                            | <p>Quality assurance (QA) and quality control (QC) procedures will be adopted throughout the field sampling programme to ensure sampling precision and accuracy, which will be assessed through the analysis of field duplicate/replicate samples.</p> <ul style="list-style-type: none"> <li>• Appropriate sampling procedures will be undertaken to prevent cross contamination. This will ensure:</li> <li>• Standard operating procedures are followed.</li> <li>• Site safety plans are developed prior to works commencement.</li> <li>• Split duplicate field samples are collected and analysed.</li> <li>• Samples are stored under secure, temperature-controlled conditions.</li> <li>• COC documentation is employed for the handling, transport, and delivery of samples to the contracted environmental laboratory.</li> <li>• Contaminated media from the site area is disposed in accordance with relevant regulatory guidelines.</li> </ul> <p>Field QA/QC sampling requirements will include</p> <ul style="list-style-type: none"> <li>• Collection of blind field duplicates at a rate of one in 20 primary samples</li> <li>• Collection of inter-laboratory duplicates at rates of one in 20 primary samples.</li> <li>• Use and analysis of one trip blank per sample batch forward to the laboratory.</li> <li>• Where non-disposable sampling equipment is used, an equipment rinsate will be collected per sample batch.</li> </ul> |
| Laboratory QA/QC                       | <p>The contract laboratory will conduct in-house QA/QC procedures involving the routine analysis of:</p> <ul style="list-style-type: none"> <li>• Reagent blanks</li> <li>• Spike recoveries</li> <li>• Laboratory duplicates</li> <li>• Calibration standards and blanks</li> <li>• QC statistical data</li> <li>• Control standards and recovery plots</li> </ul>   |
| Achievement of Data Quality Objectives | <p>Based on the analysis of quality control samples (i.e., duplicates/replicates and in-house laboratory QA/QC procedures), the following data quality objectives are required to be achieved:</p> <ul style="list-style-type: none"> <li>• Conformance with specified holding times.</li> <li>• Field and laboratory duplicates and replicates samples will have a precision average of +/- 30% relative percent difference (RPD).</li> </ul> <p>An assessment of the data quality is to be provided in the Validation Report, in accordance with NSW EPA (2017) <i>Guidelines for the NSW Site Auditor Scheme</i>.</p>  |

## 8 Validation Reporting

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Fieldworks, chemical analysis, discussions, and conclusions will be documented in a Validation Report. The Validation Report is to be prepared in accordance with NSW EPA (2020) *Consultants Reporting on Contaminated Sites: Contaminated Land Guidelines* and NSW EPA (2017) *Guidelines for the NSW Site Auditor Scheme* and must conclude that the site has been remediated to a standard suitable for the proposed land use settings.

## 9 Remediation Contingency Plan

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### 9.1 Overview

It is considered possible that unexpected events may occur during remediation and site redevelopment works, including the possibility of uncovering unidentified contamination. A site contingency plan for managing unexpected events must be prepared by the contractor. Unexpected events that may arise include:

1. Uncovering previously unidentified contamination (unexpected finds).
2. Generation of unacceptable levels of dust.
3. Generation of an unacceptable level of noise.
4. Excessive rainfall.
5. Collection of excessive water in excavations.

The following sections outline contingency procedures for the events listed above.

### 9.2 Unexpected Finds

If unexpected situations occur during remediation and site redevelopment, including the possibility to uncover unidentified environmental concerns which to date have not been identified or surveyed, the following steps are to be undertaken by the contractor:

1. Cease all work in the area and notify site foreman / manager and environmental consultant.
2. Notify any relevant authorities (e.g., fire brigade) if an emergency response is required.
3. Construct temporary barricading to prevent worker / public access to any unexpected and / or unknown substances.
4. Install appropriate stormwater diversion and sediment controls as required.
5. Provide notification to relevant authorities, where the contractor has a legal to notify (e.g., EPA and / or Council).
6. Site foreman / manager is to arrange site inspection by the environmental consultant to assess the unexpected find and determine if any sampling or remedial action is required in the area.
7. The environmental consultant is to prepare an assessment and, if required, validation of each unexpected find to the contractor prior to the recommencing of works ceased as a result of the unexpected find.

All site personnel are to be aware of their responsibilities under the unexpected finds protocol and are to report any potential signs of contamination (e.g., observed ACM, petroleum and / or oil spills, chemical odours, staining, etc.) to the site manager immediately.

All identified unexpected finds are to be documented in the Validation Report prepared by the environmental consultant.

### **9.3 Unacceptable Level of Dust**

Contingency measures must be prepared to control unacceptable dust levels. Excessive dust may be identified by workers, dust monitoring equipment or community complaints. Actions to control excessive dust can include:

- Increased use of water sprays.
- Covering soil stockpiles.
- Changing work protocols (e.g., avoiding work on windy days).

### **9.4 Unacceptable Level of Noise**

Contingency measures must be prepared to control unacceptable noise levels.

- Actions to control excessive noise can include:
- Identification and isolation of the source of noise.
- Modification of the action of the source to reduce the noise.
- Erection of temporary noise barriers.

### **9.5 Excessive Rainfall**

Contingency measures must be prepared to control the effects of excessive rainfall. Actions to control the impacts of excessive rainfall can include:

- Construction of sediment and surface water controls.
- Diversion of surface water away from excavations, soil stockpiles and active work areas.
- Appropriate stockpile covers.
- Changing work protocols.
- Wash down facilities for vehicles exiting the Site.



## 10 Conclusion

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This RAP has been prepared by MA to support a development application to Goulburn Mulwaree Council for a proposed childcare centre development with bulk excavation up to 3.0 mbgl.

The findings of previous soil investigation documented in a DSI report by MA (2024) identified contaminated soils TRH F3 (>C16-C34) and benzopyrene TEQ within recognised AECs exceeding human health and ecological criteria. The DSI recommended that a RAP be prepared to establish a remedial strategy to guide the remediation required to make the land suitable for the proposed use.

The RAP describes remediation works intended to render the site suitable for the proposed childcare development. The remediation strategy adopted was selected in consideration of the requirements of the development (i.e. a bulk excavation) and involves excavation and offsite disposal of impacted fill material to a licenced waste facility.

Subject to the limitations of this report, MA consider that soil contamination can be adequately remediated by implementation of the RAP to allow the site to be made suitable for the proposed residential land use with access to soil. MA also consider that Section 4.6 of the State Environmental Planning Policy (Resilience and Hazards) 2021 can be satisfied by the following items being made conditions of development consent to ensure that contamination is remediated to a standard consistent with the proposed land use:

- Implementation of the RAP.
- Provision of a Validation Report to City of Goulburn Mulwaree Council documenting all remedial works undertaken (as outlined in the RAP) at the Site, that concludes that the land has been remediated to a standard suitable for the land use scenario proposed at the Site.

## 11 Limitations

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The recommendations presented in this report include specific issues to be addressed during the construction phase of the project. In the event that any of the recommendations presented in this report are not implemented, the general recommendations may become inapplicable, and Martens and Associates accept no responsibility whatsoever for the performance of the project where recommendations are not implemented in full and properly tested, inspected and documented.

Previous site assessment works reviewed in this document have been conducted in accordance with the current industry standard, however no site sampling strategy can be considered to be a complete and exhaustive characterisation of a site, nor can it be guaranteed that any assessment shall identify and characterise all areas of contamination. This is particularly the case for sites where access limitations restricted previous site sampling. Therefore, this report should not be read as a guarantee that no hitherto unidentified contamination will be present within site materials. Should material be exposed during site works which was not encountered during the previous investigations undertaken, the newly discovered material should be specifically assessed by Martens and Associates.

If you require any further information, please do not hesitate to contact the writer.

## 12 References

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Australian Standard (2017) AS1726:2017, Geotechnical Site Investigations. SAI Global Limited, Sydney.

Creative Drafting Services (2023), New Child Care Centre at 69 – 75 George Street, Marulan, NSW, 2579, Job no. 231370, Drawing nos. A1.00, A1.05, A1.08, Drawings titled Site Plan and Notes, Elevations 1 -4 and Section 5, Site Cut and Fill Plan, Issue A, dated 10 September 2023 (CDS, 2023).

Goulburn Mulwaree Development Control Plan (2009)

Martens & Associates (2024a) Preliminary Site Investigation at 69 – 79 George Street, Marulan, NSW, Ref. P2310011JR01V01, Dated February 2024 (MA, 2024).

Martens & Associates (2024b) Detailed Site Investigation at 69 – 79 George Street, Marulan, NSW, Ref. P2310011JR03V01, Dated February 2024 (MA, 2024b).

NEPC (2013a) Schedule B1: Guideline on Investigation Levels for Soil and Groundwater. National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013, National Environment Protection Council.

NEPC (2013b) Schedule B2: Guideline on Site Characterisation. National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013, National Environment Protection Council.

