Construction Environmental Management Plan (CEMP)

Roseville College

27 Bancroft Avenue Roseville

E-PLAN-03 (October 2021) | Approved by Andrew Andreou
Uncontrolled copy once printed.

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Contents

1. Introduction

1.1 Project Information Table

Project information table				
Project name	Roseville College			
Location	27 Bancroft Avenue, Roseville			
Client	Roseville College			
Duration of contract	18 Months			
Taylor contacts information				
Company name	Taylor Construction Group Pty Ltd			
ABN	25 067 428 344			
Address	Level 13, 157 Walker Street, North Sydney 2060			
Telephone and fax	Ph.: 02 8736 9000 Fax: 02 8736 9090			
Position	**Contact name**	**Phone numbers**		
Chief Executive Officer	George Bardas	02 8736 9000		
General Manager Refurbishment & Live Environments	Ben Folkard	02 8736 9000		
Senior Project Manager	Dean Fondas	0431 070 846		
Site Manager (24hr Contact)	Ben Langshaw	0423 325 254		
The Head Of WHS&E	Andrew Andreou	0404 492 614		
Safety Advisor				
Quality & Compliance Manager	Stephen Player	02 8736 9000		
Contract Manager				
Contract Administrator	Dylan Massad	0468 954 007		
Project Engineer				
Site Engineer				
Foreman	Brad Hanson	0439 725 742		
Cadet				
Document control	**Name**	**Position**	**Signature**	**Date**
Prepared by:	Dean Fondas	Project Manager		
Prepared by:	Ben Langshaw	Site Manager		
Reviewed by:	Andrew Andreou	Head of WHS&E		
Reviewed by:		Operations Manager		

Reviewed by:	Ben Folkard	General Manager – Refurbishment & Live Environments		

Revised by:	Revision #	Date	Changes made

1.2 Project Description

The Roseville College SWELL Centre project generally involves:

- Demolition of outdoor sports courts at 27-29 Bancroft Avenue;
- Demolition of a dwelling, ancillary structures and hardstand areas at 37 Bancroft Avenue;
- Tree removal and excavation works;
- Construction of a three-storey building, comprising:
    - 48 basement car parking spaces;
    - eight-lane swimming pool, associated concourse and grandstand;
    - gymnasium;
    - food technology space;
    - general learning areas;
    - change facilities, amenities and storage;
    - mechanical plant, on-site detention, filtration plant and chemical store; and
    - rooftop multi-purpose sports courts.
- landscaping; and
- signage.

The site is located on 29 and 37 Bancroft Avenue, Roseville:

1.3 Purpose of the Project Environmental Management Plan

Taylor Construction Group Pty Ltd has a documented Quality, Health, Safety and Environmental (QSE) Management System. While the management systems are integrated, key documents such as the Project Environmental Management Plan (PEMP), the Project Safety Plan (WHSP) and the Project Management Plan (PMP), overarching plan with Quality provisions) are developed as separate documents to give each area a strong individual focus. The 'hierarchy of system documents' diagram below provides an overview of where the PEMP fits in the management system hierarchy.

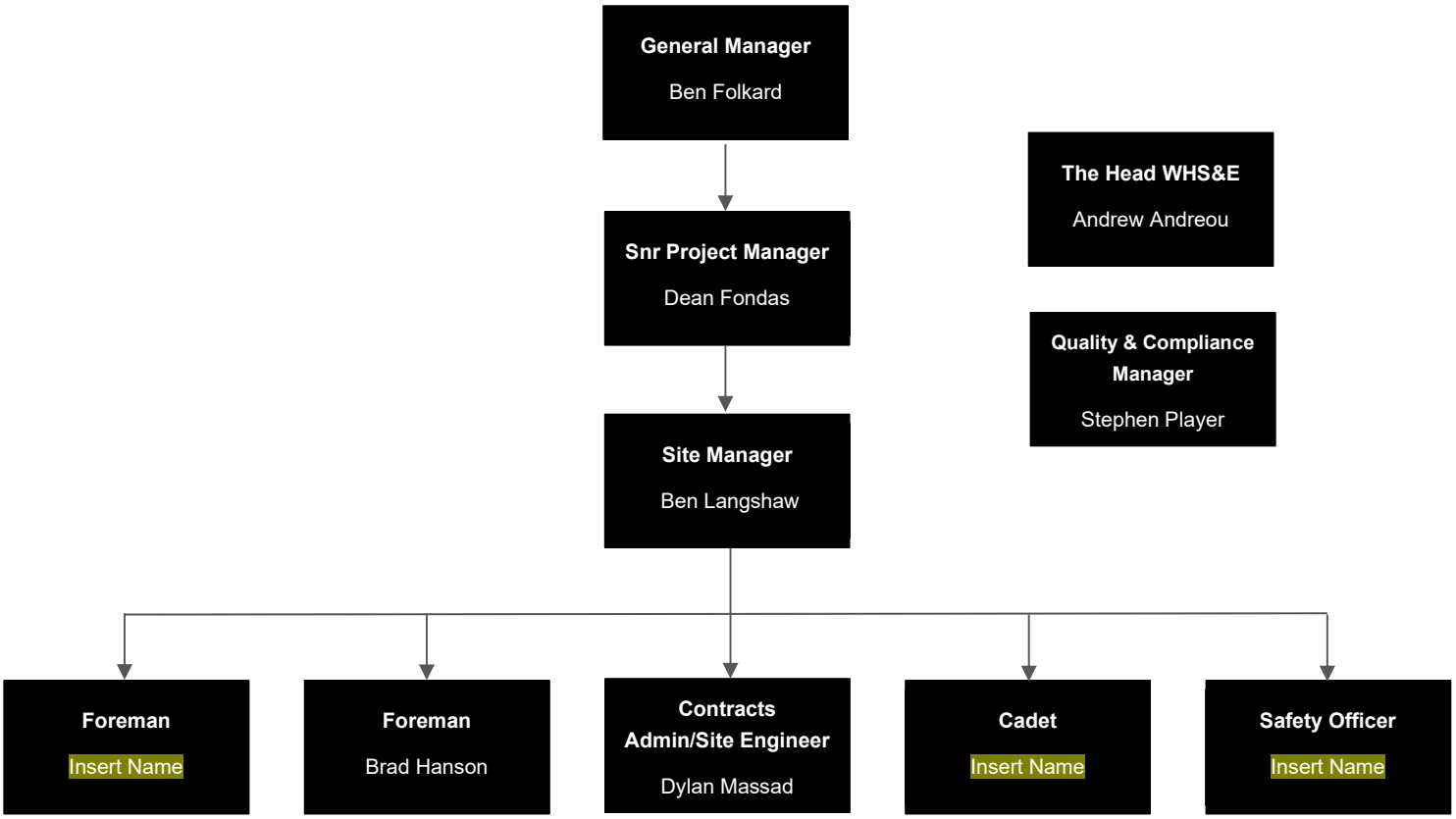
This document is a key component of the integrated QSE Management System and sets out the environmental management strategy to be adopted on site by Taylor Construction Group Pty Ltd as the principal contractor for works undertaken on this project. The purpose of this document is to provide guidance on the essential environmental requirements on a project level and reference to other important management system processes and procedures. A Project Environmental Management Plan must be prepared for each project managed by Taylor Construction Group.

The project-specific Environmental Management Plan is to be read in accordance with Taylor Construction Management Manual, Site Management Plan and Site Safety Plan.

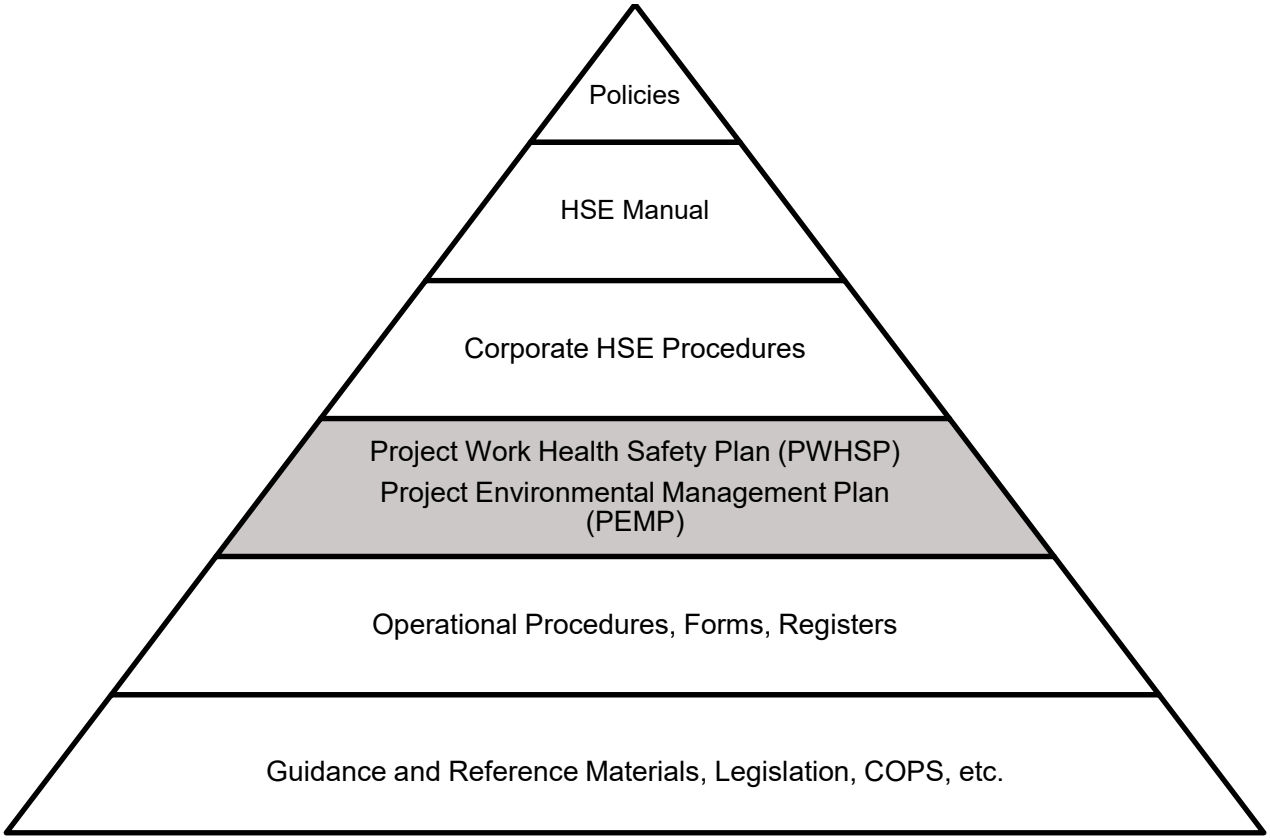
The plan addresses Condition B13 of SSD-9912 and includes information/requirements pertaining (but not limited) to the following elements:

Description	Reference
(a) Details of: i) Hours of work;	3.3 Development Consent Conditions
ii) 24-hour contact details of site manager;	1.1 Project Information Table
iii) Management of dust and odour to protect the amenity of the neighbourhood;	10.3.7 Air Quality Management
iv) Stormwater control and discharge;	10.3.2 Soil and Water Management / Sedimentation and Erosion Control
v) Measures to ensure that sediment and other materials are not tracked onto the roadway by vehicles leaving the site;	10.3.2 Soil and Water Management / Sedimentation and Erosion Control
vi) Groundwater management plan including measures to prevent groundwater contamination;	10.3.7 Groundwater Management
vii) External lighting in compliance with AS4282-2019 Control of the obtrusive effects of outdoor lighting; and	10.3.14 Construction Lighting
viii) Community consultation and complaints handling as set out in the Community Communication Strategy required by Condition B8	9.2 External Communications – Community & Appendix # 11
(b) A works methodology outlining protective measures for 31 Bancroft Avenue (Rose Cottage) and 39 Bancroft Avenue during the excavation and construction	10.3.16 Protective Measures to Surrounding Residents
(c) An unexpected finds protocol for contamination and associated communications procedure to ensure that potentially contaminated material is appropriately managed	10.3.10 Contaminated Land
(d) An unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure	10.3.13 Archaeology and Heritage Management
(e) Construction Traffic and Pedestrian Management Sub-Plan	Appendix # 8
(f) Construction Noise and Vibration Management Sub-Plan	Appendix # 9
(g) Construction Waste Management Sub-Plan	Appendix # 10
(h) Construction Soil and Water Management Sub-Plan	Appendix # 13

1.4 Project Organisational Structure



2. Hierarchy of HSE System Documents



QSE System documents can be found on SharePoint under the Taylor Management System (TMS), within the 'Quality' and 'HSE' folders.

The management system structure:

- Corporate
- QSE manual
- Corporate policies
- Corporate (system) procedures
- Forms and templates
- Registers and matrices
- Objectives and targets
- Organisational charts
- Certificates/ accreditations
- Training material.

HammerTech is a cloud-based software platform will used to enable teams to manage their processes effectively and maintain uniformly across all projects. This includes the collating and storing of:

- Onboarding and inductions
- Safety plans / SWMS / risk assessment
- Permits
- Pre-start and toolbox talks
- Equipment and maintenance records / schedules
- Personnel training records / competencies / licences

- WHS&E inspections / audits
- Accident and incident
- Attendance (site diaries).

HammerTech can also be used to send out news bulletins and updates to individuals advising of alerts, meetings, industry news and updates to site rules and procedures.

Environmental Policy

Taylor has an Environmental Policy outlining our commitment to protection of the environment. This policy can be found in Appendix 2 of this document. A copy of the Environmental Policy is to be posted on the walls or notice board at the project site.

3. Legal and Other Requirements

The processes for identifying and keeping up to date with legal and other requirements are outlined in the **Legal and Other Requirements Procedure SE-P-01**.

An **Environmental Legal and Other Requirements Register E-R-01** has been prepared and is periodically updated to ensure that it reflects current legal requirements. This register identifies the key relevant legislation and guidelines and should be attached to this plan in Appendix 7.

3.1 Environmental Factors

Factor	Objectives	Requirements
Noise Management*		
Noise/ vibration	Protect the amenity of nearby residents from noise/ vibration impacts resulting from activities associated with the proposed or existing development by ensuring that noise/ vibration levels meet statutory requirements and acceptable standards.	Identification of sources of noise/ vibration and estimates of project-wide noise. Ensure that noise and vibration levels meet acceptable standards and that an adequate level of service, safety and public amenity is maintained. Propose measures to manage and/ or mitigate impacts.
Water Management*		
Surface water quality	Maintain or improve the quality of surface water to ensure that existing and potential uses, including ecosystem maintenance, are protected.	Details of site drainage, hydrocarbon use, disposal of plant site waste (including sewage), dewatering, and fate of water used/ pumped. Incorporate measures and/ or operating procedures to ensure that storm water run-off from the site reflects patterns, volumes and quality that exist prior to development, as far as reasonably practicable. Drainage lines are to be naturalised as much as possible and should enhance the ecological values and recreational opportunities. Propose measures to manage and/ or mitigate impacts.
Groundwater quality	Maintain or improve the quality of groundwater to ensure that existing and potential uses, including ecosystem maintenance, are protected.	Describe water requirements for any on-site processing. Incorporate measures and/ or operating procedures that will minimise the demand of the development on potable water supplies. Ensure that no contaminated water, including those containing sediments, leaves the site. Propose measures to manage and/ or mitigate impacts.
Air management		
Air	Ensure that potential air pollutants are contained and that activities do not impact on the natural environment.	Identify sources of air pollution. Propose measures to manage and/ or mitigate impacts.
Particulates/ dust	Ensure that particulate/ dust emissions, both individually and cumulatively, meet appropriate criteria and do not cause an	Identification of sources of particulates/ dust and estimates of project-wide emissions. Propose measures to manage and/ or mitigate impacts.

	environmental or human health problem.	
Odour	Ensure that operations do not generate odour that causes environmental nuisance.	Identification of sources of odour and estimates of project-wide emissions. Propose measures to manage and/ or mitigate impacts.
Waste Management		
Solid/ liquid waste	Ensure that wastes are contained and isolated from land, ground and surface water surrounds and treatment or collection does not result in long-term impacts on the natural environment.	Identify sources of solid and liquid waste and estimate the proposed amount generated. Propose measures to manage and/ or mitigate impacts.
Contaminated Land and Water		
Land	Ensure that existing or proposed activities do not discharge to land.	Identify activities that have the potential to discharge to land. Propose measures to manage and/ or mitigate impacts.
Surface water	Ensure that existing or proposed activities do not discharge to surface waters.	Identify activities that have the potential to discharge to surface waters. Propose measures to manage and/ or mitigate impacts.
Groundwater	Ensure that existing or proposed activities do not discharge to groundwater.	Identify activities that have the potential to discharge to groundwater. Propose measures to manage and/ or mitigate impacts.
Hazardous Materials Management		
Scheduled wastes	Ensure scheduled wastes are specially treated for their destruction.	Identify scheduled wastes and describe treatment of their destruction. Propose measures to manage and/ or mitigate impacts.
Resource storage	Ensure that chemicals and other potentially harmful resources used in the manufacturing process are stored and disposed of correctly.	Describe the use and management of chemicals and other potentially harmful resources. Propose measures to manage and/ or mitigate impacts.
Compressed/ liquid gas	Ensure the suitable storage of compressed/ liquid gas.	Describe the use and management of compressed/ liquid gas. Propose measures to manage and/ or mitigate impacts.