NEPC (2013c) Schedule B5c: Guideline on Ecological Investigation Levels for Arsenic, Chromium (III), Copper, DDT, Lead, Naphthalene, Nickel and Zinc. National Environment Protection (Assessment of Site Contamination) Measure (NEPM) as amended in May 2013, National Environment Protection Council.

NSW DUAP (1998) Managing Land Contamination: Planning Guidelines.

NSW EPA (2014) Waste Classification Guidelines. EPA 2014/0796, November 2014.

NSW EPA (2017) Contaminated Land Management: Guidelines for the NSW Site Auditor Scheme. EPA 2017P0269, October 2017.

NSW EPA (2020) Contaminated Land Guidelines: Consultants Reporting on Contaminated Land. EPA 2020P2233, April 2020.

NSW EPA (2022) Contaminated Land Guidelines: Sampling design part 1 – application. EPA 2022P3915, NSW Environmental Protection Authority, Parramatta.

State Environmental Planning Policy (Resilience and Hazards) 2021.

# Appendix A – Remediation and Data Gap Areas

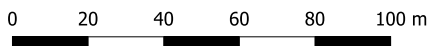
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**Legend**

- Site Boundary
- Cadastre
- Viewports



| Map    | Title                       |
|--------|-----------------------------|
| Map 01 | Overview                    |
| Map 02 | Remediation & Data Gap Area |



1:2000 @ A3  
 Viewport  
 Notes:  
 - Aerial from Nearmap (2023);  
 - Site Boundary from NSW Clip & Ship (2023)

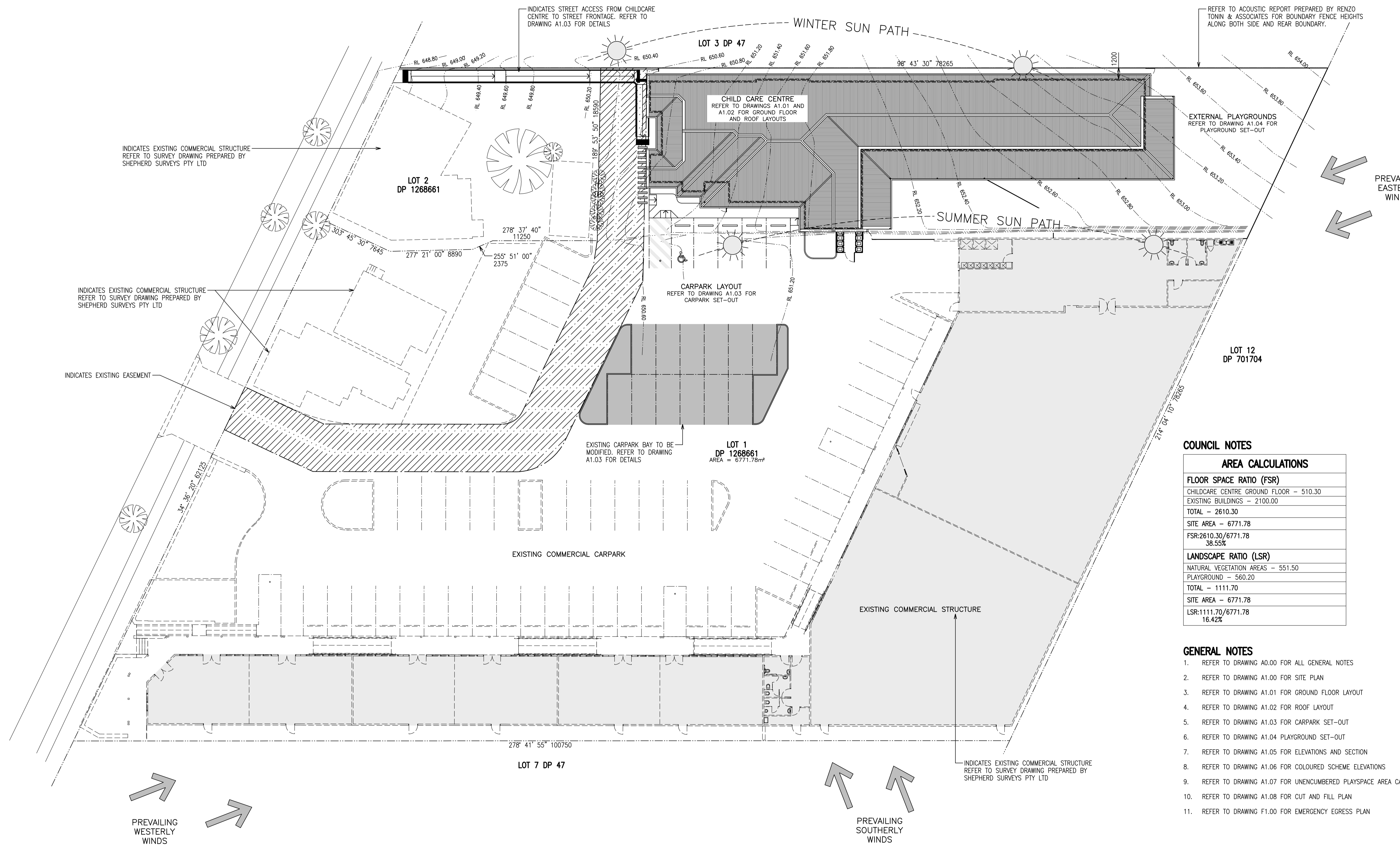


Map Title / Figure:  
**Overview**

## Appendix B – Site Development Plans

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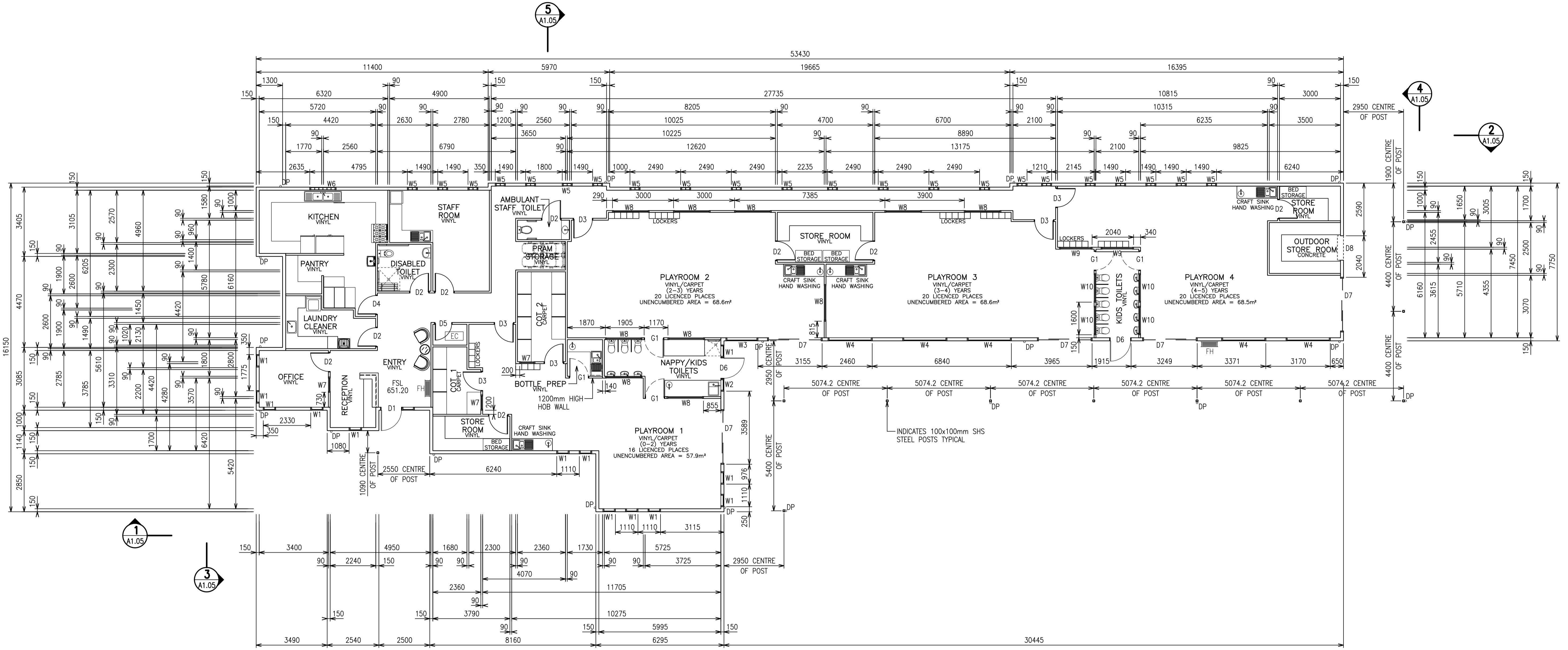
**COUNCIL NOTES**

| AREA CALCULATIONS               |                |
|---------------------------------|----------------|
| <b>FLOOR SPACE RATIO (FSR)</b>  |                |
| CHILDCARE CENTRE GROUND FLOOR - | 510.30         |
| EXISTING BUILDINGS -            | 2100.00        |
| <b>TOTAL -</b>                  | <b>2610.30</b> |
| SITE AREA -                     | 6771.78        |
| <b>FSR:2610.30/6771.78</b>      | <b>38.55%</b>  |
| <b>LANDSCAPE RATIO (LSR)</b>    |                |
| NATURAL VEGETATION AREAS -      | 551.50         |
| PLAYGROUND -                    | 560.20         |
| <b>TOTAL -</b>                  | <b>1111.70</b> |
| SITE AREA -                     | 6771.78        |
| <b>LSR:1111.70/6771.78</b>      | <b>16.42%</b>  |