3.2 Specific Undertaking from Formal Environmental Impact Assessment

N/A

3.3 Development Consent Conditions

Consent working hours are:

Day	Start Time	Finish Time
Monday to Friday	7.00 am	6.00 pm
Saturday	8.00 am	1.00 pm
Sunday and Public Holidays	NO WORK	

Other relevant consent conditions.

- Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:

  (a) 9.00 am to 12.00 pm, Monday to Friday;

  (b) 2.00 pm to 5.00 pm Monday to Friday; and

  (c) 9.00 am to 12.00 pm, Saturday.

- Construction vehicle movements are to cease during the school drop-off (7.45am to 8.30am) and pick up (2.45pm to 3.30pm) periods on school days.

4. Environmental Risk Identification and Assessment

Standard ISO 14001 requires that environmental aspects relating to the organisation's activities, products and services are identified and those aspects that can have a significant impact on the environment, determined. At Taylor, the environmental aspects relating to general construction activities have been identified through a risk assessment workshop attended by key project and site managers and an environmental consultant. The aspects, impacts, risk assessment outcomes and generic controls are documented in the **HSE Risk Register HSE-R-01**. Detailed requirements for risk assessments (environmental and OHS) are described in **Risk Assessment Procedure SE-OP-03.**

4.1 Environmental Risk Assessment

The methodology for risk assessments is based on the requirements described AS/NZS 4360 (Risk Assessment) and HB203 (Environmental Risk Assessment).

Taylor's procedure requires an initial Project Risk Assessment to be undertaken at the commencement of each project. The risk assessment is to be conducted in the form of a workshop and is to include the Project / Site Manager, HSE Manager, key members of the project team and, to the extent required, key subcontractors, and is to be recorded on form **HSE-R-01 HSE Risk Register**.

The HSE Risk Register is to be developed to address both legal and other requirements covered in this plan and is to be referenced to implement systems and work practices that will eliminate or minimise the likelihood of injury, illness or incident occurring.

When developing the project HSE Risk Register, members of the workshop will take into consideration available information which is relevant to the works and is contained in any published copies of the below documents:

- HSE acts.
- WHS regulation.
- Australian / National Standards.
- Codes of practice.
- Available internal and external industry bulletins/ alerts.
- Industry reports.

This will ensure members of the workshop identify and document any known or foreseeable hazards associated with that task.

The completed Environmental Risk Assessment can be found in Appendix 13 of the project HSE Plan (**WHS-PLAN-02**).

References:

- SE-P-03 Risk Assessment Procedure.

5. Objective and Targets

Objectives and targets are set at a corporate level. They are monitored and measured to ensure that Taylor continually improves our environmental performance. To ensure that we meet our corporate objectives and targets, key performance indicators (KPIs) are set at a project level and reported to management monthly.

Objectives	Targets
Effective site environmental controls.	— Achieve alignment with Taylors and Client expectations in relation to best practice control measures. — Fulfil environmental obligations.
Increase amount of waste being recycled, reduce waste cost.	— Eighty-five per cent (85%) of waste to be recycled.
Environmental performance.	— Zero major environmental incidents and no breaches. — Zero infringement notices. — All environmental spills to be reported to Taylor Construction within 2 hours of occurrence. — Environmental inspection competed weekly and documented in **SE-F-02 HSE Inspection Checklist** (more often if required).
Reduce the amount of environmental impact our operations have on the environment.	— Environmental issues identified and controlled prior to causing negative impacts on the project or on the environment.
Effective implementation of the environmental system.	— Eighty per cent (80%) or better internal audit results. — Full compliance with planning approval requirements.
Community issues carefully handled.	— Zero valid complaints. All complaints reported to Taylor's representative.

6. Roles and Responsibilities

All persons working for and on behalf of Taylor have responsibilities in relation to ensuring that environmental issues are appropriately managed. Generic WHS and environmental responsibilities are outlined in the **Roles, Responsibilities and Authorities Procedure QSE-P-06.**

Subcontractors

The subcontractor shall be required to comply with all applicable work health, safety and environmental legislation, including any additional Taylor's requirements, whilst engaged on a Taylor-managed project. The subcontractor shall be responsible to communicate any relevant environmental information to their personnel (workers) who are engaged in carrying out the work or providing material to the job site, including any secondary subcontractors or sole traders engaged by them and approved by Taylor.

Subcontractor's minimal environmental requirements:

- Has the subcontractor identified in the SWMS environmental hazards and controls in relation to the work task (where required), i.e. refuelling plant and equipment on site, nuisance dust controls, nuisance noise, waste management (off-cuts), rubbish, concrete wash-out?
- Have hazardous substances or dangerous goods to be used on site by the subcontractor been identified?

  Note: the subcontractor will need to provide copies of relevant Safety Data Sheets (SDS) for all materials and/ or hazardous substances or dangerous goods to be used on site and note reference to training of employees in the SDS prior to first use and controls listed in the SWMS.

Taylor Construction Personnel

For this project, the key roles and specific responsibilities of our managers, supervisors, and site personnel regarding environmental management on site are outlined below. Project-related management and staff are required to sign off that they have read and understood their responsibilities.

6.1 Directors

Directors are responsible for:

- Defining Taylor Construction workplace WHS&E policies and setting their objectives.
- Acquiring and keeping up to date with knowledge of environmental matters relevant to the organisation.
- Gaining an understanding of the nature of the operation of the business or undertaking and general environmental issues associated with those operations.
- Providing leadership that promotes and maintains Taylor's determination to continually improve its performance in workplace health safety and the environment.
- Demonstrating genuine interest in workplace health and safety and the environment; supporting all project teams to encourage incident prevention.
- Ensuring that there is available for use and used by those engaged in the business or undertaking, appropriate resources and processes to eliminate or minimise risks to the environment and non-compliance with licences during the conduct of the business or undertaking.
- Ensuring that people engaged in the business or undertaking have appropriate processes for receiving and considering information regarding environmental incidents, hazards, and risks, and respond in a timely way to that information.
- Ensuring that those engaged in the business or undertaking have in place and implement processes for complying with any duty or obligation of the organisation under the Act, including complying with licence conditions and notices served.

6.2 Chief Executive Officer

The Chief Executive Officer's responsibilities include:

- Informing the board of all events within, or which reasonably should be within, his/her knowledge or awareness, which may or do have a material impact on the organisation's activities or well-being.
- Monitoring and interpreting the external environment in order to continually position the organisation in its markets to best advantage.
- Maintaining awareness of political, governmental, business and industry components of the external environment, on a local, national, and international level.
- Reviewing environmental objectives and targets to ensure compliance with our environmental commitments and achieve continuous improvement in our environmental performance.
- Working proactively with our clients, regulators, and other community stakeholders to enable environmental issues to be addressed at an early stage of development.
- Monitoring the activities which are undertaken by employees and subcontractors are done so in a manner that is consistent with the principles of ecologically sustainable development.
- Overseeing the implementation of company procedures and policies that will prevent pollution and reduce adverse environmental impacts of our activities on the natural, built, and cultural environment.
- Setting realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy –avoid, reduce, re-use, recycle and finally dispose.
- Identifying alternative, financially viable and sustainable courses of action to minimise environmental impacts.

6.3 Operations Manager

The Operations Manager is responsible for:

- Defining Taylor Construction WHS&E policies and setting their objectives.
- Ensuring project teams compliance with any licence, permit, notice or order from the EPA. For example, failure to have a monitoring program at a licensed site is a breach of your licence.
- Owning and understanding the key project environmental issues involved.
- Gaining an understanding of the operations of the business and the hazards and risks involved.
- Promoting and overseeing procurement standards for goods and services that help minimise environmental hazards.
- Ensuring information regarding incidents, hazards and risks is received responded to in a timely way.
- Ensuring the PCBU has implemented processes for complying with any legal duty or obligation.
- Being fully briefed of the safety status of all current Taylor Construction projects.
- Supporting and consulting employees and subcontractors on environmental performance.
- Setting targets and allocating priorities for workplace health and safety matters for all Taylor Construction staff.
- Leading by example in all matters concerning workplace health and safety.
- Conducting or participating in periotic environmental compliance inspections and or audits.
- Where required, engaging with the local community to understand their environmental concerns and impacts linked to the organisation's operations.
- Where events or non-compliance occurs, all reasonable and appropriate precautions are reviewed and as necessary, ensure new controls are designed and implemented.
- Examining whether risk management and other environmental compliance / systems requirements have been effectively reported to the general manager.
- Participating in periodic compliance inspections / audits to review the effectiveness of management structures and risk controls for environmental performance are appropriate and remain effective.

6.4 General Manager

The General Manager is responsible for:

- Demonstrating genuine interest in workplace health, safety, and environment; supporting all project and site managers to encourage incident prevention and compliance.
- Assessing and allocating appropriate resources and equipment within the company for the effective implementation of the workplace health, safety and environmental management systems and the management of WHS&E related hazard/ risks relevant to the construction projects.
- Being fully briefed of the WHS&E performance and compliance of all current Taylor projects.
- Assisting in the development and implementation of continuous improvement processes for workplace environmental management

Specific roles:

- Ensure the implementation and overall effectiveness of the Taylor environmental, health and safety programs.
- Provide visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken. Participate in WHS&E meetings and consultation regarding workplace health safety and environmental matters.
- Consider workplace health safety and environment matters with other senior members of the organisation as part of normal business practice and incorporate WHS&E into meeting agendas.
- Allow appropriate budget allocations for WHS&E management and improvement.
- Encourage and promote safety within the company by participating and openly consulting with employees in respect to their health and safety.
- Follow up with the WHS&E Manager and site teams on any compliance breaches or external authority notices issued to projects and or subcontractors.
- Report on critical incidents which then embed lessons learnt and system improvement will demonstrate the board's commitment to environmental responsibility.
- Participate in periodic compliance inspections / audits to review the effectiveness of management structures and risk controls for environmental performance are appropriate and remain effective.

Name:	Ben Folkard
Signed:	
Date:	

6.5 Construction Manager

The Construction Manager is responsible for:

- Demonstrating genuine interest in workplace health and safety; supporting all the project/ site managers to encourage environmental incident prevention.
- Assessing and allocating appropriate resources and equipment within the company for the effective implementation of the workplace health safety and environment management system and the management of WHS&E related hazard/ risks relevant to the construction projects.
- Confirming that legislative obligations are met, and that Taylor's Environmental Policy is effectively implemented throughout all company construction projects under their control.
- Ensuring compliance with Taylor's accredited QSE systems is maintained and implemented across all Taylor managed projects under their control.

Specific roles:

- Provide leadership in the development of project teams to ensure the fostering of the business culture and approach to doing business with our clients, consultants, and subcontractors.
- Attend sites on a regular basis to ensure compliance with workplace environmental and programming requirements of both the head contract and the company' systems.
- Provide visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters.
- Encourage and promote environmental compliance within the company by participating and openly consulting with employees in respect to their health and wellbeing.
- Ensure that Project / Site Manager have developed and implemented systems, which will ensure subcontractors/ suppliers engaged by the company comply with the health safety management and environmental systems and the relevant HSE legislation.
- Consider workplace health safety and environmental matters with other senior members of the organisation as part of normal business practice and incorporate WHS&E into meeting agendas.
- Support the WHS&E Manager in ensuring Project / Site Managers have developed and implemented systems which will ensure subcontractors and suppliers engaged by the company comply with the WHS&E management systems and the relevant legislation.
- Respond to non-conformance by any member of the company who fails to discharge their duties as set by the Responsibility Statement and actively participate in dispute resolution where required.
- Allow appropriate budget allocations for WHS&E management and improvement.
- Facilitate a systematic approach of workplace health, safety and environment identification, and assessment and facilitate control and monitoring of related risks that may arise through both normal and adverse operating conditions.

Name:	N/A
Signed:	
Date:	

6.6 Project Manager

The Project Manager is responsible for:

- Ensuring that environmental, health and safety obligations are carried out by everyone working in their operations.
- Communicating to employees, workers, and visitors that health and safety and concern for the environment are top priorities on Taylor projects and that everyone shares in the obligation to perform work in a safe, healthful, environmentally protective manner.
- Analysing work procedures to identify hazards; ensure measures are implemented to eliminate or control those hazards.
- Ensuring safe operating procedures are in place and are observed.
- Curtail or stop work being carried out under their authority if they reasonably believe that continuation of the work poses an imminent danger to health or safety. Upon directing that work be curtailed or stopped, if the situation cannot be corrected immediately, the Manager must notify the WHS&E Manager
- Ensuring that self-assessment inspections are performed regularly, that records are retained and that deficiencies identified in any inspection (self-assessment or HSE inspections) are addressed.
- Consulting with Taylor's Construction Manager and HSE Manager to ensure enough resources are allocated to the project to comply with legislative and Taylor's WHS&E requirements.
- Ensuring compliance with safety legislation, regulations, licensing conditions and authorities' requirements relevant to all construction work.
- Ensuring Taylor's site supervision is maintained throughout all hours of operation and those assigned with supervisory roles are competent and authorised to do so (e.g., PM, SM, or foreman).
- Ensuring incidents are investigated and appropriate action taken as required by Taylor's site safety plan requirements in consultation with the WHS&E Manager.
- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in health and safety meetings and consultation regarding WHS&E matters.
- Ensure safety notices issued and/ or visits made to the project by industrial representatives and/ or SafeWork NSW are reported to both the Managing Director and WHS&E Manager.
- Selecting appropriate subcontractors, giving due regard to their ability to comply with legislative and Taylor's WHS&E requirements.
- Participating in at least one formal site HSE inspection per month on a project under their control.
- Reporting back to Taylor's senior managers on project HSE incidents, any external authority visits and/ or Notices issued by external authorities.
- Overseeing the development and implementation of a site evacuation and emergency procedures and overseeing at least one spontaneous evacuation drill every six months and assessing the results of that drill.
- Supporting the Site Manager in the management of employee, subcontractor, and supplier's performance in complying with Taylor's environmental plan and the site-specific rules for the project.
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for their project and participate in emergency drills.