- GENERAL NOTES**
- REFER TO DRAWING A0.00 FOR ALL GENERAL NOTES
  - REFER TO DRAWING A1.00 FOR SITE PLAN
  - REFER TO DRAWING A1.01 FOR GROUND FLOOR LAYOUT
  - REFER TO DRAWING A1.02 FOR ROOF LAYOUT
  - REFER TO DRAWING A1.03 FOR CARPARK SET-OUT
  - REFER TO DRAWING A1.04 PLAYGROUND SET-OUT
  - REFER TO DRAWING A1.05 FOR ELEVATIONS AND SECTION
  - REFER TO DRAWING A1.06 FOR COLOURED SCHEME ELEVATIONS
  - REFER TO DRAWING A1.07 FOR UNENCUMBERED PLAYSACE AREA CALCULATIONS
  - REFER TO DRAWING A1.08 FOR CUT AND FILL PLAN
  - REFER TO DRAWING F1.00 FOR EMERGENCY EGRESS PLAN

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|--|---|---|
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| Title   | GROUND FLOOR LAYOUT   |  |

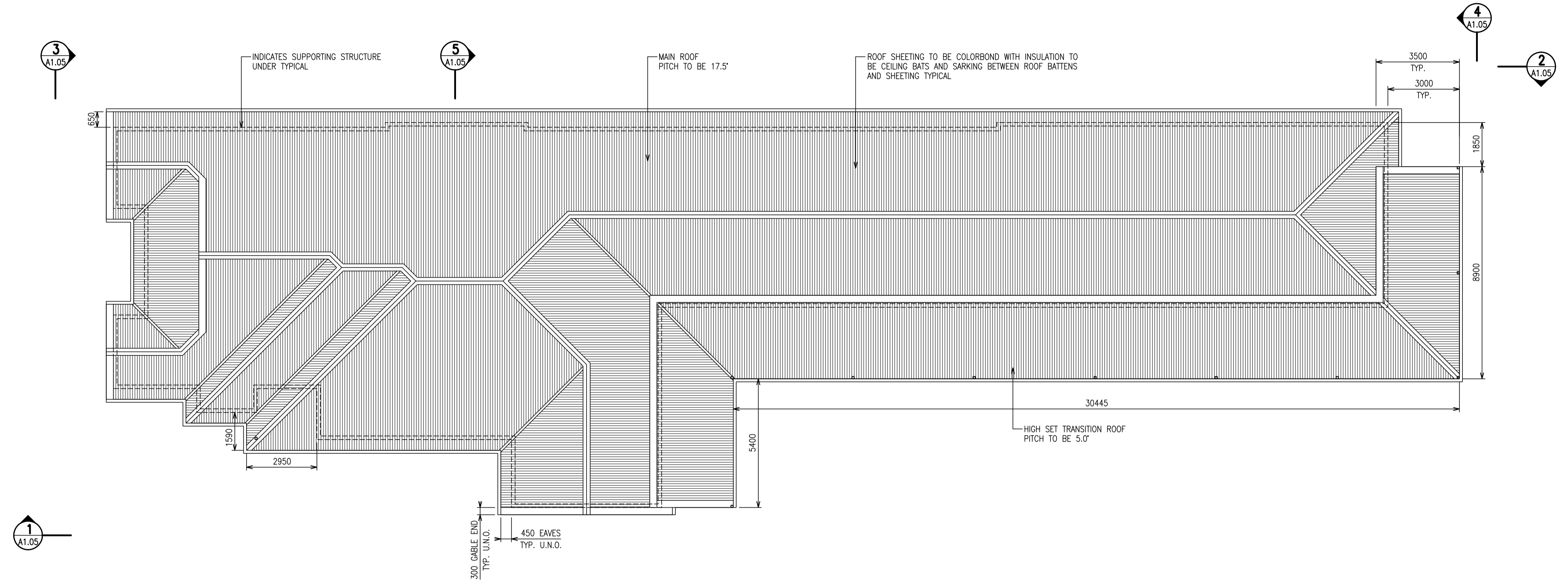
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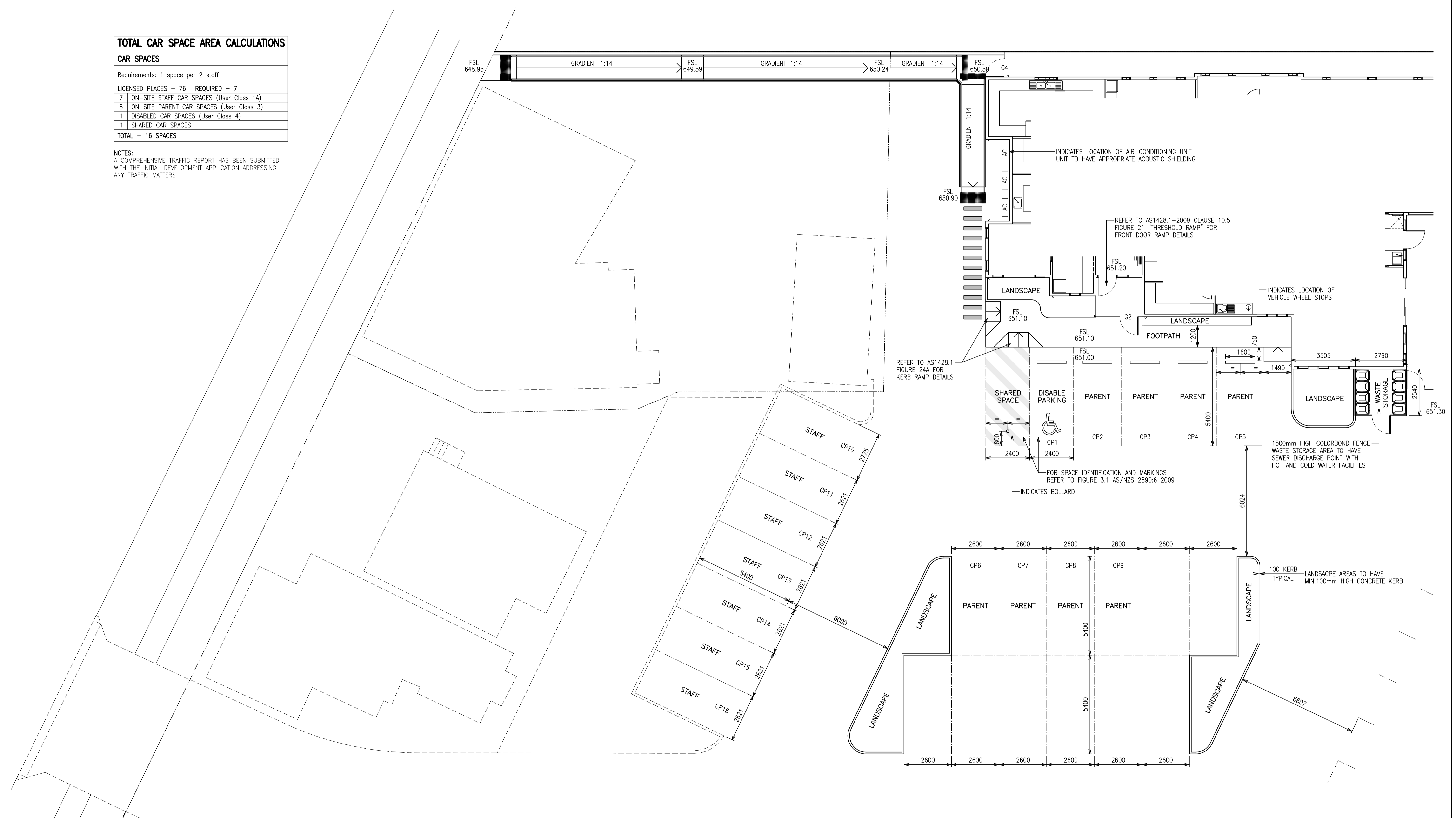
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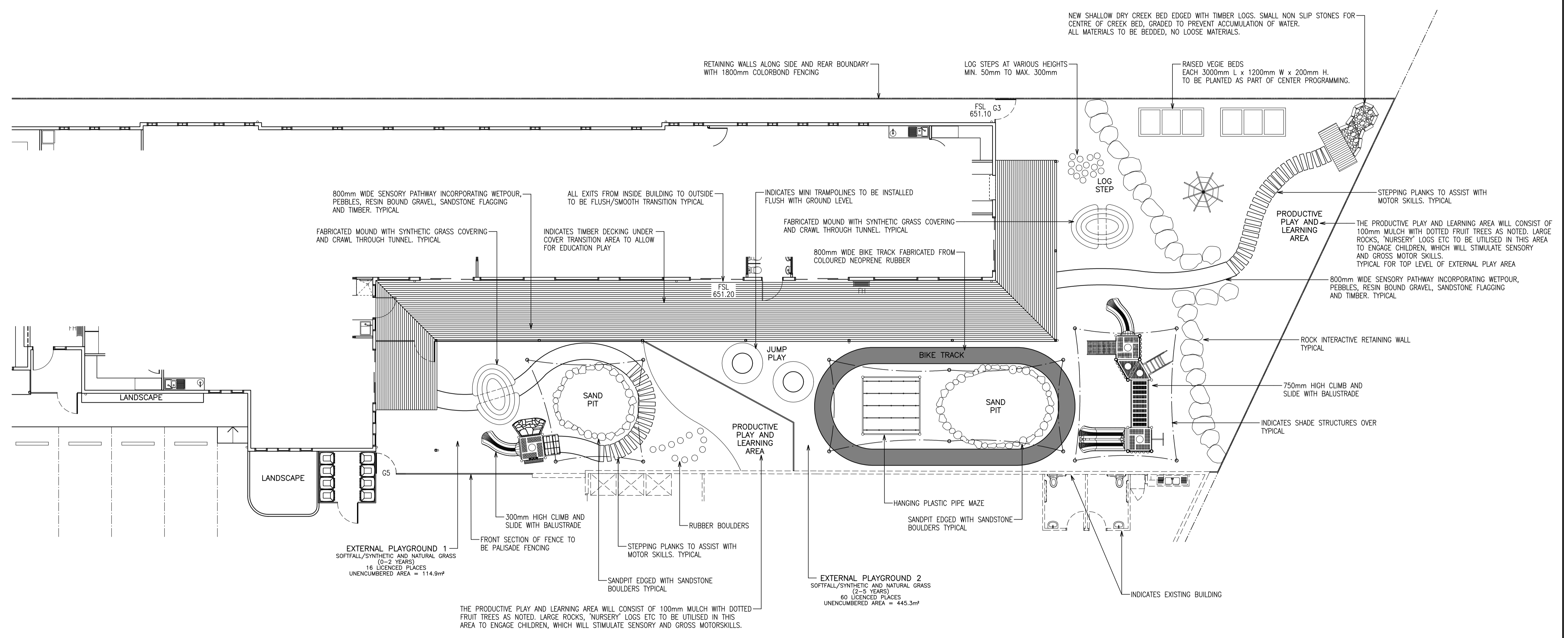
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| <b>FOR APPROVAL</b>   |  | Title<br><b>ROOF LAYOUT</b>   | Scale: 1:100<br>Job Number: <b>231370</b>  |
|   |  | Drawn: SD<br>Drawing Number: <b>A1.02</b>   | Date: 10.09.23<br>Issue: <b>A</b>  |