Name:	Dean Fondas
Signed:	
Date:	

6.7 The Head Of WHS&E

The Head Of WHS&E is responsible for:

- Overseeing the development and implementation of Taylor policies and procedures related to environmental health and safety and that provide additional support for environmental.
- Developing and maintaining electronic systems and technology solutions related to environmental health and safety.
- Disseminating information and providing guidance regarding compliance with federal, state, and local regulations and Taylor policies and procedures.
- Providing guidance, direction, and oversight to help ensure adherence to federal, state, and local regulations and Taylor policies and procedures instituted to protect the health and safety of employees, workers, visitors, and the environment.
- Overseeing the implementation of Taylor's health, safety and environmental management systems throughout all Taylor activities.
- Ensuring that a systematic internal reporting system exists to guarantee that information about environmental hazards and unsafe practices is promptly conveyed to senior management and acted on.
- Maintaining good relationship with government regulatory authorities.
- Setting targets and allocating priorities within the framework of the QSE System.
- Safeguarding compliance and maintenance of the company's third-party accreditations.
- Planning and delivering training in environmental management and/ or arranging for the appropriate internal or external trainers/ facilitators to conduct the training.
- Researching, developing, and implementing new procedures and forms, and updating the manual as required.
- Reviewing, analysing, and reporting on safety and environment project performance to Taylor's managing director, sector managers and any party as arranged by the managing director.
- Ensuring compliance with environmental legislation, regulations, licensing conditions and authorities' requirements.
- Ensuring Taylor's workplace health safety and environment performance is reviewed on a regular basis (i.e., arranging for internal and external audits).
- Ensuring that periodic audits of the effectiveness of management structures and risk controls for environmental performance are conducted.
- Reviewing internal and external (independent) audit reports and, in consultation with the directors and the project manager, develop appropriate action plans if necessary.
- Identifying environmental hazards, assessing risks and in consultation with project teams select risk control measures for site-specific situations.
- When required, acting as the lead investigator in workplace incidents/ accidents, liaise with external authorities in managing them and report back to managing director and/ or sector managers on outcomes of investigations.
- Ensuring WHS&E policies and procedures are implemented on all projects and that a specific site environmental plan is prepared and implemented for all projects.

Name:	Andrew Andreou
Signed:	
Date:	

6.8 Project Safety Advisor

The Project Safety Advisor is responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters.
- Ensuring workplace hazards and environmental, health and safety-related policies and procedures are communicated to employees, workers, and visitors.
- Assisting the WHS&E manager and project teams in implementing Taylor's health, safety and environmental procedures, policies, and project systems in line with best practice and the relevant statutory legislation.
- Reporting any serious environmental incident or near miss and unexpected finds immediately to the WHS&E manager.
- Safeguarding compliance and maintenance of the company's third-party accreditations.
- Assisting project teams and subcontractors in meeting their workplace health safety and environmental obligations.
- Ensuring compliance to this project environmental plan.
- Monitoring subcontractor's compliance with the site environmental plan, and subcontractor compliance to their Safe Work Method Statements by conducting regular task observation/ audits.
- Undertaking regular workplace inspections to identify hazards and unsafe/ unhealthy workplace conditions and practices.
- Being familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.
- Assisting the Site Manager / Foreman in the supervision of subcontractors.
- Ensuring WHS&E items identified by safety inspections and or audits are rectified within specified timelines in consultation with the Site manager, and subcontractors.
- Reporting incidents and/ or identified environmental hazards and appropriate risk control measures to line managers.
- Ensuring all workplace health and safety and environment documents are maintained and filed in accordance with Taylor's filing requirements.
- Coordinating or conducting site toolbox talks and ensure subcontractors regularly consult with their employees on matters relating to environmental issues.
- Liaising with the Project / Site Manager to implement controls on hazards identified.
- Completing Safe Work Method Statement checklists for the site (task observation).
- Collating completed contractor required forms, authority to work permits and checklists.
- Acting site safety representative for the site (unless another person has been elected to perform this role as per the consultation statement S-F-04 WHS Consultation Statement).
- Other HSE and/ or CW's issues or activities that may require their attention.

If no safety advisor is allocated to the project, the roles and responsibilities mentioned above are to be allocated to alternative Taylor Construction persons engaged on the project who are competent or have been suitably trained to fulfil these duties.

Name:	
Signed:	
Date:	

6.9 Site Manager

The Site Managers are responsible for:

- Providing visible commitment to a safe and healthy work environment by ensuring regular reviews are undertaken, and by participating in safety and health meetings and consultation regarding WHS&E matters.
- Facilitating the process to ensure the project team and the WHS&E manager are consulted and participate in the development of the project specific WHS&E risk assessment. This is to be done prior to such activities commencing.
- Ensuring that prior to the works commencing a formal assessment of the emergency control equipment requirements has been completed and that these remain effective throughout the duration of the project. (e.g., first aid, nurse call, emergency warning alarms, fire extinguishers, spill kits, lighting, and signage)
- Ensuring workplace hazards and environmental, health and safety-related policies and procedures are communicated to employees, workers, and visitors.
- Ensuring individuals working in their operations have the proper safety equipment and personal protective equipment to perform their work safely.
- Leading or participating in formal site safety inspections weekly and record results using **SE-F-02 HSE Inspection Checklist**. Daily informal inspections should be noted in site diary.
- **Unexpected finds** – ensure all unexpected finds are treated, reported, and managed in accordance with Taylor's unexpected finds procedure.
- **Environmental controls** – ensure all environmental controls (sediment and erosion, noise, hours of operation, etc) as mentioned by permits or building approvals are adhered to and workers are advised of these requirements during the site induction process.
- **Emergency Response and Training Plan** – contribute to the development of the ERP, ensure that all employees, workers, and others know about the plan, and communicate the importance of participating in drills and otherwise following procedures set out in the plan.
- **Groundwater protection Program** – report any hazardous materials or other pollutants spilled to or discovered in soil or groundwater to EH&S for appropriate emergency or non-emergency clean up.
- **Hazardous material and waste management** – inform employees and workers that hazardous materials and hazardous waste, except as expressly authorized by regulations, licenses or permits, may not be disposed of via the sewer system, or other unsafe or environmentally damaging routes; and to stress the importance of proper hazardous material/waste management.
- **Training** – ensuring that everyone working in their operations is appropriately trained to identify and mitigate potential hazards. Ensure that work requiring training is performed only by persons who have received the proper training.
- **Hazardous spill response** – upon request, provide assistance in hazardous material spill clean-up, preparing written reports about reportable releases and notifying appropriate persons about reportable spills.
- **Noise monitoring and hearing conservation** – conduct noise surveys to determine exposure levels.
- **Environmental procedures / permits** – ensure activities requiring internal and or external permit or approvals do not commence until permit or approval has been formally granted the user has the responsibility for providing relevant information to obtain permits, meeting permit conditions, and any responsibility. Taylor site management shares in the responsibility to advise those performing the works of Taylors procedure and permit requirements.
- Ensuring WHS&E items identified by safety inspections and or audits are rectified within specified timelines in consultation with the Project Manager, Project Safety Advisor and subcontractors.
- Ensuring that all plant and equipment used on Taylor sites are environmentally safe, correctly maintained and that the operator is appropriately licensed or qualified to operate and or use that equipment.
- Utilising experience and judgement to shut down and/ or evacuate any part of the site if a major health and safety and environmental risk occurs.
- Reviewing, coordinating, and implementing emergency evacuation procedures and participating in drills at specified intervals (quarterly).

Name:	Ben Langshaw
Signed:	
Date:	

6.10 Site Foreman

The Site Forman is responsible for:

- Implementing, through consultation with the Project Manager, the site environmental plan and procedures in accordance with WHS&E legislation, regulations, codes of practice, Australian Standards and/ or other statutory requirements.
- Ensuring no work is undertaken on site until the relevant SWMS has been reviewed and signed off in accordance with form **SE-F-14 Safe Work Method Statement Review Form**.
- Monitoring subcontractor's compliance with the site environmental plan and subcontractor's compliance to their Safe Work Method Statements by conducting regular task observation /audits.
- Ensuring all workers and, if required, visitors, are site-inducted and aware of any environmental compliance obligations.
- Assisting with implementing and undertaking formal and proactive consultation measures between the project team and subcontractors.
- Ensuring items identified by environmental or system audits findings are rectified and closed out within specified timelines in consultation with the project manager, site manager, site safety advisor and subcontractors.
- Consulting with all persons on environmental issues, including changes to the workplace layouts and access egress points, and encourage the involvement of all personnel in achieving a safe and healthy site.
- First response in managing site-specific workplace environmental issues in the first instance, and discussing these with the project manager, site manager and/ or site safety advisor as required.
- Assisting the site manager with developing, planning, implementing, and reviewing site-specific emergency and evacuation procedures.
- Identifying any environmental hazards and assessing any risks on site and implementing risk control measures.
- Leading or participating in formal site safety inspections weekly using form **SE-F-02 HSE Inspection Checklist**. Note: informal inspections should be noted in site diary.
- In consultation with the Project Manager and Senior Site Manager, and utilising experience and judgement, shut down and/ or evacuate any part of the site if a major environmental risk or situation occurs.
- When requested by the Site Manager participate in any environmental incident and assist with the investigating, recording, and reporting,
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.
- Monitoring the use of personal protective equipment (PPE) by site personnel.
- Where requested by the Site Manager, assist with monitoring of environmental issues (e.g., dust, noise, air quality)
- Assist the Site Manager with reviewing, coordinating, and implementing emergency evacuation procedures and participating in drills at specified intervals, minimum every six months.
- Ensuring that all plant and equipment used on Taylor sites are environmentally safe to use, appropriately maintained and that the operator is correctly licensed or qualified for operating that equipment.

Name:	Brad Hanson
Signed:	
Date:	

6.11 Contract Administrator / Site Engineer

The Contract Administrator and Site Engineer's responsibilities are to:

- Support the Project Manager and Site Manager in the management of employee, subcontractor, and suppliers' performance in complying with Taylor WHS&E and the site-specific rules for the project.
- Assist the project/ site manager to ensure the site environmental plans and associated documentation, including standard forms, procedures, and templates, remain current and up to date.
- Where required, assist the project and site manager with site inductions.
- Include in subcontract agreement the requirement for subcontractors to carry out their works in accordance with the company's or subcontractor's approved QSE plans.
- Forward to subcontractors a copy of HSE subcontractor requirement, **Contractor's HSE Requirements QSE-F-15.23** (letter template), ensuring this is completed and returned by subcontractor prior to commencing.
- Discuss with the subcontractors, at the tender interview stage, their obligation for managing HSE requirements by issuing to them relevant sections of the tender interview form and ensuring this is completed by subcontractor prior to commencing on site.
- Request and obtain from the subcontractor prior to their arrival to site copies of their Workers Compensation and Public Liability Certificates of Currency, environmental and or council licences and or required permits ensuring they are current and that copies are available on site.
- Ensure that all completed copies of form **Contractor's HSE Requirements QSE-F-15.23** (letter template) are returned and filed in the project files.
- Ensure that the latest copies of project plans and WHS&E risk assessments are uploaded onto project centre, or preferred data control system used, and engaged subcontractors have access to these.
- Ensure all external complaints/ incidents are recorded on **SE-F-21 Incident Report Form** and filed in the external complaints register or HammerTech.
- Assist the Project Manager and Site Manager in the general administration of WHS&E where requested.
- Be familiar with the emergency plan, the emergency assembly area and emergency coordinators for the project and participate in emergency drills.

Name:	Dylan Massad
Signed:	
Date:	

6.12 Building Cadet

The Building Cadet's health, safety and environmental responsibilities are to:

- Provide general assistance to management on an assigned project.
- Provide administrative assistance in managing site safety, quality assurance and environmental management systems.
- Maintain project registers and records up to date.
- Where requested, assist with site contract administration and tendering.
- Manage project document control and provide design management assistance.
- Assist the Project / Site Manager to ensure the site QSE plans and associated documentation, including standard forms, procedures, and templates, remain current and up to date.
- Fulfil responsibilities as outlined in the 'Taylor Cadet Program Guidelines', including undertaking an approved course of study at an Australian University.
- Assist Project Manager and Site Manger in the general administration of HSE where requested.
- Monitor the use of personal protective equipment (PPE) by site personnel.
- Complete site diaries as per project administration requirements.

Name:	
Signed:	
Date:	

6.13 First Aid Officers

It is the job of the trained first aider to provide initial treatment to injured or ill employees, which is consistent with first aider's level of training and competency. Where the treatment required is beyond a first aider's level of competency, they should recommend that the employee seek immediate medical assistance.

The nominated site first aid officers shall possess the required level of competency (Senior First Aid Certificate or Occupational First Aid Certificate) and they shall be responsible for:

- Providing first aid assistance to persons ill or injured on site.
- Recording all such assistance provided.
- Liaising with the site manager and/ or site foreman to achieve first aid obligations.

First Aid Officer Records

The nominated first aider shall be relied upon to exercise a common sense-approach in determining what type of injuries require a first aid report to be completed. First aid/ incident reports shall only be completed for injuries or illnesses for which first aid assistance was sorted **immediately** following an event. Employees, including subcontractor is, seeking to report an injury or incident for which first aid assistance was not initially sort **shall not** be provided with a copy of the report unless this has been authorised by the Site / Project Manager and/ or Taylor's WHS&E Manager.

Some typical injuries that may require reporting are:

- All injuries requiring off-site medical treatment.
- Impact injuries.
- Head injuries.
- Musculoskeletal injuries.
- Open wounds (cuts).
- Eye injuries.

The first aid officers shall also be responsible for the regular maintenance and replenishment of the first aid kits and equipment. At all times during normal operations there shall be a minimum of one (1) trained first aider on site for every 25 workers.

Name:	
Signed:	
Date:	

Name:	
Signed:	
Date:	

6.14 PCBU and Workers

PCBU and Workers are responsible for:

- Attending Taylor's site-specific induction prior to commencing work on site.
- Taking reasonable care for their individual health and safety and that of others on site, including members of the public.
- Familiarising themselves and adhering to Taylor Construction corporate policies.
- Performing only those works in which they possess the required competencies for or have been suitably trained to perform.
- Taking corrective actions to eliminate hazards within the workplace and /or reporting those hazards they cannot correct.
- Reporting all injuries to a first aid officer or supervisor.
- Cooperating with Taylor management in all requirements imposed in the interest of health, safety the environment and wellbeing.
- Never intentionally or recklessly interfering with, misusing, or removing any items and/ or equipment provided in the interest of health and safety.
- Complying with all site safety instructions and abiding by the procedures and work practices identified in the Workplace Heath Safety Project Plans and/ or as directed or informed by the Site Manager / Foreman.
- Complying with all relevant workplace health and safety legislation, standards, and codes of practice.
- Reporting promptly to a Site Manager / Foreman any unsafe conditions, practices or defects discovered in any control measures, including personal protective equipment.
- Maintaining safe work practices when working with, or near, hazardous substances, so that their own health and safety, and the health and safety of those around them, is maintained.
- Using personal protective equipment (PPE) as required. The equipment should be kept clean and maintained in an appropriate manner.
- Practicing a high-standard personal hygiene in and around all amenity areas such as lunch, change and toilet facilities by washing thoroughly and removing all protective clothing before eating, drinking, and smoking.
- Do not perform any activity or act that endangers or impacts on the environment.

7. Induction

Taylor employees, including those workers engaged by or working on behalf of the subcontractors, are required to be site-inducted prior to commencing work on the site. General environmental awareness and specific environmental requirements of this PEMP must be incorporated into the site-specific induction as required.

As a minimum, inductions must include the following environmental information:

- Community issues.
- Hours of operation.
- Noise and vibration.
- Dust management.
- Traffic access.
- Washing requirements for construction plant and equipment.
- Storage and handling of fuels, oils, and other chemicals.
- Waste management: recycling, disposal, litter.
- Soil and water issues: controls, tracking of mud off-site.

Where there are significant environmental issues identified for the project, these must be incorporated into the site-specific induction. These may include but shall not be limited to (where required):

- Environmentally sensitive areas of the site (specify details in this section).
- Contaminated or Acid Sulphate soils.
- Endangered flora and fauna.
- Environmental controls and management.
- Noise emissions.
- Plant emissions.
- Archaeology and heritage management.

References:

- SE-F-11 Site Induction Form and Mandatory Safety Requirements.
- SE-F-11a Induction Register.

8. Training and Competency

All persons undertaking work on the project (employees and subcontractors) must be trained and competent to carry out their work. This includes undertaking tasks in an environmentally sound manner.

Subcontractors shall be responsible to ensure that Taylor's environmental risk management, as prescribed in Section 10.3 of this plan, are adopted and controls, as contained in Taylor's **HSE-R-01 HSE Risk Register,** are implemented when developing their systems of work.

The subcontractor shall be responsible to consult and train workers under their management in agreed environmental system. Evidence of appropriate training shall be made available by the subcontractor to Taylor upon request by a Taylor nominated representative.