| TOTAL CAR SPACE AREA CALCULATIONS          |              |
|--|--------------|
| <b>CAR SPACES</b>                          |              |
| Requirements: 1 space per 2 staff          |              |
| LICENSED PLACES - 76                       | REQUIRED - 7 |
| 7 ON-SITE STAFF CAR SPACES (User Class 1A) |              |
| 8 ON-SITE PARENT CAR SPACES (User Class 3) |              |
| 1 DISABLED CAR SPACES (User Class 4)       |              |
| 1 SHARED CAR SPACES                        |              |
| <b>TOTAL - 16 SPACES</b>                   |              |

NOTES:  
A COMPREHENSIVE TRAFFIC REPORT HAS BEEN SUBMITTED WITH THE INITIAL DEVELOPMENT APPLICATION ADDRESSING ANY TRAFFIC MATTERS

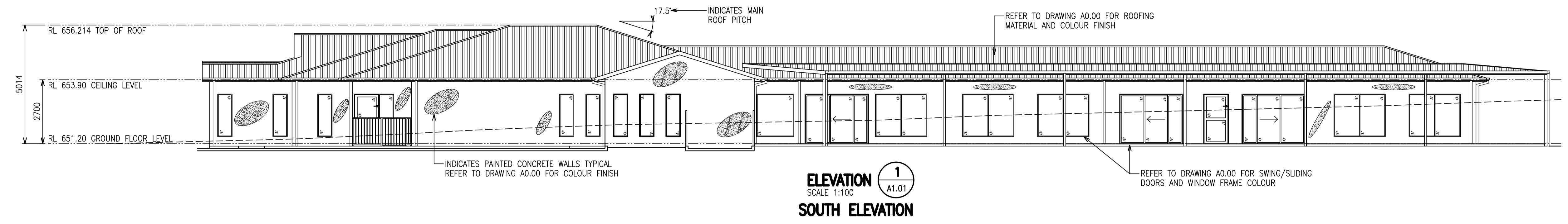


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| <p>Drawn: SD</p> <p>Drawing Number: <b>A1.03</b></p>                                | <p>Date: 10.09.23</p> <p>Issue: <b>A</b></p>   |  |

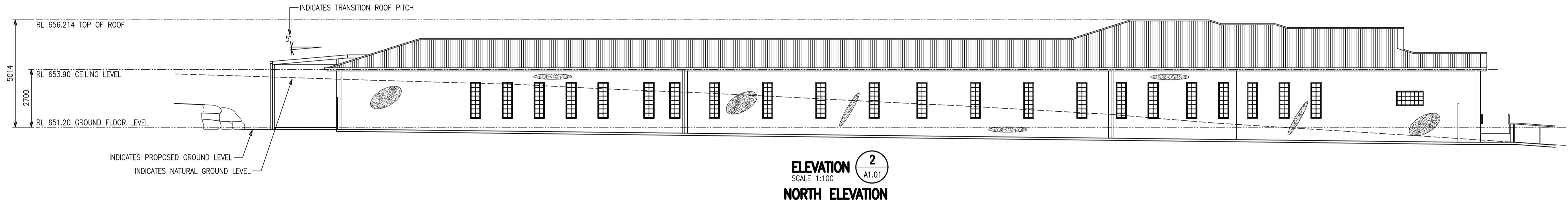


THE PRODUCTIVE PLAY AND LEARNING AREA WILL CONSIST OF 100mm MULCH WITH DOTTED FRUIT TREES AS NOTED. LARGE ROCKS, 'NURSERY' LOGS ETC TO BE UTILISED IN THIS AREA TO ENGAGE CHILDREN, WHICH WILL STIMULATE SENSORY AND GROSS MOTOR SKILLS.

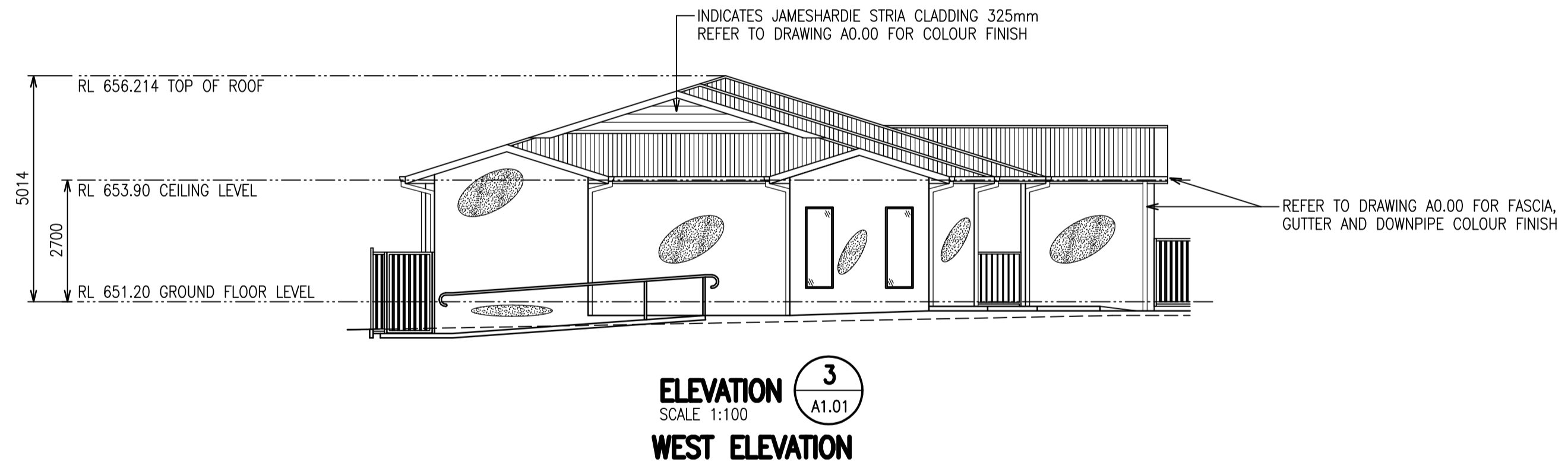
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**ELEVATION 1**  
SCALE 1:100  
**SOUTH ELEVATION**