The Project / Site Manager, along with relevant members of the project team, must be made aware of the requirements of the Taylor environmental management system and shall be required to attend Environmental Awareness and Due Diligence training sessions when organised by the company.

References:

- QSE-P-19 Training, Competency and Awareness Procedure.
- WHS-PLAN-02 Project Workplace Health and Safety Plan (PWHSP).

9. Communication

The requirements for internal and external communication are outlined in the QSE Management System Manual. The following provides essential information in relation to environmental communication on projects.

9.1 Internal Communications

Essential information relating to project environmental management will be communicated through toolbox talks and inductions.

Environmental alerts will be periodically prepared and sent to sites for posting on notice boards.

Key changes to environmental legislation will be sent by email to all project managers and site managers

9.2 External Communications – Community

Community complaints must be reported as environmental incidents and all correspondence relating to the complaint must be retained and filed on site, including information on how the complaint was resolved.

All community consultation will be completed by the College in accordance with the Community Communication Strategy Communications prepared by Australian Public Affairs (Refer Appendix 11) with TCG notified as required. All community complaints will be notified to the relevant stakeholders in line with clause B8 of the SSDA. The majority of these tools will be implemented by the College with TCG assisting as required.

9.3 Regulator Site Visits and Written Communications

If an authorised officer *(*Council or DECCW representative*)* visits your site, you should contact the HSE Manager or Construction Manager for assistance and advice. While you can request that a higher level of management assists you, you cannot refuse to answer questions. An authorised officer must show their identification on request (ensure you ask for it) and has the right to ask any person on site questions relating to environmental issues. When being enquired, always be polite, discuss only the facts and do not elaborate or provide opinions.

Any Penalty Infringement Notices or official warnings from regulators are to be treated as ‘incidents’ and reported in the Incident Report Form, investigated and corrective actions assigned and completed to address the root cause of the infringement.

Any communication from a regulator must be notified to the HSE manager. Records of all communications must be retained and appropriately filed.

10. Environmental Risks

10.1 Standard Operating Procedures

Several standard operating procedures have been developed as part of the HSE management system to provide detailed information on the management of site issues in relation to environmental and safety risks. The following procedures have been developed to date and are available on SharePoint:

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure.
- E-OP-01 Erosion and Sedimentation Controls.
- E-OP-02 Waste and Resource Management.
- QSE-OP-02 Asbestos Management Procedure.
- SE-OP-04 Noise Management (OHS and Environmental).

10.2 Safe Work Method Statements (SWMS)

While SWMS are primarily used in WHS to manage high-risk activities, any relevant or foreseen environmental risk must also be considered in the preparation of the SWMS.

Taylor's site managers or their nominees are responsible for ensuring that subcontractors include environmental issues in their task-specific SWMS by using **SE-F-14**. If environmental issues are not appropriately addressed, the subcontractor should be advised of the requirements. It is recommended that subcontractors are assisted with identifying environmental issues, particularly during the early implementation of Taylor's environmental management system and PEMP.

References:

- SE-F-03 Taylor Construction Group Safe Work Method Statement.
- SE-F-14 Safe Work Method Statement Review Form.
- SE-F-14.1 Contractor's HSE Plan Review.

10.3 Environmental Risk Management and Control

This section provides an overview of environmental issues typically encountered on site based on the generic issues identified in the master Environmental Risk Assessment. When preparing this document, the project manager should add any additional environmental issues that may have been identified through the environmental impact assessment, development consent/ approval, etc.

10.3.1 Project Design – Environmental Considerations

During the planning phase of the project, consideration should be given to the following:

- How will design minimise energy use and allow for and use the natural environment?
- How will materials, products and systems be selected or designed to minimise adverse impacts and/ or benefit the environment?

These questions should be considered prior to commencement of the project and may require the input from the client.

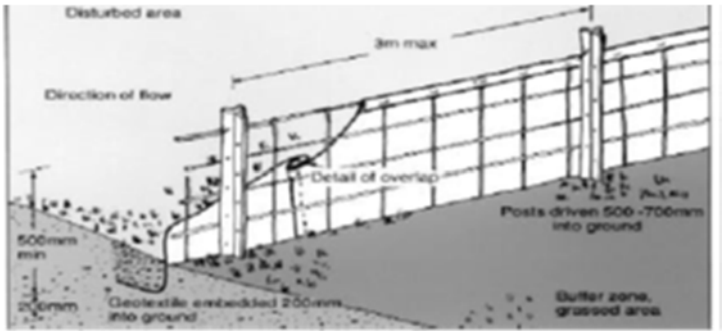
10.3.2 Soil and Water Management / Sedimentation and Erosion Control

Taylor and subcontractors shall plan and carry out works to avoid erosion and prevent sediment leaving the site to the surrounding land, watercourses, water bodies, wetlands and storm water drainage systems. This includes the installation of erosion and sedimentation controls prior to commencing clearing works. Where possible, works should be staged to reduce the areas cleared at the same time to minimize soil disturbance. Where required, prepare erosion and sediment control plans (ESCP), install the controls in accordance with the plan and maintain them regularly. For more detailed information, refer to the procedure and external guidelines listed below.

The following controls will be implemented within Taylor site boundaries to control erosion, sediment and pollution within the site:

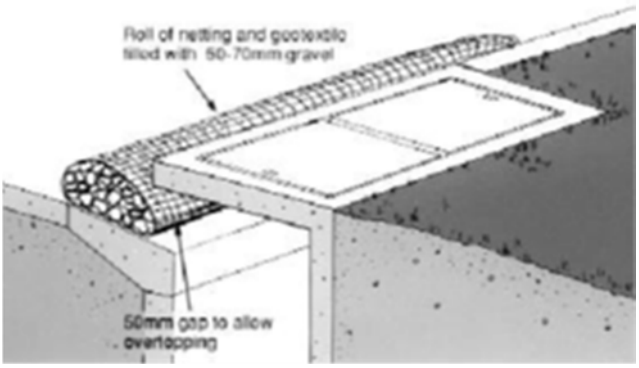
Sediment and erosion control devices – unnecessary disturbance of the site shall not occur, and all cuts are to be stabilised as soon as possible after the completion of site earthworks. Extra care will be taken to prevent sediment run-off into all neighbouring lots and storm water. Any collected silt will be disposed of in accordance with all other relevant codes and standards.

Silt fences – are to be installed to site boundaries as required. Geotextile fabric will be fixed to the temporary construction fencing where 'downhill' boundaries exist. The fabric will be turned down under the existing ground line and secured at regular intervals not exceeding 3m, in accordance with the following diagram:



Vehicle access – will be controlled to prevent sediment being tracked. This will be done by maintaining an all-weather access/ driveway composed of an approved coarse aggregate surface. Moreover, if the need arises, a shaker grid will be installed to the main access by Taylor during the construction works. Any sediment that is tracked onto the surrounding roads will be cleaned off in a timely manner.

Storm water inlets – all storm water inlets are to be covered with geotextile fabric in a roll or other format to ensure that no sediment enters the storm water system. This will be the responsibility of the site manager to enforce. The rolls will not only be placed directly at the inlets as shown below, but also at regular intervals in the gutters 'upstream' from the inlets, creating multiple barriers.



Stockpiles – if appropriate topsoil is to be stockpiled on site, then the following measures will be put in place:

Stockpiles shall be stored at least 2 metres away from drainage lines, natural watercourse and established trees.

Stockpiles will have temporary silt fences around it to create an enclosure and, if necessary, they will be covered with shade cloth or tarpaulin to retain the materials inside it. The location of stockpiles will be determined on site.

Monitoring – to maintain the various erosion and sediment control devices, regular inspections, repairs and cleaning will be carried out on the silt fences to the boundaries, stockpiles, waste enclosures and to the stockpile covers.

References:

- E-OP-01 Erosion and Sedimentation Controls Procedure.
- Managing urban stormwater: soils and construction, Volume 1, 4th edition, 2004.

10.3.3 Vegetation Management

Taylor and subcontractors shall plan the works to preserve existing trees, plants and other vegetation, that are to remain within or adjacent to the works. Areas of the site that contain vegetation that must be preserved should be fenced-off, marked or otherwise isolated to ensure they are not inadvertently damaged. If there are any endangered species on site, specific management techniques may be required; these should be addressed in an Environmental Impact Assessment.

On completion of the works, all areas disturbed by construction activities shall be restored to the contract specifications. Where required and practical, efforts will be made to mulch and re-use vegetation on site or send it to a green waste recycling facility.

10.3.4 Waste Management and Resource Recovery

Taylor and subcontractors shall adopt the hierarchy of waste (avoid, reduce, reuse, recycle/ reprocess), dispose to maximise resource recovery and minimise disposal wherever possible and practical. The importance of appropriate waste management practices is to be included in the site induction.

Sites are to be provided with suitable bins and skips for appropriate collection and separation of waste and recyclables, and these are to be collected with appropriately qualified and licensed (where required) waste contractors.

Prior to disposal, waste must be classified in accordance with the DECCW Waste Classification Guidelines (latest version 2014) prior to transporting waste off-site. Excerpts from the waste classification guidelines are contained within appendix B of the **Waste and Resource Management Procedure E-OP-02**. Waste receipts must be kept for legal requirements; details of waste separated and disposed of is to be documented in the **Waste and Recycling Register QSE-R-16**. The information from the register is to be used to complete the waste management section of the KPI Monthly Report Form and forwarded to the HSE manager for tracking of Taylor environmental targets.

References:

- E-OP-02 Waste and Resource Management Procedure.
- SE-F-23 KPI Monthly Report Form.
- QSE-R-16 Waste and Recycling Register.

10.3.5 Noise Management

From an environmental viewpoint, noise can create a nuisance to neighbours and members of the public and is subject to legal requirements. Taylor and subcontractors shall make all practical efforts to comply with statutory requirements for noise management and minimise nuisance to neighbours. Protection of the Environment Operations Act 1997 (sections 139 and 140) and the Department of Environment and Climate Change NSW 'Interim Construction Noise Guideline' risk controls for noise must be incorporated in relevant SWMS, including nuisance to neighbours. Where required by development consent conditions, environmental noise monitoring will be undertaken as per the conditions. Further information on noise management from a WHS and environmental viewpoint is contained within the Noise Management Procedure.

References:

— SE-OP-04 Noise Management Procedure.

10.3.6 Water Quality Management

Taylor and subcontractors shall comply with the requirements of section 120 of the Protection of The Environment Operations Act 1997 (Prohibition of Pollution of Waters). The act prohibits all forms of water pollution unless specifically authorised through and environment protection license (EPL). On most projects undertaken by Taylor, an EPL will not be required.

There are substantial penalties for individuals and the company and controls must be in place to ensure that site activities do not cause water pollution.

Potentially hazardous activities, including washing out of concrete delivery vehicles and washing down of construction plant, are not permitted on site except in specially constructed bays that retain high PH water. Washing out of concrete delivery vehicles off-site is only permitted at locations approved for that purpose by the appropriate authority. Drains will be labelled to reduce likelihood of misuse.

Washing of paint brushes must be undertaken to avoid any paint wash-water entering drains or waterways. Wash-water must be removed from site and appropriately treated and/ or disposed of. The chemicals, acids or residue from any 'wet trades' such as brick cleaning must also be prevented from entering drains and waterways.

All liquids and materials that could cause water pollution must be stored in areas with secondary containment. Also refer to section on hazardous substances, chemicals, oils and other contaminants and the related procedure.

Pumping of storm water – if a sediment basin is required and storm water is required to be pumped out of the site, the pump intake is to be located no more than one metre (1m) below the surface of the collected water to reduce the amount of settled silt being pumped out for further treatment.

Storm water treatment – there are two treatment options for storm water collected on site, flocculation and/ or filtration. For each option, the applicable procedures in their entirety are to be followed.

References:

— SE-OP-01 Hazardous Substances and Dangerous Goods Procedure.

— Storing and Handling Liquids - Environmental Protection (DECCW).

10.3.7 Ground Water Management

Refer to annexure appendix 12 for further details. Furthermore, see brief commentary.

- Groundwater was encountered within the two monitoring wells installed during the PSI, between 3.3 and 3.8 metres below top of casing (existing ground level).
- Concentrations of contaminants were generally detected below the screening criteria, with the exception of a very minor exceedance for zinc above the Groundwater Investigation Level. This is considered typical of urban water quality.
- Encountered groundwater is to be addressed with a sump and pump system to discharge water into the stormwater or sewer subject to dewatering testing/monitoring of groundwater quality prior to/ during dewatering and authority approvals.
- During construction, risks of groundwater contamination such as spills and leaks from on-site plant will be controlled via the mechanisms within this Construction Environmental Management Plan, ensuring good environmental practice.

10.3.8 Air Quality Management

Taylor and subcontractors shall comply with all statutory requirements governing air quality management, i.e. Protection of The Environment Operations (POEO) Act 1997, section 124, and the POEO Clean Air Regulation 2010.

The Project / Site Manager will ensure that all construction facilities erected at the site are designed and operated to minimise the emission of smoke, dust, cement dust, plant and vehicle exhausts and other substances into the atmosphere.

Taylor and subcontractors shall employ construction methods that will keep the air pollution to a minimum and apply measures such as those listed below to ensure that airborne pollutants do not cause pollution and nuisance near the works:

- The spraying of disturbed soil and roads with water whilst under construction as required.
- The removal of mud from the wheels and bodies of plant and vehicles before it enters public roads or other sealed pavements. This could be rumble grids, dry brushing, wheel wash, etc., depending on the nature of the site.
- The removal of mud or dirt spilt by construction equipment onto public roads or other sealed pavements.
- The provision of coverings or stabilisation of topsoil stockpiles.
- Covering all loads leaving the site.
- Stabilisation of ground likely to be exposed for significant time periods (e.g., using sterile seed).
- Fitting power tools with dust collection devices where practical.
- Keeping all plant and equipment well maintained and not leaving them idling while not being used.
- Reporting excess air emissions from plant and arranging for a service to fix the problem.
- On-site burning of any materials is not permitted on Taylor sites.

Dust Including Crystalline Silica Dust

Dust containing respirable crystalline silica particles is commonly called silica dust. Activities such as cutting, grinding, sanding, drilling, loading or demolishing products that contain silica can generate respirable particles of crystalline silica dust that are small enough to breathe into your lungs. Crystalline silica dust can be harmful when it is inhaled into your lungs over a long period of time at low to moderate levels, or short periods at high levels.

From the **1st of July 2020** in NSW dry cutting will be an offence and for those who choose to ignore the law and put their employees a risk, SafeWork inspectors will issue tough new fines for noncompliance.

All subcontractors working on a Taylor project that are using, drilling, cutting, sanding or grinding products that are known to contain silica will need to have a system in place that will allow their workers to either wet cut or drill, or will be required

to use dust extraction systems on portable tools, or adopt other methods that eliminate or minimise the generation of silica dust.

10.3.9 Hazardous Substances, Chemicals, Oils and Other Contaminants

Prior to commencing work on site, an assessment of the quantities and locations of hazardous substances, chemicals, etc. likely to be held on site must be undertaken. The location of hazardous substances and other contaminants must be marked on a site map (refer to appendix 5). The Site Manager will use the assessment when planning the works to minimise the potential for pollution. This includes providing appropriate storage, separation of incompatible materials and bunding, and ensuring that all activities that use or handle these substances are undertaken in an area that will not cause water pollution or land contamination.

Spill kits will be provided wherever substances that could potentially cause pollution are stored and handled. Relevant site personnel will be trained in spill response and will be familiar with the contents and function of the spill kit materials on site. All spills, no matter how small, must be cleaned up immediately and be 0reported as an environmental incident.

Refuelling or maintenance of plant and equipment, or any other activity which may result in the spillage of a chemical, fuel or lubricant on the site, is not permitted without appropriate temporary controls measures.

The use and storage of any hazardous substances or other chemicals will be made strictly in accordance with the manufacturer's instructions and the relevant materials safety data sheets (MSDS).

References:

- SE-OP-01 Hazardous Substances and Dangerous Goods Procedure.
- Storing and Handling Liquids - Environmental Protection (DECCW).

Spill Response

Major spillages must be notified immediately, and all efforts made to contain the spill and prevent escape into storm water drains and waterways, provided it is safe to do so. If the spill is beyond the capacity of the site personnel to contain and clean up, specialist services must be employed.

Minor spillages must be cleaned up immediately. If soil or ground is contaminated, the soil is to be removed and placed into a bag or designated waste drum and disposed of appropriately.

If the spill enters drains or waterways, the incident may be required to be reported to the appropriate regulatory authority (local council) as soon as practicable, in accordance with the duty to report under the POEO Act. The decision to report must be discussed with the HSE Manager or a Director prior to making the report.

Spill response procedures for this project are:

- Provide site map showing location of all hazardous substances, chemicals, fuels, oils, spill kits, storm water drains and natural waterways (Appendix 5).
- Spill Response Procedure flow chart (Appendix 3).
- Call emergency services (fire, hazmat): call 000.
- Local council phone number: Ku-ring-gai Council – 9424 0000
- MSDSS are located at: Project Hammertech and Onsite

10.3.10 Pesticide Use and Storage

If pesticides are used at the site, they must be stored appropriately as per 'hazardous substances' section (10.3.9 above) and used in accordance with the manufacturer's requirements and the NSW Pesticides Management Act and Regulations. The act and regulations have strict record keeping requirements for the use of more than 20 litres of product.

Taylor Construction Group general policy on the use of pesticides is that they should only be applied by suitably qualified pest control contractors.

10.3.11 Contaminated Land

Prior to commencing project work, checks should be made on the potential for the site to be contaminated. This should generally be identified by the client and addressed in an Environmental Impact Assessment. If the site is found to be contaminated, the recommendations for management of the contaminated soils from the assessment and other reports should be incorporated into this PEMP below.

Should contamination be suspected once working on the site (e.g., unusual odours, visual indications of soil or water pollution, etc.) work should cease immediately and the Taylor's project/ site manager contacted. Where relevant, the client should be notified by Taylor's project manager and investigations undertaken into the nature of the contamination. Work should not recommence until the nature and extent of the contamination is established and can be safely managed without environmental risk.

Taylor and subcontractors shall comply with relevant statutory requirements of Contaminated Land Management Act and the POEO Act (NSW) in relation to disturbance or treatment of potentially contaminated ground.

The company shall install any control measures needed to divert surface run-off away from contaminated ground and to treat any surface run-off contaminated by exposure to contaminated ground. Contaminated material removed from site must be recorded on the **Waste and Recycling Register QSE-R-16**.

References:

— Waste and Recycling Register QSE-R-16.

10.3.12 Acid Sulphate Soils (ASS)

Acid sulphate soils are naturally occurring soils generally found in estuarine areas. When exposed to air, they can oxidise and cause run-off of highly acid water. Acid sulphate soils require specialist management techniques.

The client should be aware of any potential for encountering acid sulphate soils and, if there is a potential, it should be addressed in the Environmental Impact Assessment undertaken for the project.

10.3.13 Community Complaints

Community complaints should be treated as incidents. They must be reported to the HSE Manager, be thoroughly investigated, and reported on SharePoint. Reference to these must also be documented and included in site diary entries. The project or site manager should try to resolve the issue with the community member in a conciliatory manner.

References:

- SE-F-21 Incident Report Form.
- SE-F-22 Incident Investigation Form (report on SharePoint – forms are back-up only).
- SE-F-23 KPI Monthly Report (as above).

10.3.14 Archaeology and Heritage Management

If any unexpected heritage item is discovered during maintenance and construction works, the following must be taken into consideration:

Indigenous heritage – all Aboriginal and Torres Strait Islander, regardless of significance, are protected under law. Should any deposit, artefact or material evidence (including skeletal remains) of Aboriginal and Torres Strait Islander origin be found, Taylor and subcontractors shall cease all construction works that might disturb or damage the deposit, artefact or material. The Project Manager will notify the client immediately, who will then consult the relevant government department (i.e., DECCW - National Parks and Wildlife Services). Examples of Aboriginal and Torres Strait Islander objects include stone tool artefacts, shell middens, axe grinding groves, pigment or engraved rock art, burials, and scarred trees.

Historic heritage – historic (non-Aboriginal) heritage items may include archaeological 'relics and other historical items such as works, structures, buildings or moving objects. Should any item which is suspected to be of historical heritage value be encountered, Taylor and subcontractors shall cease all construction works that might disturb or damage the item. The Project Manager will notify the client immediately, who will arrange for an officer from the relevant government heritage department to be consulted. A 'relic' is 'any deposit, artefact, object or material evidence that relates to the settlement of the area, not being Aboriginal and Torres Strait Islander settlement; and is of State or local heritage significance'. It can include bottles, remnants of clothing, pottery, building materials and general refuse.

References:

- Heritage Act 1977.
- National Park and Wildlife Act 1974.
- Unexpected Heritage Items Procedure – Roads and Maritime Services, 2015.

10.3.15 Construction Lighting

As required by the SSDA for the project, TCG will endeavour to ensure all external lighting during construction meets the requirements for AS 4282-2019 Control of the obtrusive effects of outdoor lighting. TCG will engage specialty consultants to provide advice regarding the light type and locations to ensure compliance to this clause.

10.3.16 Protective Measures to Surrounding Residents

As required by the SSDA for the project, TCG will during the demolition and construction phases have an acoustic barrier installed adjacent to 39 Bancroft Avenue and a Noise and Vibration monitor installed at locations to be confirmed by the acoustic consultant. A Vibration Monitor is to be installed adjacent to boundary with 31 Bancroft Avenue at a location to be confirmed.

11. Incident and Emergency Management

11.1 Emergency Response

The Emergency Response Plan for this site has been developed based on a template provided in the **SE-P-07 Project Emergency Control Management Plan**. Additional information for the management and control of emergency situations can be found in the Project Safety Plan (**WHS-PLAN-02**) but a Spill Response Procedure Flow Chart is contained in appendix 3 of this plan. For additional information on response to a spill, refer to section 10.3.8.

Emergency response posters and flow charts are to be posted in the site and induction office, WHS notice boards, in crib rooms and other areas of the site as required.

References:

- SE-P-07 Project Emergency Control Management Plan.
- QSE-F-10.1 Pre-Start Site QSE Checklist.
- SE-F-31 Emergency Evacuation Rehearsal Register.
- SE-F-05 Site Layout Evacuation Plan.
- SE-F-06 On-Site Emergency Control Plan.

11.2 Incident Reporting and Investigation Reporting

Site environmental incidents must be reported to the Project / Site Manager as soon as practically possible. In addition, any major environmental incidents must also be reported to the HSE Manager in accordance with the **Incident Reporting and Investigation Procedure QSE-OP-05**. The priority is to ensure that the situation is controlled as soon as possible and to avoid further pollution or other adverse environmental consequences. Reporting of the incident should not delay any immediate responses to the incident.

Incident Reports must be completed and forwarded to the HSE manager within 24 hours and must be kept for a minimum of five (5) years.

Environmental incidents that cause, or threaten to cause, material environmental harm must be reported to the Appropriate Regulatory Authority (ARA, the local council in which the project is located) as soon as practicable following the incident. This would include any spillage or leak of substances that cause water or land pollution. Material environmental harm generally means that the harm is not trivial and/ or costs more than $10,000 to clean up. The phone number of the ARA should be included in the Emergency Response Plan.

If the Site Manager believes that the incident may be reportable to the ARA, contact the WHS Manager for further advice prior to making an investigation report.

All environmental incidents that cause, or could potentially result, in an environmental harm are to be investigated, and corrective actions implemented following the investigation. Depending on the seriousness of the incident, key site personnel, the HSE Manager, witnesses, etc. should be consulted on the investigation and in determining appropriate corrective or preventive actions.

References:

- QSE-OP-05 Incident Reporting and Investigation Procedure.
- SE-F-21 Incident Report Form (report on SharePoint – forms are back-up only).
- SE-F-22 Incident Investigation Form (as above).

12. Environmental Monitoring and Inspections

12.1 Site Environmental Inspections

Site environmental inspections are to be undertaken weekly using **SE-F-02 HSE Inspection Checklist** to ensure that environmental hazards are recognised and can be promptly rectified. Additional environmental issues may be added to the site HSE inspection form as required.

12.2 Physical Monitoring

For many projects undertaken by Taylor, physical environmental monitoring is not typically required (e.g., dust, water quality, noise levels and air quality). Should the Environmental Impact Assessment specify that environmental monitoring is required, the project manager will arrange for appropriately qualified consultants to undertake that monitoring. All equipment used to measure environmental parameters will be calibrated in accordance with manufacturer's instructions.

12.3 Monitoring of Project Environmental Targets

Objectives and targets for the project are specified under 'Objectives and Targets' section of the PEMP. Data relating to these targets will be documented daily using site diaries, reviewed by Project / Site Managers monthly and forwarded to the HSE Manager for reporting to senior management.

The KPI monthly report captures information on lag and lead indicators. The current indicators are:

Lag indicators:

- Number of environmental incidents.
- Number of penalty infringement notices (pins) or clean-up notices.
- Number of community complaints.

Lead indicators:

- Number of toolbox talks (combined with WHS and environmental issues);
- Number of environmental inspections undertaken.
- Waste and recycling volumes (initially to set benchmark, then track improvement)

13. Non-Conformity, Corrective and Preventive Actions

Taylor has a non-conformance and corrective action process in place to address all non-conformities across the business, regardless of the source. The process is defined in the **Reporting Non-Conformance, Corrective and Preventive Actions Procedure QSE-OP-29**. Typically, environmental non-conformances would result from audits, inspections and from observations by the site manager of poor environmental practices, including incorrect waste disposal/ recycling (liquid waste, poor storage of hazardous substances, oils, chemicals and damage to existing environmental controls such as sediment fencing, etc.). Non-conformances may be issued for serious breaches or repeated minor breaches.

References:

- QSE-OP-29 Reporting Non-Conformance, Corrective and Preventive Actions Procedure.
- Notices (electronic) raising of non-conformances (internal).
- Notices (printable) for raising NCRS on subcontractors.

14. Purchasing / Procurement

Purchasing and procurement includes the purchase of goods and the supply of services of contractors. When purchasing goods, the following environmental considerations should be considered:

- Is there a less toxic, less harmful alternative (e.g., chemicals, paints, solvents, etc.)?
- How much do we need? Will anything be wasted? Precise ordering will minimise wastage of resources and money.
- Can the product be purchased locally to reduce transport impacts?
- Are there any opportunities to use ‘green’ products in construction to improve the efficiency of the building in terms of energy and water usage (design issue – may need client input)?
- S-F-18.1 Pre-Hire Purchasing Assessment Form

When engaging contractors, the following should be taken into consideration:

- Has the environmental capability been assessed and signed-off through contract administration?
- Has the contractor attended a pre-award interview and assessed Taylor Construction Group environmental requirements?
- Has **Subcontractor Tender Interview and Assessment Form QSE-F-15.6** been completed?

References:

- QSE-OP-15 Subcontracting, Purchasing and Hiring Procedure
- QSE-F-15.6 Subcontractor Tender Interview and Assessment Form.

15. Contractor Management

Taylor, as the principal contractor, will ensure that contractors performing work on site are aware of the environmental requirements and enforce compliance to requirements.

Prior to commencing on site, contractors are to be inducted to the site as part of the HSE requirements. Inductions will include an environmental component to ensure all contractors are aware of the environmental risks on the project.

Contractors are required to submit Safe Work Method Statements (SWMS*)* prior to commencement of work as part of the WHS requirements. SWMS must also address the environmental risks for the tasks and will be reviewed and checked-off on **SE-F-14 Safe Work Method Statement Review Form** by the site manager to ensure that all environmental risks are appropriately identified, and controls documented.

Environmental inspections will be undertaken at least once monthly. This will include an inspection of the contractor's work area and checking that all environmental controls are in place. Serious breaches or repeated minor breaches will result in the issue of a Non-Conformance Report, and the issue must be resolved within designated time frames.

16. Environmental Audit

Audits of the Environmental Management System will be conducted regularly to ensure the system is appropriately in place and implemented. As part of the audit program, audits will also be undertaken on project sites for compliance to the requirements of the Project Environmental Management Plans. Audits should be undertaken by suitably experienced auditors.

Projects that have duration of more than six months will have at least one audit against the PEMP and, after the six months, will be audited at least once per year. This will generally be undertaken as an integrated audit in conjunction with the Project Safety Plan and Project Management Plan (Quality). Projects with high-risk activities or that performed poorly at the initial audit may be audited at a higher frequency. The HSE Manager is responsible for coordinating project audits.

17. Review of This Plan

This Environmental Management Plan must be reviewed by the project manager in consultation with the project team and HSE manager whenever any major change occurs on the site that may have an impact on the environment, or at least twice (every six months) during construction.

Appendix 1 – Global Mark Accreditation

global-mark®

Certificate of Approval

This certificate confirms that the company below complies with the following standard:

Company Name	**Taylor Construction Group**		
Company Other Name			
Client ID	**101009**	*Scheme*	**Environmental Management Systems Scheme**
Certification Standard	**AS/NZS ISO 14001-2016: Environmental management systems - Requirements with guidance for use**		
Scope of Certification	**Design, construction, project management and property development services**		
Type of Certification	**Management System**		

The control set source for controls applied in the Statement of Applicability (referenced above) does not imply these controls are certified by Global-Mark.

CERTIFICATE DATES:

Original / Initial	**19/11/2009**	*Last Certificate update*	**13/05/2021**
Certification / Re Certification	**4/05/2021**	*Expiry*	**7/05/2024**
Last Certification Decision	**13/05/2021**		

APPROVED COMPANY/SITE ADDRESS(ES):

Level 13, 157 Walker Street North Sydney NSW 2060 Australia

The use of the Accreditation Mark indicates accreditation by the Joint Accreditation System of Australia and New Zealand in respect to those activities covered by JAS-ANZ accreditation. Refer to www.jas-anz.org/register for verification.

This certification remains valid until the above mentioned expiry date and subject to the organisation's continued compliance with the certification standard, and Global-Mark's Terms and Conditions.

This Certificate of Approval remains the property of Global-Mark Pty Ltd, Company Number: ACN 108-087-654

JAS-ANZ

confidence conformance commitment

Certification Manager

Unique Certificate Code: E15D2CE263BF3E6CCA2586CF0001C4EF

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Appendix 2 – Environmental Policy

TAYLOR

Environmental Policy

Taylor regards appropriate management of environmental issues as integral to our business. We are committed to the protection of the environment and ecologically sustainable practices in all aspects of our operations.

We will comply with all relevant legislation governing the protection of the environment. Our environmental management systems will address all aspects of the International Standard, ISO 14001:2016: "Environmental Management Systems – Requirements with guidance for use".

In managing our business, we make a commitment to:

- Work pro-actively with our clients, regulators, and other community stakeholders to enable environmental issues to be addressed at an early stage of development.
- Take local community views into consideration and ensure that we inform, listen to and respond to reasonable concerns relating to our projects.
- Undertake our activities in a manner that is consistent with the principles of ecologically sustainable development.
- Prevent pollution and reduce adverse environmental impacts of our activities on the natural, built and cultural environment.
- Promote the efficient use of natural resources and reduce waste through the use of the waste hierarchy – avoid, reduce, re-use, recycle and finally dispose.
- Set realistic environmental objectives and targets at all relevant levels within the company and continually monitor performance.
- Promote environmental awareness among all employees and subcontractors to achieve our environmental objectives.
- Continually improve our environmental performance through periodic review and evaluation of our policy and management systems to ensure they remain suitable, adequate and effective.
- Encourage a sense of personal responsibility for environmental issues amongst employees and subcontractors through effective communication, training and positive organisational culture.