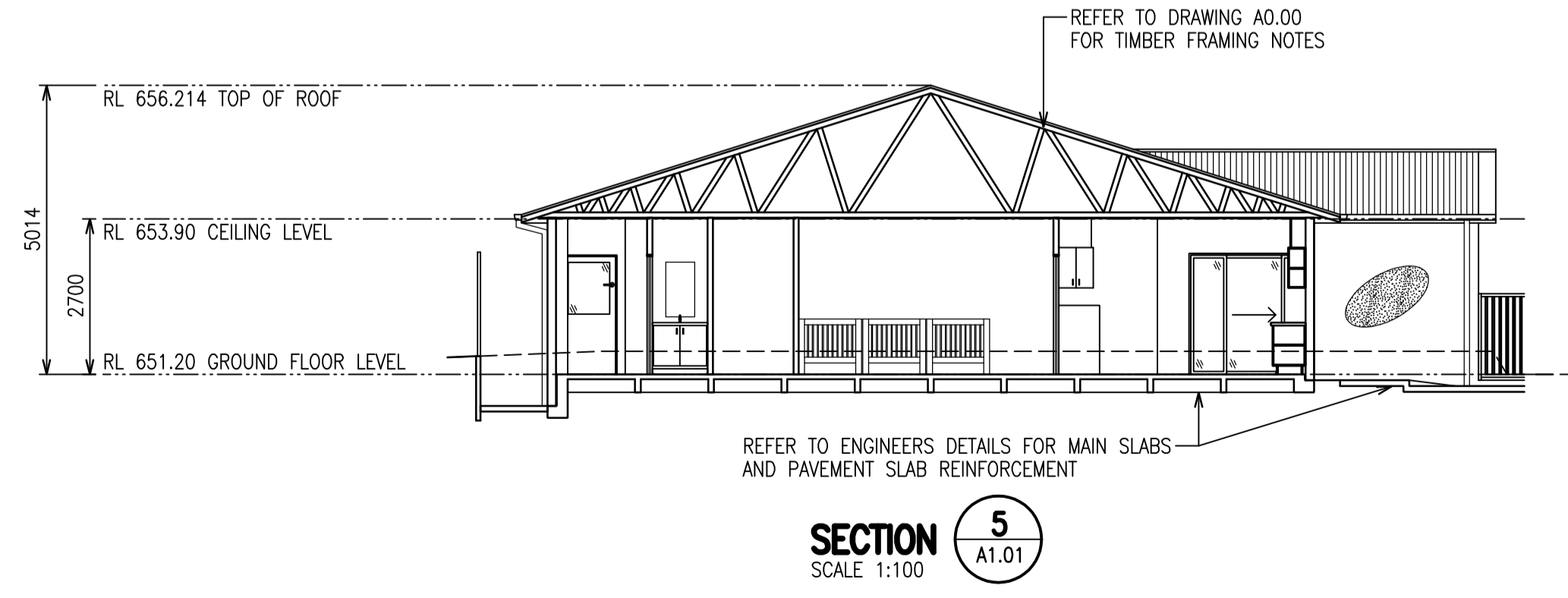
**ELEVATION 2**  
SCALE 1:100  
**NORTH ELEVATION**



**ELEVATION 3**  
SCALE 1:100  
**WEST ELEVATION**



**ELEVATION 4**  
SCALE 1:100  
**EAST ELEVATION**



**SECTION 5**  
SCALE 1:100  
**SECTION 5**

|  |  |   |
|--|--|---|
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| <p>Title: <b>ELEVATIONS 1-4 AND SECTION 5</b></p>                                    |  | <p>Scale: 1:100<br/>Job Number: <b>231370</b></p>   |
| <p>Client: <b>Dacoas Holdings Pty Ltd</b></p>  |  | <p>Drawn: SD<br/>Drawing Number: <b>A1.05</b></p>   |
| <p>Project: <b>New Child Care Centre at 69-75 George Street Marulan NSW 2579</b></p> |  | <p>Date: 10.09.23<br/>Issue: <b>A</b></p>   |

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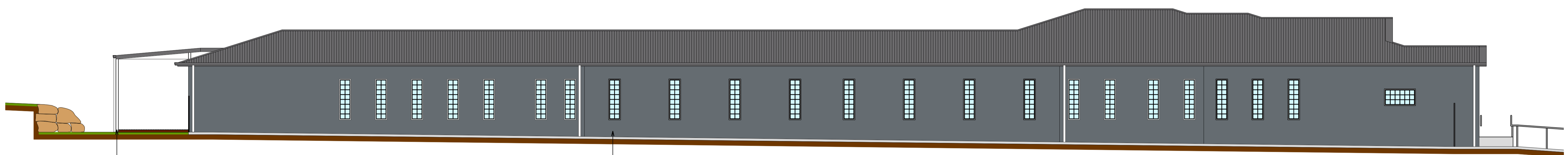
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**FOR APPROVAL**