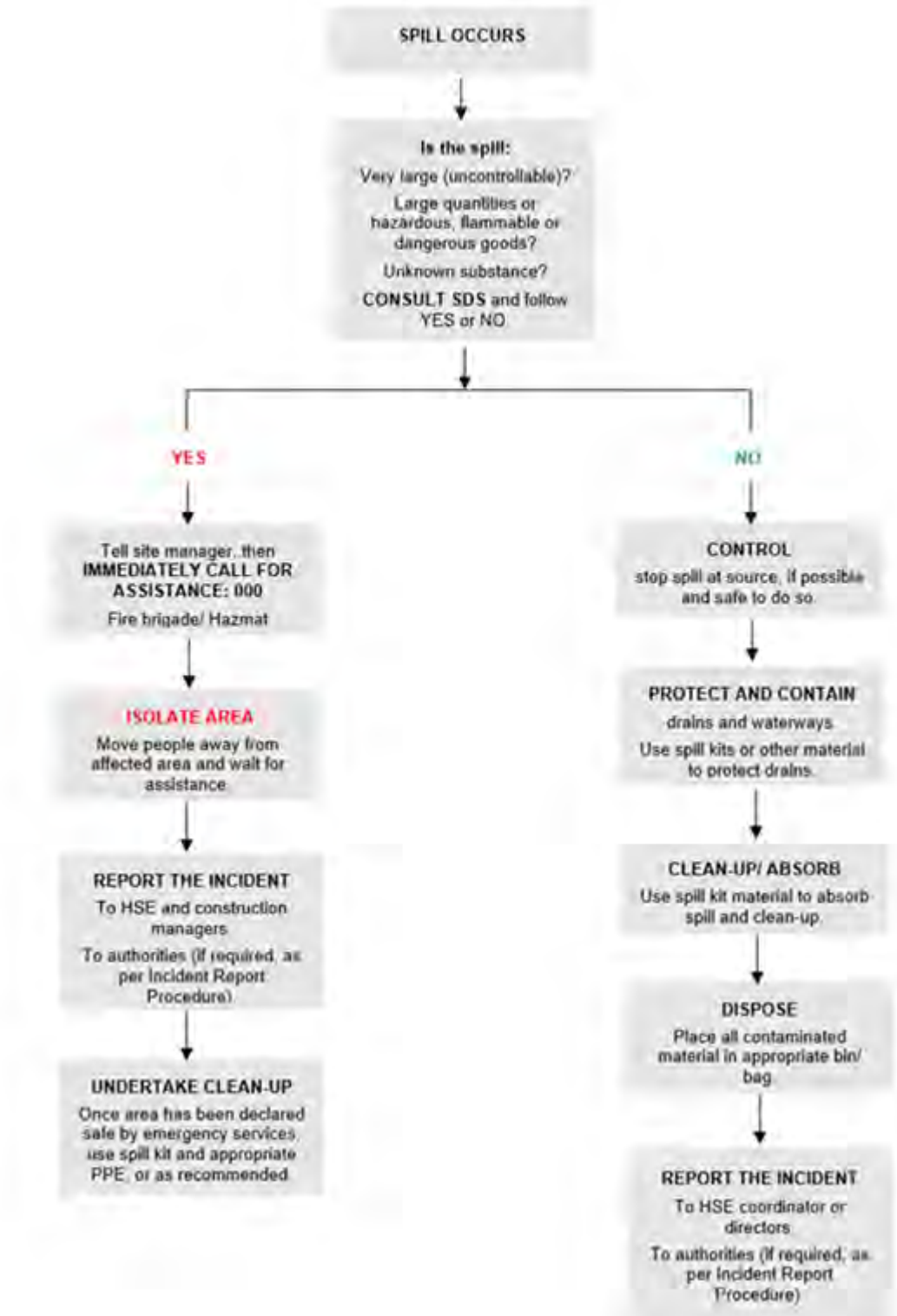
This policy will be reviewed in December 2022.

George Bardas
Chief Executive Officer

Environmental Management · ISO14001
Global-Mark.com.au®

Appendix 3 – Taylor's Construction Spill Reponse Procedure Flow Chart

Taylor's Construction Spill Reponse Procedure Flow Chart



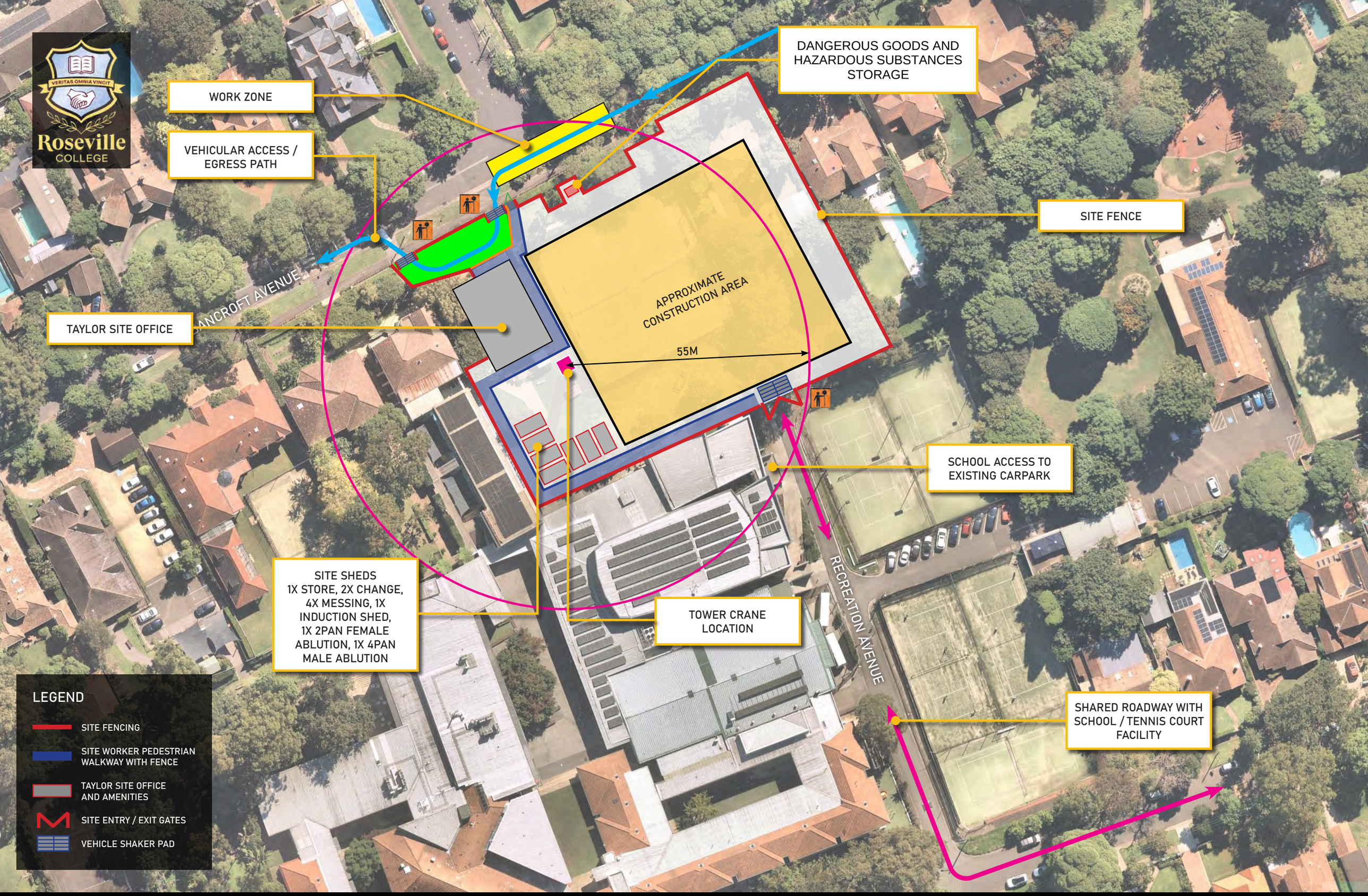
Appendix 4 – Site Environmental Emergency Reponse Plans

Site Environmental Emergency Reponse Plans

Potential emergency	What to do?	Relevant authorities and persons
Injury caused by: Fire Explosion Machinery accidents Minor injuries	For serious injuries, call an ambulance. You should also have the contact details of the nearest doctor, medical centre and hospital. Immediately inform the site first aid officer. Follow the procedures as detailed in the Site Safety Plan. For major injuries, contact the site manager or project manager.	Emergency services Nearest doctor Medical centre Site Manager Project Manager
Fire **Fire at the diesel tank** **Fire at any of the machineries** **Fire caused by vandalism**	Evacuate all personnel to a safe area immediately. Call the fire brigade (emergency services). If the fire is likely to damage neighbouring property, inform the adjacent residents. Follow the procedures as detailed in the Site Safety Plan. For major fire emergencies, contact the site manager or project manager. Inform terminal security. **Note:** fire extinguishers are located throughout the site as detailed in the Emergency Evacuation Map.	Emergency services Site Manager Project Manager Adjacent residents
Spills management and contaminated soils. **Major spills:** Spill or release of diesel fuel or oil Spill or release of other hazardous chemicals or material.	For major spills (defined as a spill that is likely to have direct environmental consequences): Immediately call the Fire Brigade and notify the project manager. Identify the source of the spill. Refer to the Material Safety Data Sheet (MSDS) and evaluate the hazards of the material.	Emergency services (fire brigade) HSE Manager Site Manager and Project Manager EPA
Minor site spills **Acid sulphate soils**	If the material is dangerous, evacuate the site immediately and notify all neighbours. If it is safe to do so, halt the source of the spill immediately. Contain the spill and control its flow. Block storm water drains downstream of the spill. EPA and local council must be notified about any spills that are likely to threaten the environment. Minor spills (defined as spills which can be contained and rectified correctly without the need of external services), shall be contained and rectified with the site spill kit and disposed of correctly. Superintendent to be notified via incident report. Reported to the Site Manager. Where acid sulphate soils are discovered, the spoil shall not be removed from site; subsequent notification and testing will follow.	Emergency services (fire brigade) HSE Manager Site Manager and Project Manager EPA

Potential emergency	What to do?	Relevant authorities and persons
Heavy rainstorm and flood beyond the capacity of the sediment and erosion controls on-site or failure of the sedimentation control measures.	Contain/ minimise the flow. Contact council immediately. Investigate reasons for failure and prepare an incident report. Contact the Project Manager.	Council Site manager Project manager
Discovery of items of conservation value (e.g., flora and fauna, heritage).	Fence-off the area as 'no go' zone and contact the site manager or project manager immediately for further action.	Site Manager Project Manager
Discovery of contaminated material on site (e.g., underground fuel storage tanks).	Fence-off the area as 'no go' zone and contact the site manager or project manager immediately for further action.	Site Manager Project Manager

Appendix 5 – Site Map: Environmental Requirements



TAYLOR

ROSEVILLE COLLEGE

27 Bancroft Avenue, Roseville NSW 2069

SITE MAP: ENVIRONMENTAL REQUIREMENTS

SK 01

Appendix 6 – Sediment Control Plan

PROVIDE SAND BAG SEDIMENT TRAP.
REFER TO DETAIL ON DRAWING C11.08

STABILISED CONSTRUCTION EXIT
SHOWN INDICATIVELY ONLY. CIVIL
CONTRACTOR TO CONFIRM FINAL
LOCATION ON SITE

INSTALL TEMPORARY SEDIMENT
FENCE TO BOUNDARY PERIMETER.
REFER TO DETAIL ON DRAWING C11.08

MOBILE SEDIMENT CONTROL TANK
LOCATION SHOWN INDICATIVELY ONLY

OUTLINE OF BUILDING
FOOTPRINT

PROVIDE CUT OFF DRAIN.
REFER TO DETAIL ON
DRAWING C11.07

UNDERTAKE DEVIATION
WORKS TO EXISTING
STORMWATER DRAINAGE
LINE PRIOR TO BULK
EXCAVATION WORKS

PROTECTION OF EXISTING TREES
TO BE RETAINED DURING
CONSTRUCTION WORKS TO BE IN
STRICT ACCORDANCE WITH THE
ARBORIST REPORT REQUIREMENTS.
TYPICAL

CONTRACTOR TO ENSURE SEDIMENT AND EROSION
CONTROL MEASURES FOR RECREATION AVENUE ROAD
WIDENING WORKS ARE STAGED AND COORDINATED
WITH MAIN SITEWORKS. REFER TO CIVIL ROADWORKS
PACKAGE FOR SEDIMENT AND EROSION CONTROL
MEASURES TO RECREATION AVENUE

SCALE 1:200 @ A1
SCALE 1:400 @ A3
0 2 4 8 12 16 20 metres

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TENDER ISSUE
NOT FOR CONSTRUCTION

This drawing has been assigned an electronic code that signifies the drawing has been checked and approved by: NATHAN PEARCE

Issue	Description	Date	Drawn	Approved
01	ISSUED FOR TENDER ADDENDUM	13.04.22	RD	SK
0	ISSUED FOR TENDER	11.03.22	RP	SK

1cm at full size

North

Client
ROSEVILLE COLLEGE
27-29 BANCROFT AVE, ROSEVILLE

Architect
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Project
ROSEVILLE COLLEGE
SWELL CENTRE
27-29 BANCROFT AVENUE, ROSEVILLE

Drawing Title
SOIL EROSION AND AND SEDIMENT CONTROL PLAN

Drawn	Date	Scale	A1	Q.A. Check	Date
DK	AUG 2019	1:200		NP	04.03.22
Designed	Project No.			Dwg. No.	Issue
MB	SY190030			C15.01	01

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Apr 13, 2022 - 11:38am

Appendix 7 – Environmental Legal and Other Requirements Register

TAYLOR

Project : **Date:**

ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	*Key Requirements*	*Relevance to Taylor Construction Group*	*Mechanism for Evaluating Compliance*	*Link to legislation and relevant web sites*
Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act is the key piece of environment protection legislation, and is administered by the Department of Environment and Climate Change (DECC) – formerly EPA. The objective of the Act is to protect restore and enhance the quality of the environment in NSW with a need to maintain ecologically sustainable development. Schedule 1 of the POEO Act lists activities that are subject to environmental licensing. Where an environmental Protection Licence is required, the DECC is the Appropriate Regulatory Authority (ARA). In most other cases, the local council is the ARA.	Environmental Protection Licences may be required for large projects by TPG. (Refer to Schedule 1) Therefore, in most cases, the local council is the Appropriate Regulatory Authority . Environmental protection offences and penalties, and a duty to notify of environmental harm, apply to all personnel working on the project. Managers, supervisors, workers and contractors need to comply with all requirements of the Act, with particular emphasis on duty to notify, and prevention of pollution (see key sections in adjacent column to the left)	**Environmental inspections** **Compliance checks / audits against Environmental Management Plan**	www.austlii.edu.au/au/legis/nsw/consol_act/poteoa1997455/ http://www.environment.nsw.gov.au/licensing/
	The POEO Act imposes severe penalties for causing environmental harm, polluting water, not operating equipment in an efficient manner and inappropriate handling and disposal of waste. Penalties also exist for failure to notify pollution incidents.	The company and individuals can be prosecuted in criminal proceedings under this Act.	**Environmental inspections** **Plant pre-start inspections and plant maintenance** **Compliance checks / audits against Environmental Management Plan**	
	The following is a summary of key sections of the Act that must be complied with: ▪ S 120 – Prohibition of Water pollution ▪ S 124 - 125 Air pollution - failing to maintain and operate plant, or carry out maintenance work on plant, in a proper and efficient manner. ▪ S 128 Standard of air impurities not to be exceeded (air pollution)		Environmental inspections Plant pre-start inspections and plant maintenance Compliance checks / audits against Project Environmental Management Plan	http://www.environment.nsw.gov.au/water/polltreatment.htm http://www.environment.nsw.gov.au/air/

Project : TAYLOR **Date:**

ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	*Key Requirements*	*Relevance to Taylor Construction Group*	*Mechanism for Evaluating Compliance*	*Link to legislation and relevant web sites*
	▪ S 139 – Noise Pollution – operation of plant S 142 A-E – Land Pollution (offence if cause or permit land to be polluted S 143 – Land Pollution (unlawful transport of waste) S 144 – Land Pollution – permitting land to be used as unlawful waste facility	**Waste must be transported by an appropriately licenced transporter to a facility that is licenced to accept waste**		http://www.environment.nsw.gov.au/noise/
	S 148 – Duty to Notify S 152 Offences for failure to notify of pollution incident	**Licenced disposal authority to provide reciepts for all waste received , reciept is to include date, time and amount of waste disposed , ALL reciepts MUST be provided to Taylors site management on their return to site or when requested**	**Environmental incident reports (indicating if notification was required). Reviewed at Management Review.**	
	Penalties **Most Serious Offences Causing Harm to the Environment and Involving Wilfulness or Negligence** Maximum penalty: Corporations $5,000,000 (wilful) or $2,000,000 (negligence): Individuals $1,000,000 or 7 years' imprisonment, or both, (wilful) or $500,000 or 4 years' imprisonment, or both (negligence) **Tier 2 (strict liability)** Corporations: $1,000,000 and up to $120,000 for each day the offence continues. Individuals: Up to $250,000 and up to $60,000 each day the offence continues. **Tier 3 (penalty notice – on the spot fine)** $1500 for corporation $750 for individuals **Failure to Notify a Pollution Incident**	Damage to corporate reputation / image **Possible exclusion from tendering for future environmental sensitive projects** **Financial Cost to company and project stake holders**	**Environmental inspections** **Plant pre-start inspections and plant maintenance** **Compliance checks / audits against Environmental Management Plan** **Monitor compliance with DA concent**	

Project :	TAYLOR	Date:
	ENVIRONMENTAL -LEGAL -REGISTER -01	
	Environmental Legal Register	

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	Maximum penalty: corporations $1,000,000; individuals $250,000			
POEO (General) Regulation 2009	The Regulation (among other things): • sets out fees for environment protection notices and noise control notices; • sets out matters to be included by the EPA in its statement of reasons for the grant or refusal of a licence application; • makes it an offence to provide false or misleading information in relation to a licence application; • requires licensees to retain records used to calculate licence fees; • prescribes certain matters when placed into water to be water pollution, and the methodology for testing matter in waters; • exempts certain water pollution from the water pollution offence under the *POEO Act 1997* ; • allows the EPA to prohibit or regulate certain activities that threaten the safety of drinking water that is part of a public water supply; declares certain bodies to be the ARA in relation to certain activities for the purposes of the *POEO Act 1997* ;	Projects may require environmental protection licences. (Refer to Schedule 1 of the POEO Act)	**Planning - requirement for Licence set out in PEMP (if required)** **Audits against PEMP**	https://www.google.com.au/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiQq5ew4rzYAhWHE7wKHXjTDUUQFggnMAA&url=http%3A%2F%2Fwww.austlii.edu.au%2Fau%2Flegis%2Fnsw%2Fconsol_reg%2Fpoteor2009601%2F&usg=AOvVaw1RKZlXEv0dxWGfFhkVRVb3

Project :	TAYLOR	Date:

ENVIRONMENTAL -LEGAL -REGISTER -01

Environmental Legal Register

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
POEO (Clean Air) Regulation 2010	**This Regulation replaces the** *Clean Air (Domestic Solid Fuel Heaters) Regulation 1997, Clean Air (Motor Vehicles and Motor Vehicle Fuels) Regulation 1997, Clean Air (Plant and Equipment) Regulation 1997* and the *Protection of the Environment Operations (Control of Burning) Regulation 2000POEO (Clean Air) Regulation 2002*			http://www.austlii.edu.au/au/legis/nsw/consol_reg/poteoar2002601/
	In relation to motor vehicles, the regulation deals with the emission of air impurities, including excessive smoke from motor vehicles. In relation to Plant and Equipment, the regulation sets maximum limits on emissions from activities and plant for a number of substances, including chlorine, dioxins furans, smoke, solid particles and sulphur. In relation to the control of burning, the regulation controls burning in the open or in incinerators in local government areas, prohibits the burning of certain articles (including tyres, paint and solvent containers, and certain treated timbers), and imposes a general duty on persons to prevent or minimise air pollution when burning in the open or in an incinerator	Keep vehicles maintained to minimise air pollution and avoid a "smoky vehicle" fine. Maintain plant and equipment to minimise air pollution General Policy at Taylor Construction Group is no burning off at site.	Environmental Inspection checklist Pre-start checks on plant	http://www.legislation.nsw.gov.au/fragview/inforce/subordleg+428+2010+whole+0+N?tocnav=y
POEO (Noise Control) Regulation 2008	This Regulation repeals and remakes, with minor amendments, the provisions of the Protection of the Environment Operations (Noise Control) Regulation 2000: • the sounding of sirens and similar devices and the use of sound systems on vessels, • the emission of noise from the engines or exhausts of motor vehicles and vessels, • the maintenance of noise control equipment on motor vehicles and vessels, • the issue of defective vehicle notices and defective vessel notices, • the times during which it is not permissible to use certain articles if they emit noise that can be heard in any residential premises,	**Noise emissions from machinery and activities.**	**Environmental Inspection checklist** **Pre-start checks on plant**	www.austlii.edu.au/au/legis/nsw/consol_reg/poteocr2008693/ http://www.environment.nsw.gov.au/noise/

Project :	TAYLOR	Date:
	ENVIRONMENTAL -LEGAL -REGISTER -01	
	Environmental Legal Register	

Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	• the inspection and testing procedures for the purpose of determining noise emission levels of certain motor vehicles, motor vehicle accessories, vessels, articles or equipment			
POEO (Penalty Notices) Regulation 2004	This Regulation: • sets out the offences under the *Protection of the Environment Operations Act 1997* and related Acts and regulations for which penalty notices may be issued, and the amount of such fines; • specifies the organisations authorised to issue penalty notices for particular offences; and • authorises the service of a penalty notice relating to an offence, applying to an owner of a motor vehicle or vessel, on the owner without naming the address of the owner and by leaving the penalty notice on that vehicle or vessel.	Environmental protection offences and penalties, and a duty to notify of environmental harm, apply to all personnel working on projects.		www.austlii.edu.au/au/legis/nsw/consol_reg/poteonr2004710/
POEO (Waste) Regulation 2005	Schedule 1 of the regulation sets out the types of waste to which waste tracking requirements apply.	Certain chemicals used or generated may be subject to tracking requirements in this regulation. If waste tracking requirements apply, waste dockets and other records must be kept	**Periodic (monthly) review of project waste dockets and records to ensure compliance with tracking requirements.**	http://www.austlii.edu.au/au/legis/nsw/consol_reg/poteor2005609/ www.environment.nsw.gov.au/waste
Protection of the Environment Operations Amendment (Scheduled Activities and Waste) Regulation 2008 (Note – part of 2005 Regulation)	**This framework uses a mix of legislative, policy, educative and economic tools to encourage waste avoidance and the further recovery of resources. This new framework includes:**	Altered definitions of waste categories and disposal requirements (since April 2008). If using recovered resources (eg recycled asphalt, etc), ensure material meets threshold contaminant requirements (obtain from supplier prior to use)		www.austlii.edu.au/au/legis/nsw/consol_reg/poteor2005609/
	• **Fewer and simpler licensing categories for waste;** • A streamlined waste classification system; • **New resource recovery licensing categories and resource recovery exemptions; and**	includes 2011 amendment		http://www.environment.nsw.gov.au/waste/classification.htm http://www.environment.nsw.gov.au/waste/RRecoveryExemptions.htm

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	• **Clearer requirements for managing asbestos and clinical waste.** **The waste regulatory framework is administered under the principal legislation of the Protection of the Environment Operations Act 1997 and the Waste Avoidance and Resource Recovery Act 2001.**			http://www.legislation.nsw.gov.au/sessionalview/sessional/subordleg/2011-151.pdf
Protection of the Environment Operations (Underground Petroleum Storage Systems Regulation 2008)	Regulation requires that underground petroleum storage tanks must not be commissioned unless it has been properly designed, installed and equiped, and integrity test performed. A storage system must not be used unless groundwater monitoring wells are installed on the storage site and these are not to be installed unless properly designed. The storage system must not be used unless an environment protection plan is in place and must be used in accordance with that plan. (for detail, of plan requirements refer to clause 19) Note - this requirement will apply to old tanks from June 2009. Groundwater monitoring requirements on old storage tanks will come be required from June 2011 (Clause 21) Loss detection procedures must be in place and acted upon if any loss is detected (clause 22) Records must be kept for at least 7 years	The regulation generally will only apply to TPG if it owns or operates sites with Underground Petroleum Storage Systems (UPSSs). When working on sites with UPSTs, ensure location is known, and that client can provide details on locations of groundwater monitoring wells, and other required information	If UPSSs are owned or operated by TCG, extensive monitoring would be required in accordance with an Environmental Protection Plan specifically relating to the tank. Periodic evaluations would be conducted agains the Plan.	www.austlii.edu.au/au/legis/nsw/consol_reg/poteopssr2008983/ http://www.environment.nsw.gov.au/clm/upss.htm
Contaminated Land Management Act 1997 *Contaminated Land Management Amendment Act 2008*	The main objective of this Act is to establish a process for investigating and remediating land areas where contamination presents a significant risk of harm to human health or some other aspect of the environment. The amendment Act strengthens EPA/DECC powers in relation to contaminated land. Under this act DECC has the power to: • Declare an investigation site and order and investigation	Environmental Hygienist may be engaged to provide advice , reports and monitor activities when undertaking work on contaminated sites is required .	**If contaminated land is likely to be encountered, measures for testing, handling and disposing of contaminated spoil are in the Project Environmental Management Plan. Testing is undertaken to ensure compliance.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/clma1997238/ http://www.austlii.edu.au/au/legis/nsw/consol_act/clmaa2008318/sch1.html

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	• Declare a remediation site and order remediation to take place • Agree to a voluntary proposal to investigate or remediate a site			http://www.environment.nsw.gov.au/clm/
Contaminated Land Management Regulation 2008	This Regulation prescribes a number of matters for the purposes of the *Contaminated Land Management Act 1997*, including: • the content of site auditors' annual returns; • the form to be used when reporting contamination; and • the amount which the EPA may recover for its costs incurred in relation to investigation and remediation orders.	Minimal relevance.	N/A	http://www.austlii.edu.au/au/legis/nsw/consol_reg/clmr2008329/
Environmentally Hazardous Chemicals Act 1985	The purpose of this Act is to control chemicals that are environmentally hazardous. DECC may make chemical control orders (CCOs) with respect to assessed chemicals or declared chemical wastes. The CCOs may regulate the manufacture, processing, conveying, buying, selling or disposal of chemical or declared waste. A CCO may prohibit activities in relation to declared chemical wastes, except under the authority of a licence issued by DECC.	Certain chemicals used or generated may be subject to handling and disposal requirements in this Act. Chemicals subject to this Act include Dioxin wastes, Asbestos wastes, PCBs, and organochlorine pesticide wastes. It is unlikely that Taylor Construction Group activities would generate hazardous wastes covered by a CCO	**Measures for identification, handling, disposal of hazardous wastes are in the Project Environmental Management Plan.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/ehca1985373/
Environmentally Hazardous Chemicals Regulation 2008	This Regulation: • sets various fees in relation to assessments of technology and prescribed activities by the EPA and in relation to licences to carry on prescribed activities; • specifies the matters to be included in applications for assessment of prescribed activities, in EPA notices about assessments of chemicals, and in EPA notices about applications for licences and transfers of licences; • prescribes the information to be included in registers under the Act.	No relevance.		

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
Pesticides Act 1999	This Act promotes the protection of human health, environment, property and trade in relation to the use of pesticides. It is an offence under the Act to: • Use a pesticide that harms or damages a person or property, a non-target animal or plant; • Use a pesticide that harms a threatened species or protected animal; • Possess or use an unregistered pesticide without a permit, or contrary to the approved label; • Fail to comply with the label or permit while using a pesticide; • Keep a registered pesticide in a container without a label; • Possess or use a restricted pesticide without authorisation. DECC may make pesticide control orders which prohibit use or possession of restricted pesticides	Generally pest control would be undertaken by specialist contractors. If pesticides are applied by TPG personnel, stringent storage, handling and record keeping requirements apply. Refer to the full Act and Regulations	**If pesticides are used, the requirements would be documented in the Project Environmental Management Plan for the project. Regular audits would be undertaken against the Plan, and pesticide records would be reviewed once monthly by the project manager.**	www.austlii.edu.au/au/legis/nsw/consol_act/pa1999120/ http://www.environment.nsw.gov.au/pesticides/
Pesticides Regulation 1995	This regulation requires that any person or organisation applying a chemical in a public place must apply this chemical as described in their Notification Plan for Pesticide Use in Public Places. The regulation makes it compulsory for all people who use pesticides for commercial or occupational purposes to make a record of their pesticide use.	As above	As above	www.austlii.edu.au/au/legis/nsw/consol_reg/pr1995211/
Environmental Planning and Assessment Act 1979	The main objective of the EP&A Act is to ensure that proper management and development of land is undertaken incorporating the ecologically sustainable development principles. To achieve this the EP&A Act:	Development Approval / Consent required prior to construction as per EP&A Act and as detailed in LEPs.	**Compliance audits / checks against development consent conditions (likely to be done by client)**	www.austlii.edu.au/au/legis/nsw/consol_act/epaaa1979389/

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
(EP&A Act)	• Ensures that development consent is obtained prior to construction; • Ensures compliance with planning consents and conditions associated with the consent; • Ensures environmental assessment is undertaken prior to development consent; • Has provision for penalties to be issued should development conditions be breached. Also has Planning instruments such as Local Environmental Plans (LEPs)	Need to comply with Conditions of Consent once granted		
Fisheries Management Act 1994	The primary aim of this Act is to conserve, develop and share fisheries resources of NSW to benefit present and future generations. To do this the Act: • Provides Fishery Management Strategies for commercial and recreational purposes; • **Protects marine flora and fauna (eg. Mangroves);** • Describes dredging and reclamation approval process; • Prevents the sale or possession of noxious fish and marine vegetation; • Has provision for penalties to be issued for breaches of the requirements of this Act.	The Act applies to works that involve dredging or working in water bodies including estuaries, lakes, intertidal zones etc.:	**If dredging or other activities in fisheries are undertaken, the requirements would be documented in the Project Environmental Management Plan for the project. Regular audits would be undertaken against the Plan.**	www.austlii.edu.au/au/legis/nsw/consol_act/fma1994193/
Marine Pollution Act 1987 ***Marine Pollution Regulation 2006***	This Act and the *Marine Pollution Amendment Regulation 2006* oblige marine operations to: • Prevent pollution of marine environment by spillages from ships and transfer operations; • Report/record oil or noxious liquid discharges from ships. Schedule 4 of the regulation provides Standards for treated sewage from vessels (faecal coliform, suspended solids and BOD)	Relevant only when dredging or working in a marine environment.	**If dredging or work in the marine environment is anticipated, the measures for monitoring compliance will be documented in the Project Environmental Management Plan.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/mpa1987200/
Waste Avoidance and Resource Recovery Act	This Act promotes waste avoidance and resource recovery by:	Waste is generated during construction. The principles of the Act are applied to	**Regular environmental inspections using standard checklist**	

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
2001	• Encouraging efficient use of resources in accord with ecologically sustainable principles; • Promoting the "Avoid, reuse, recycle, dispose" hierarchy; • Ensuring industry has a responsibility for reducing and dealing with waste; • Providing penalties for breaches of this Act.	all aspects of construction to reduce impacts from waste. A Waste Management Plan may be required to be prepared as part of conditions of consent.	**Audit against Waste Management Plan (if applicable) or against Project Environmental Management Plan**	www.austlii.edu.au/au/legis/nsw/consol_act/waarra2001364/ http://www.environment.nsw.gov.au/waste/
Threatened Species Conservation Act 1995	This Act outlines the protection of threatened species, communities and critical habitat. An independent Scientific Committee determines which species, populations and ecological communities should to be listed as endangered, vulnerable or extinct, and also determines key threatening processes. Any animal, plant or habitat that is listed as endangered, vulnerable or threatened must not be harmed or damaged, unless planning approvals or licences from DECC have been granted.	Construction activities may be undertaken in areas where threatened species, communities and critical habitat exit. The presence of these should be identified by the Environmental Impact Assessment process prior to construction – usually identified by the client	**If threatened species have been identified in the Environmental Impact Assessment (usually by client), the requirements would be documented in the Project Environmental Management Plan for the project. Regular audits would be undertaken against the Plan.**	www.austlii.edu.au/au/legis/nsw/consol_act/tsca1995323/ http://www.environment.nsw.gov.au/threatenedspecies/
Native Vegetation Act 2003	This Act regulates the clearing of native vegetation on all land in NSW except for National Parks, State Forests and reserves and urban areas. Native vegetation is any species of vegetation that existed in	Approval is generally required for clearing native vegetation, although some exceptions apply.		www.austlii.edu.au/au/legis/nsw/consol_act/nva2003194/ http://www.environment.nsw.gov.au/vegetation/
Noxious Weeds Act 1993	This Act requires occupiers of land to control noxious weeds required under control categories specified in relation to the weeds concerned. There are five classes of noxious weeds: Class 1 – State Prohibited Weeds: must not be introduced/become established in NSW; Class 2 – Regionally Prohibited Weeds: must not be introduced or become established in parts of NSW; Class 3 – Regionally Controlled Weeds: area that these weeds occupy must be reduced;	Classified weeds that are present on project sites or establish themselves during construction must be eradicated.	**If noxious weeds are present, regular inspections should be carried out as part of the environmental inspection process**	www.austlii.edu.au/au/legis/nsw/consol_act/nwa1993182/ http://www.environment.nsw.gov.au/pestsweeds/