POOL STYLE FENCING TO HAVE POWDER COATED BLACK FINISH

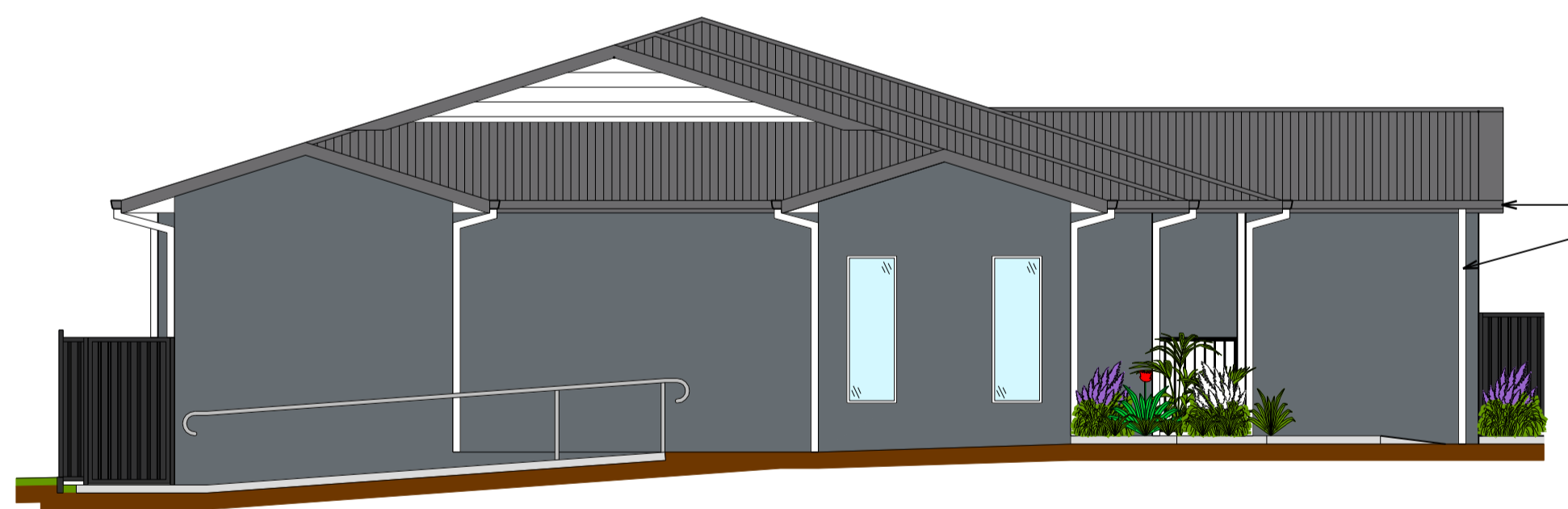
**ELEVATION 1**  
SCALE 1:75  
A1.02



EXTERNAL STRUCTURAL STEELWORK TO HAVE WHITE COLOUR FINISH

PAINTED SURFACES TO MATCH EXISTING COMMERCIAL STRUCTURE

**ELEVATION 2**  
SCALE 1:75  
A1.02



FASCIA BOARDS, GUTTERS AND DOWNPIPES TO MATCH EXISTING COMMERCIAL STRUCTURE

**ELEVATION 3**  
SCALE 1:75  
A1.02



COLORBOND FENCING TO HAVE COLORBOND MONUMENT COLOUR FINISH

RETAINING WALL TO BE AUSTRAL EXPLORER CHARCOAL TIMBERLOOK COLOUR FINISH

OUTDOOR PLAY STORAGE ROOM ROLLER DOOR TO HAVE WHITE COLOUR FINISH

**ELEVATION 4**  
SCALE 1:75  
A1.02

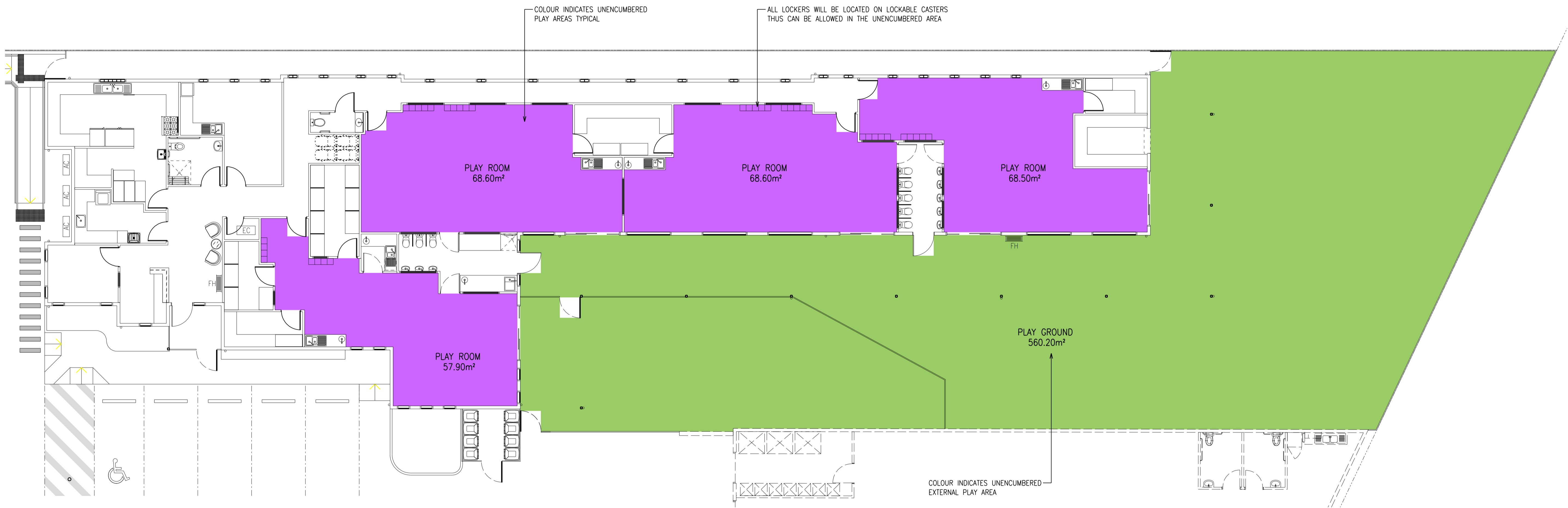
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| Title   | COLOURED SCHEME ELEVATIONS  |  |

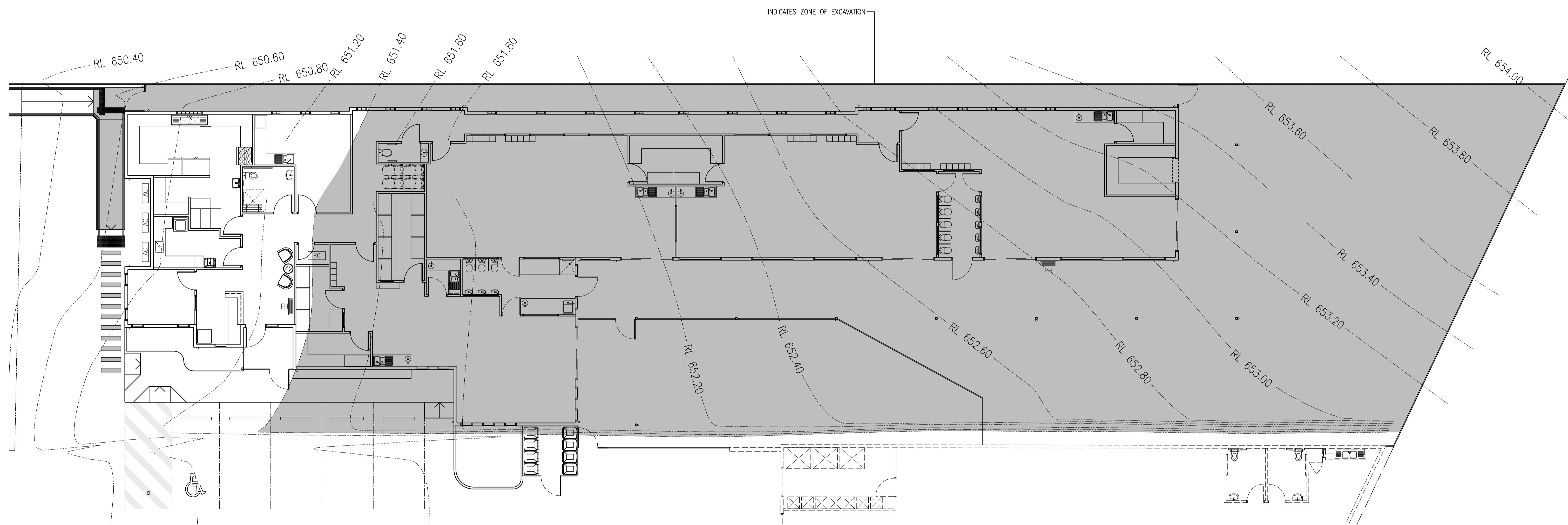


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| <b>FOR APPROVAL</b>  |  | Title<br><b>COLOURED UNENCUMBERED<br/>AREA LAYOUTS</b>                                  | Scale: 1:100<br>Job Number: <b>231370</b>  |
|  |  | Drawn: SD<br>Drawing Number: <b>A1.07</b>   | Date: 10.09.23<br>Issue: <b>A</b>  |



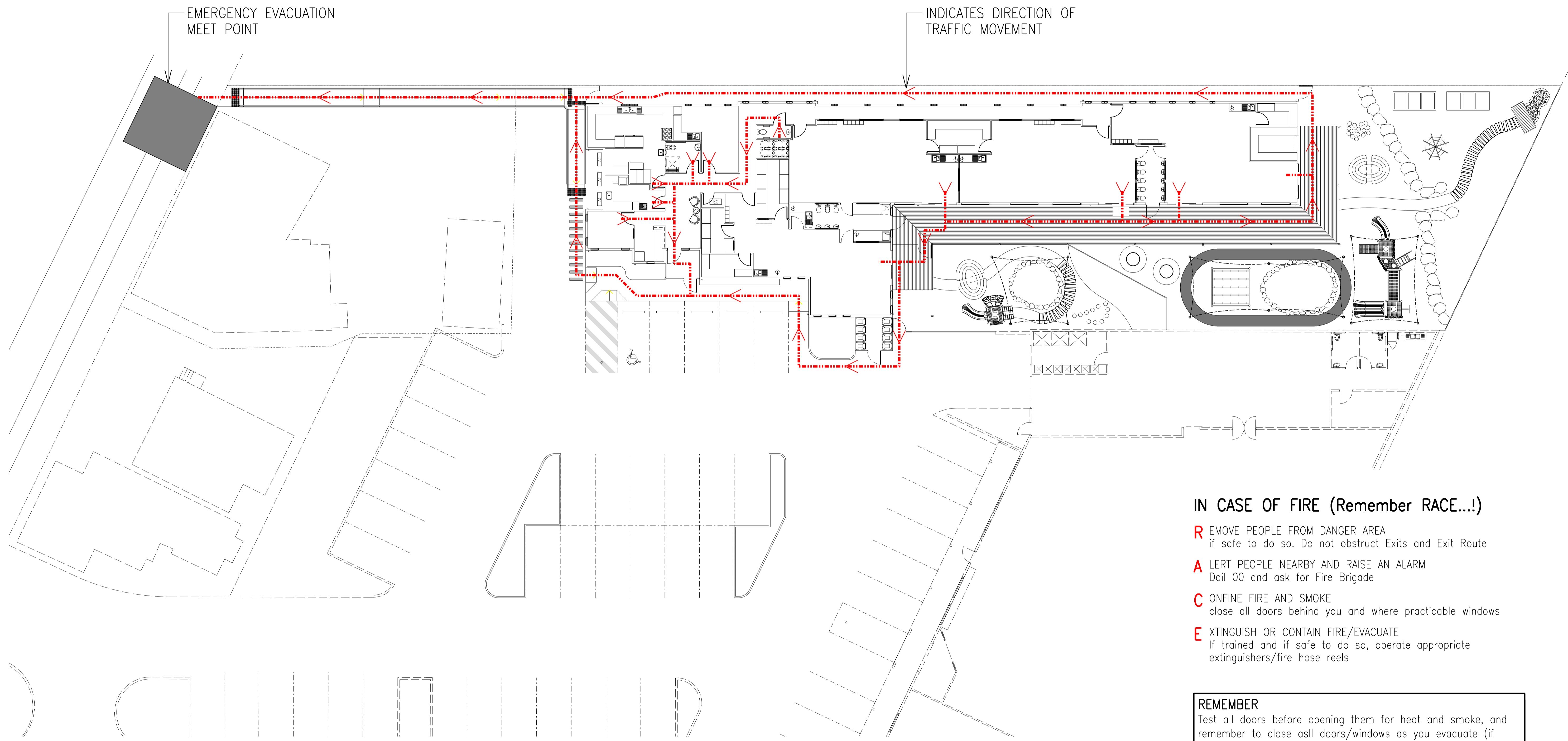
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| <p>Title: <b>SITE CUT AND FILL PLAN</b></p>  |  | <p>Scale: 1:100</p>   | <p>Date: 10.09.23</p>  |
| <p>Job Number: <b>231370</b></p>   |  | <p>Drawing Number: <b>A1.08</b></p>   | <p>Issue: <b>A</b></p> |
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EMERGENCY EVACUATION MEET POINT

INDICATES DIRECTION OF TRAFFIC MOVEMENT

# EMERGENCY EVACUATION PLAN

## IN CASE OF FIRE (Remember RACE...!)

- R**EMOVE PEOPLE FROM DANGER AREA  
if safe to do so. Do not obstruct Exits and Exit Route
- A**LERT PEOPLE NEARBY AND RAISE AN ALARM  
Dial 00 and ask for Fire Brigade
- C**ONFINE FIRE AND SMOKE  
close all doors behind you and where practicable windows
- E**XTINGUISH OR CONTAIN FIRE/EVACUATE  
If trained and if safe to do so, operate appropriate extinguishers/fire hose reels

### REMEMBER

Test all doors before opening them for heat and smoke, and remember to close all doors/windows as you evacuate (if safe to do so)  
Stay low to avoid the effects of smoke, use a cloth over your mouth (soak in water if available)  
GET OUT FAST, once you have spotted smoke or flames, alert others and evacuate the building via the closest safe exit route  
DO NOT re-enter the building once out. Stay out and await for assistance from the responding Emergency Services

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## Appendix C – Conceptual Site Model

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## C.1 Areas of Environmental Concern

Based on the findings of previous investigation (MA, 2023) completed at the Site, remediation of the AECs and associated COPCs detailed in Table 10 is required for soils.

**Table 10:** Potential contamination sources and associated COPC

| Source                               | Potential for Contamination  | COPC  |
|--------------------------------------|--|---|
| AEC A<br>Fill material and stockpile | Stockpile material and fill material of unknown origin were identified during the site geotechnical assessment. This is of particular significance if materials were sourced from locations of heavy industry, are a by-product of industrial processes, or include demolition debris contaminated with asbestos containing materials (ACM).   | Heavy metals (HM), total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, and xylene (BTEX), polycyclic aromatic hydrocarbons (PAH), organochlorine pesticides (OCP), organophosphorus pesticides (OPP), polychlorinated biphenyls (PCB), and asbestos |
| AEC B<br>Former dwellings, and sheds | Potential contamination may occur in areas of the site that is derived from still present old structures, and uncontrolled demolition of former dwellings and structures, whereby hazardous building materials (asbestos containing materials (ACM), lead-based paint) associated with demolition debris may exist in surface or near-surface soils.<br><br>Pesticides and heavy metals may have been used on structures for pest control. | HM, OCP / OPP and asbestos.   |
| AEC C<br>Electric power generator    | Potential contamination may occur due to fuel spills and long-term precipitation of after-combustion contaminants.   | Total recoverable hydrocarbons (TRH), benzene, toluene, ethylbenzene, and xylene (BTEX), polycyclic aromatic hydrocarbons (PAH),  |

**Notes:**

<sup>1</sup> HM – Heavy metals

AECs identified at the Site are presented in Appendix A (Map 02).

## C.2 Source - Exposure Pathway – Receptor Linkages

The CSM presented in the RAP has been refined from previous investigation findings (MA, 2022 & 2023) from the Site. Details of the refined CSM are presented in Table 11.

**Table 11:** Conceptual site model summary of source – exposure pathway – receptor linkage

| Item  | Description  |
|---|--|
| Media Affected by AECs and Mechanism of Contamination | <p>Soil is identified as the main media potentially impacted by contamination sources.</p> <p>Groundwater is unlikely to be impacted by the identified contamination sources and deep excavation potentially intercepting groundwater is not expected to occur onsite as part of any future development.</p> <p>Contamination mechanisms are considered to include ‘top-down’ impacts on near-surface soils. Based on the identified contamination sources, potential deeper sub-surface contamination releases are considered to be unlikely.</p> |
| Potential Receptors                                   | <p>Potential on-site human receptors include current and future site users (including adults and children) and visitors, as well as construction workers (during any future site development) and maintenance workers.</p> <p>Potential off-site human receptors include current and future users of adjacent land.</p> <p>Potential ecological receptors include flora and fauna that may inhabit the surrounding area.</p>   |
| Potential Exposure Pathways                           | <p>Potential exposure pathways include ingestion, dermal adsorption, and inhalation of dust (all COPC) and vapour inhalation from volatile COPC.</p> <p>Based on the identified contamination sources, the most likely exposure pathway during future education use of the site is considered to be direct contact with near surface soils and inhalation of volatile contaminants and airborne asbestos fibres during proposed construction works and future use of the site as a childcare facility.</p>   |

# Appendix D – Previous Investigation Laboratory Results Tables

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# Appendix E – Sampling, Analysis and Quality Plan

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## E.1 Data Quality Objectives

DQOs for validation activities have been prepared as statements that specifying the qualitative and quantitative data required to support established project decisions. The DQOs for the project, presented in Table 12 below, have been prepared in accordance with the guidance provided in NEPC (2013b) and NSW EPA (2020).

**Table 12:** Data quality objectives

| DQO Step   | DQO Output  |
|--|---|
| <p>Step 1<br/>Stating the problem</p>                | <p>It is understood that the current development proposal (Section 1.2) for the Site will involve the construction of childcare centre that will require bulk excavation for Site levelling purposes up to 3.0 mbgl.</p> <p>Contaminated soil (&gt;C16-C34 Fraction (F3) and benzopyrene TEQ) has been documented by MA (2023) within the Site's eastern portion where shallow fill are present. This contamination has been reported at levels exceeding Residential-B land use criteria and EILs, which may pose a potential risk to human health and ecological receptors. The CSM established for the remediation of contaminated soils, and provided in Appendix C, outlines the potential <i>source - exposure pathway - receptor</i> linkages that exist at the Site which could result in potential receptor exposure to contaminated soil.</p> <p>Remediation of contaminated soil is required to make the Site suitable for the proposed shop top residential (with limited access to soil) land use setting.</p> |
| <p>Step 2<br/>Identifying the decision(s)</p>        | <p>The decisions required to be made for the project will be based on the following questions:</p> <ul style="list-style-type: none"> <li>• Is the environmental data collected for the project, suitable for assessing relevant land contamination exposure risks?</li> <li>• Have contaminated soils been satisfactorily remediated that risks to Site receptors have been removed?</li> <li>• Is soil excavated during remediation works suitable for retention under site roadways, or does soil require disposal to a suitably licenced landfill facility?</li> <li>• Following the completion of remediation works, is the Site suitable for the proposed end land use?</li> </ul>  |
| <p>Step 3<br/>Identifying inputs to the decision</p> | <p>The inputs to the assessment include:</p> <ul style="list-style-type: none"> <li>• The proposed development and extent of bulk excavation.</li> <li>• Areas of soil contamination identified by previous investigation of the Site.</li> <li>• Remedial strategies to be employed to remove potential contamination risks to receptors posed by COPC in Site soil.</li> <li>• Observations made during remediation activities.</li> <li>• Soil samples collected to validate remediation undertaken.</li> <li>• The measured physical and/or chemical parameters of the media sampled (including field data and laboratory analytical results, where relevant).</li> <li>• Validation criteria for soil adopted to confirm successful remediation.</li> </ul>  |

| DQO Step                                       | DQO Output  |
|--|---|
| Step 4<br>Defining study boundaries            | The boundaries of the study are as follows: <ul style="list-style-type: none"> <li>• Lateral - defined by the IA boundary (see Appendix A (Map 01)). Also includes the extent of soil contamination at locations requiring remediation and sampling point locations to be used for validation sampling.</li> <li>• Vertical - limited to the depth of soil samples collected to validate successful soil remediation at each sampling point.</li> <li>• Temporal - sampling data collected relates specifically to the date that samples have been collected, and is likely to remain valid, as long as no activities occur on the Site which may result in land contamination and contamination does not migrate on to the Site from off-site sources.</li> </ul>  |
| Step 5<br>Developing decision rules            | The decision rules for this investigation are as follows: <ul style="list-style-type: none"> <li>• The 95% UCL of the arithmetic mean will be the key statistical parameter. Data evaluation will include:               <ul style="list-style-type: none"> <li>- The 95% UCL arithmetic mean to be <math>\leq</math> criterion.</li> <li>- No individual sample to exceed 250% of the criterion.</li> <li>- The sample standard deviation to be <math>&lt;</math> 50% criterion.</li> </ul> </li> <li>• If the maximum soil concentration for respective COPCs does not exceed the RAC, then the area can be confirmed as validated.</li> <li>• If the maximum soil concentration for respective COPCs exceeds the RAC, then soil remediation and offsite disposal will be required.</li> <li>• All material nominated for offsite disposal will be classified in accordance with NSW EPA (2014) Waste Classification Guidelines.</li> <li>• Material tracking is to be appropriately documented and waste disposal docketed validated.</li> </ul> |
| Step 6<br>Specifying limits on decision errors | Specific limits for this project will be in accordance with National and NSW EPA guidance.<br>The hypotheses for soil validation are: <ul style="list-style-type: none"> <li>• The null hypothesis is that the 95% Upper Confidence Limit (UCL) of the mean for COPC exceed RAC.</li> <li>• The alternative hypothesis is that the 95% Upper Confidence Limit (UCL) of the mean for COPC exceed RAC.</li> </ul> The acceptance of soil suitability will be based on the probability that concentrations of soil COPC are below investigation criteria that are made or approved by the NSW EPA, which will be treated as acceptable and indicative of soil being suitable for the proposed land use setting.  |
| Step 7<br>Optimising sampling design           | The project sampling design is detailed in Section 6 to ensure the necessary data is collected to validate remediation completed and confirm suitability of the Site for the proposed land use settings.  |

## E.2 Data Quality Indicators

To ensure that the data collected is of an acceptable quality, the data set will be evaluated against the data quality indicators (DQI) outlined in Table 13 which relate to both field and laboratory-based procedures.

**Table 13:** Data quality indicators

| <b>Data Quality Objective</b> | <b>Data Quality Indicator</b>   | <b>Acceptable Range</b>   |
|-------------------------------|---|---|
| Accuracy                      | Field – Trip blank (laboratory prepared)<br>Laboratory – Laboratory control spike and matrix spike          | < laboratory limit of reporting (LOR)<br>Prescribed by the laboratories           |
| Precision                     | Field – Blind replicate and spilt duplicate<br>Laboratory – Laboratory duplicate and matrix spike duplicate | < 30 % relative percentage difference (RPD [%])<br>Prescribed by the laboratories |
| Representativeness            | Field – Trip blank (laboratory prepared)<br>Laboratory – Method blank                                       | < laboratory limit of reporting (LOR)<br>Prescribed by the laboratories           |
| Completeness                  | Completion (%)  | -   |

# Appendix F – Site Management Planning Framework

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### **G.1 Overview**

Remediation works should be conducted in accordance with requirements detailed in a Construction Environmental Management Plan (CEMP) developed for site preparation and construction-phase of the development works. The works should also be performed in accordance with the City of Canada Bay Development Control Plan 2013 and any conditions of development consent.

The following sections are intended as a guide for information to be included in the above-mentioned plan.

### **G.2 Air Quality / Dust Control**

Dust control measures may be required at the site if excessive dust is generated. Dust control procedures may include:

- Cover of all soil loads entering or exiting the site.
- Use of water sprays across disturbed areas.

### **G.3 Erosion and Sediment Control Measures**

Erosion and sediment control measures will be required at the site in accordance with Landcom (2004) *Managing Urban Stormwater: Soils and Construction – Volume 1*. Measures are to be:

- Suitable for the proposed remediation works.
- Assessed, maintained and where necessary repaired throughout the duration of works.
- Appropriate for mitigating topsoil erosion, containing sediment within the site after works have been completed.
- Maintained onsite until all surface soils have been stabilised at the premises.

### **G.4 Site Access and Security**

Prior to works commencing, barricades shall be erected to control access to the designated work area, along the proposed remediation area boundary. Site security and access controls must remain in place during all onsite construction works.

### **G.5 Signage and Contact Information**

Security fencing and appropriate signage around all open excavations must be installed and maintained by the contractor.

A sign displaying the contact details of the contractor (including the onsite foreman or manager) shall be displayed for the duration of onsite works.

## **G.6 Traffic Control**

Prior to exiting the site, vehicles shall have wheels washed at a designated exit point to remove potentially contaminated soil that may have accumulated while onsite. Prior to leaving the site, during the decontamination phase, earthworks machinery is required to decontaminate upon plastic sheeting laid beneath vehicles, with all accumulated potentially contaminated soil removed. Plastic sheeting and contaminated soils collected should be disposed of with classified waste for subsequent offsite disposal.

## **G.7 Hours of Operation**

Onsite works are only permitted during the following hours outlined in the City of Canada Bay DCP 2013:

- Monday – Friday: 7:00 am – 6:00 pm.
- Saturday: 8:00 am – 1:00 pm.
- Sunday and public holidays: No work permitted.

In certain instances, these hours may be modified when the contractor has the approval of Council.

## **G.8 Worker Health and Safety Plan (WHSP)**

Worker health and safety of all onsite workers or visitors is the responsibility of the contractor. The purpose of a WHSP is to provide relevant health and safety information for all personnel working on or visiting the site.

The WHSP should include (but not necessarily be limited to):

- WHS legislative requirements.
- Hazardous materials identification (including fuel and chemical management).
- Induction requirements. All onsite personnel and visitors must be suitably inducted prior to entering the site.
- Location of worker facilities.
- Designation, delineation, and control of access to various work zones.
- Community notification.
- Roles and responsibilities.
- Training and competency.
- Hazard identification and risk assessment.
- Control measures including personal protective equipment (PPE).

- Incident and emergency response.
- Safe work method statement(s).
- Toolbox meetings.
- Audits and inspections.

## **G.9 WHS Legislation and Standards**

All onsite works should comply with the WHS Act, regulations, codes of practice, and with relevant Australian Standards. As a minimum, all work must comply with:

- Workplace Health and Safety Act 2011.
- Workplace Health and Safety Regulation 2017.
- AS 1940 (2017) – The Storage and Handling of Flammable and Combustible Liquids.
- AS 2436 (2010 R2016) – Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites.
- Managing the Work Environment and Facilities Code of Practice (December 2018).
- Managing Noise and Preventing Hearing Loss at Work Code of Practice (October 2018).
- Hazardous Manual Tasks Code of Practice (October 2018).
- Work Health and Safety Consultation, Co-operation and Co-ordination Code of Practice (May 2018).

### **G.9.1 Hazard Assessment**

A WHS hazards assessment is to be completed by the contractor and incorporated into the WHSP. Key hazards include:

- Onsite chemical hazards (storage of fuels, contaminated soils).
- Heat exposure for workers.
- Noise.
- Dust.
- Operation of heavy equipment.

### G.9.2 Worker Facilities

Prior to starting works, site workers and subcontractors involved in the project shall attend a site-specific safety induction.

Documented evidence of the safety induction must be available onsite. The contractor must supply site workers and subcontractors with appropriate PPE.

### G.9.3 Site Inductions

Prior to starting works, site workers and subcontractors involved in the project shall attend a site-specific safety induction.

Documented evidence of the safety inductions must be available onsite.

### G.9.4 Personal Protective Equipment

Table 14 below lists the personal protective equipment (PPE) required to prevent exposure to contaminants, in designated remediation work zone areas.

**Table 14:** Personal Protective Equipment

| Type               | Description                    | Requirement   |
|--------------------|--------------------------------|---|
| Head protection    | Hard hat                       | All site activities   |
| Eye protection     | Safety glasses                 | All site activities   |
| Hand protection    | Disposable nitrile gloves      | All site activities   |
|                    | Cut resistant gloves           | Manual handling activities  |
| Body protection    | High visibility clothing       | All site activities   |
|                    | Type 5 & 6 disposable overalls | All site activities   |
|                    | Sunhat, sunscreen              | All site activities   |
| Foot protection    | Steel toed boots               | All site activities   |
| Hearing protection | Ear plugs or earmuffs          | Site activities likely to generate potentially harmful noise levels |

Site personnel should be aware that personal protective equipment required to be worn may limit manual dexterity, hearing, visibility and may increase the difficulty of performing tasks. PPE places an additional strain on the user when performing work that requires physical activity.

Eating, drinking, chewing gum or tobacco, smoking or any practice that involves hand to mouth transfer increases the probability of ingestion of foreign matter into the body. Hands must be thoroughly washed before eating, drinking, or smoking. Clothing which becomes dirty from onsite work should be washed separately from other clothing.