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	Class 4 – Locally Controlled Weeds: impact on economy, community, environment must be minimised; Class 5 – Restricted Plants: must not be introduced or allowed to spread from current areas. Notices ordering the eradication of a classified weed may be served.			
National Parks and Wildlife Act 1974	Under this Act, NPWS is responsible for the care, control and management of all national parks, historic sites, nature reserves, reserves, Aboriginal areas and state game reserves. The Act governs various activities including: • Protection of flora and fauna; • Protection of Aboriginal heritage; • Licences and approvals to modify or destroy flora, fauna or Aboriginal heritage; • Penalties for breaches of the Act.	Relates to any Aboriginal heritage or relics, and protection of flora and fauna.	**If works are undertaken in areas with potential Aboriginal Heritage, These should be identified in the Environmental Impact Assessment and related documents, and incorporated into the PEMP. Regular inspections and audits would be undertaken to ensure compliance.**	www.austlii.edu.au/au/legis/nsw/consol_act/npawa1974247/ http://www.environment.nsw.gov.au/licences/
	An Aboriginal Heritage Impact Permit (AHIP) is required for any activity likely to have an impact on Aboriginal objects or places.			http://www.environment.nsw.gov.au/nswcultureheritage/dec_consultation_080103_ReviewInterimRequirementsForAHIP.htm
National Parks and Wildlife Regulation 2002	This regulation governs various activities under the *National Parks and Wildlife Act 1974* , including: • the regulation of the use of national parks and other areas administered by the NPWS (Part 2) • the preservation of public health in Kosciuszko National Park (Part 3) • licences and certificates (Part 4) • the protection of fauna (Part 5)	Relates to any Aboriginal heritage or relics, and protection of flora and fauna.	If works are undertaken in areas with potential Aboriginal Heritage, These should be identified in the Environmental Impact Assessment and related documents, and incorporated into the PEMP. Regular inspections and audits would be undertaken to ensure compliance.	www.austlii.edu.au/au/legis/nsw/consol_reg/npawr2002338/

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	The regulation replaces the former NPW (Land Management) Regulation 1995, the NPW (Administration) Regulation 1995 and the NPW (Fauna Protection) Regulation 2001.			
Heritage Act 1977	The Heritage Act protects NSW's natural and cultural heritage including archaeological remains. If a site or place is of great significance, the Heritage Council can list it on the State Heritage Register. Items listed on the State Heritage Register are subject to the provisions of the *Heritage Act 1977*, which protects items of State heritage significance. Items 50 years or older are also considered heritage items and need to be managed as such. The Act prohibits the demolition, damage or development of or around any heritage item without approval from the Heritage Office.	Requirements will be triggered if there are natural or culturally significant sites or places. These should be identified through the Environmental Impact Assessment (EIA) process (eg – EIA, REF)	**If works are undertaken in areas with potential European Heritage, these should be identified in the Environmental Impact Assessment and related documents, and incorporated into the PEMP. Regular inspections and audits would be undertaken to ensure compliance.**	http://www.austlii.edu.au/au/legis/nsw/consol_act/ha197786/
Heritage Regulations 2005	The Heritage Regulation 2005: • restates the minimum standards for the maintenance and repair of items on the State Heritage Register set in the previous regulation; and • provides for equitable and adequate funding for heritage protection through cost recovery for statutory processing..	Minimal relevance.		
Water Act 1912	An Act consolidating water rights, water and drainage and artesian wells. Provisions include: • To obtain a licence to sink or alter an artesian bore; • Not to waste water taken from dams, lakes, artesian wells and bores; • Not to unlawfully interfere with sub-surface water or obstruct its flow.	Minimal relevance.	N/A	
Water Management Act 2000 and Water Management (General) Regulation 2004	The *Water Management Act 2000* is the main piece of water legislation in NSW and governs: • Extraction of water from waterways and bores • The construction of water storage and supply structures	Approvals may be required to undertake water supply works, drainage works or floodplain works	**If water is extracted from waterways, this would be addressed in the EIA and PEMP. Audits of the PEMP would be undertaken to determine compliance**	

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Legislation	Key Requirements	Relevance to Taylor Construction Group	Mechanism for Evaluating Compliance	Link to legislation and relevant web sites
	• Development or building within the proximity of waterways • A licensing system established under the *Water Management Act 2000* allows for regulated usage of water resources The WMA Act consolidates the Water Act 1912 and the Rivers and Foreshores Improvement Act 1948.			http://www.austlii.edu.au/au/legis/nsw/consol_act/wma2000166/
Rivers & Foreshore Improvement Act 1948	*This Act has been repealed and is replaced by the Water Management Act 2000*	Nil - repealed	N/A	
Commonweath Legal Requirements				
Environment Protection and Biodiversity Conservation Act 1999 ***(Commonwealth Act)*** (EPBC Act)	This Act aims to protect the environment, particularly matters of National Environmental Significance. Approval is required for actions that are likely to have a significant impact on: • a matter of national environmental significance; • environment of Commonwealth land (even if taken outside Commonwealth land); • environment anywhere in the world if the action is undertaken by the Commonwealth. Permits are required under the EPBC Act for: • certain activities in Commonwealth reserves; • activities that affect listed species or communities in Commonwealth areas; cetaceans in Commonwealth waters and outside Australian waters; • the import and export of wildlife. The Act contains compliance and enforcement mechanisms such as court injunctions, required environmental audits, strict civil and criminal penalties, remediation of environmental damage, liability of executive officers, and publicising contraventions.	Approvals may be required when working in areas that may have matters with national significance. Examples may include: * Work on Commonwealth land that may have a significant impact on the environment Working in areas that are listed as: *World Heritage property * National Heritage places * Listed wetlands (Ramsar) * Threatened species or communities * Migratory species * Nuclear actions * Marine Environments	**Specific requirements for complianceshould be addressed in Environmental Impact assessments and Project Environmental Management Plans. Audits and inspections would be undertaken against the stated requirements.**	http://www.austlii.edu.au/au/legis/cth/consol_act/epabca1999588/
Other Requirements				

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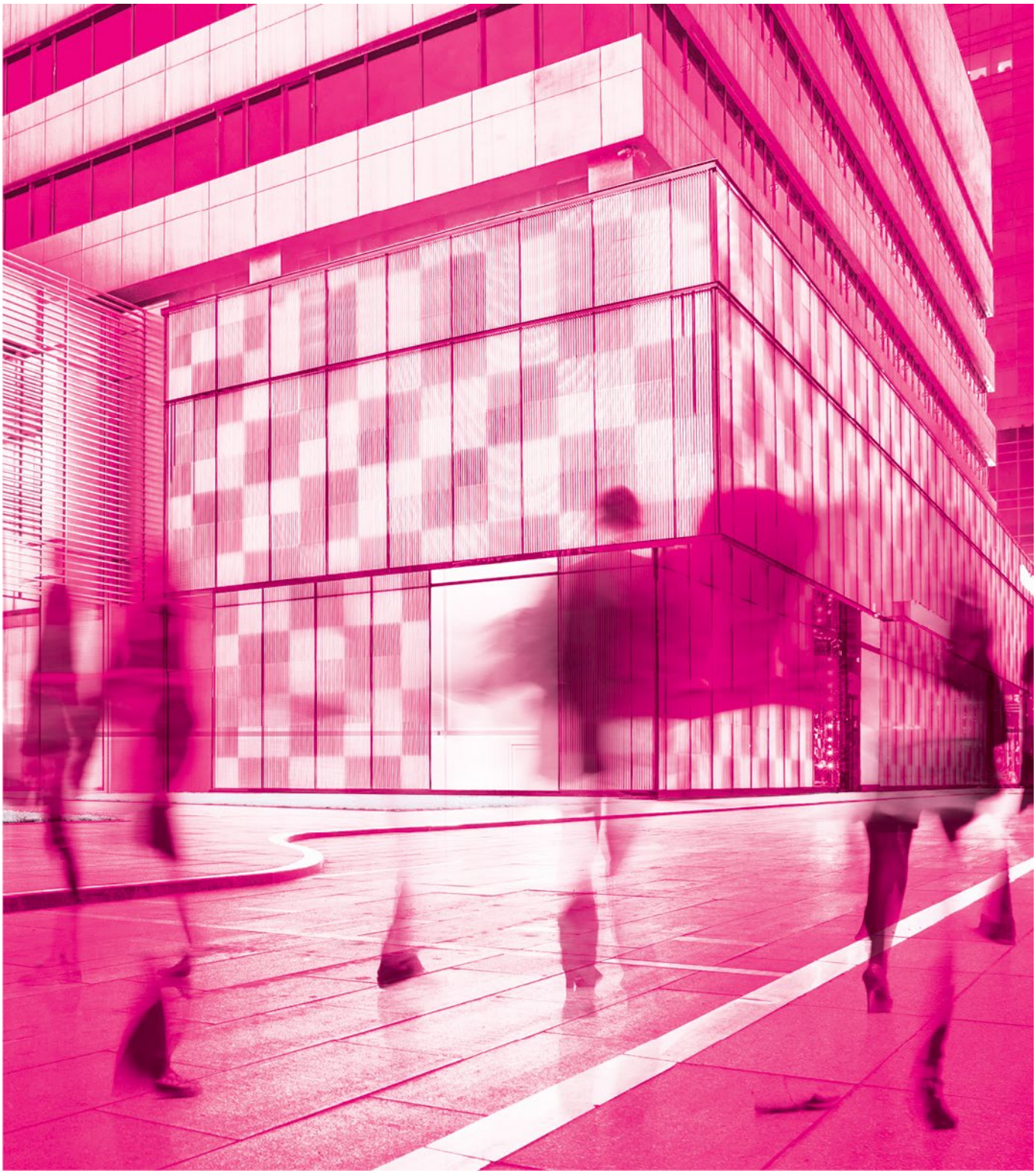
Legislation	*Key Requirements*	*Relevance to Taylor Construction Group*	*Mechanism for Evaluating Compliance*	*Link to legislation and relevant web sites*
NSW Environmental Management System Guidelines Edition 2, 2007	The guidelines are published by the NSW Government to provide a framework for managing evnironmental issues on construction sites	Taylor Construction Group is seeking to gain accreditation to the NSW EMS Guidelines. The Integrated HSE management system and the Project Environmental Management Plan templates have been designed and prepared to meet these requirements		

** Note: This Legal Register provides guidance on the applicability of certain Environmental Acts and Regulations at Taylor Construction Group and should not be seen as legal advice. Should legal advice be required, appropriate legal firms should be engaged.*

Appendix 8 – Construction Traffic and Pedestrian Management Sub-Plan



Construction Traffic Management Plan

Roseville College Student Wellbeing Centre

For Taylor Construction Group

16 November 2022

parking;
traffic;
civil design;
wayfinding;

ptc.

Document Control

Roseville College Student Wellbeing Centre, Construction Traffic Management Plan

Issue	Date	Issue Details	Author	Reviewed	For the attention of
1	17/07/2022	Draft	Preet Desai	Dan Budai	
2	22/07/2022	Final	Andrew Morse	Andrew Morse	Jason Tulich
3	10/10/2022	Revised final	Preet Desai	Dan Budai	Dean Fondas
4	07/11/2022	Revised final	Preet Desai	Dan Budai	Dean Fondas
5	16/11/2022	Revised final	Preet Desai	Dan Budai	Dean Fondas

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1. Introduction

1.1 Project Summary

ptc. has been engaged by Taylor Construction Group to prepare a construction traffic management plan (CTMP) in response to the conditions of consent (SSD-9912) for the construction of a Student Wellness Centre (SWELL) at Roseville College.

The project is located at 27 Bancroft Avenue in Roseville within the Ku-ring-gai Council Local Government Area (see Figure 1-1).

This CTMP is associated with the demolition, excavation and construction associated with the following proposal:

- Demolition of the existing sports courts and the property at 37 Bancroft Avenue,
- Construction of a new semi-recessed three / four storey building including a 25m swimming pool and associated facilities,
- Construction of a two-storey car park comprising a basement level and semi-basement level,
- Construction of rooftop sports courts above the new car park,
- Construction of a new access way to the new car park via Recreation Avenue.

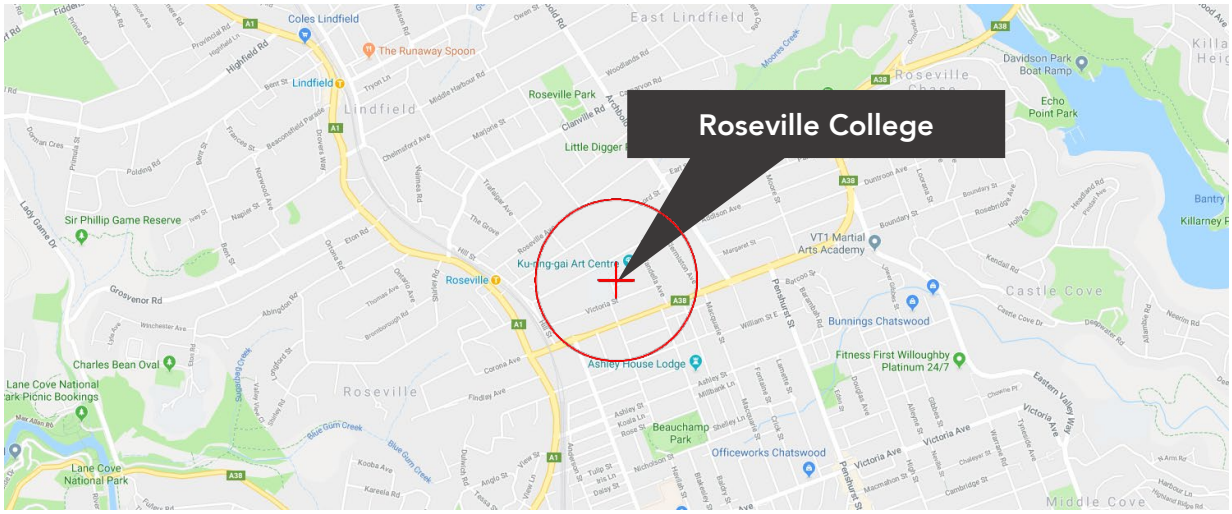

Figure 1-1: Site Location

1.2 Purpose of this Report

This report presents the following considerations in relation to the construction traffic management of the Proposal:

Section 2	A description of the project;
Section 3	A description of the road network serving the development property;
Section 4	Construction traffic management plan; and
Section 5	Summary.

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1.3 Consent Details and Relevant Conditions

The consent (SSD-9912) was granted to the applicant, The Anglican Schools Corporation by the Independent Planning Commission on 18 June 2021 within the properties known as 27-29 and 37 Bancroft Avenue, Roseville, being Lot 2003 in DP 1084428 and Lot 18 in DP 5035. The consent is for the Construction and operation of a Sport and Wellbeing Centre on the Roseville College school campus,

- demolition of outdoor sports courts at 27-29 Bancroft Avenue;
- demolition of a dwelling, ancillary structures and hardstand areas at 37 Bancroft Avenue;
- tree removal and excavation works;
- construction of a three-storey building, comprising: o 48 basement car parking spaces;
- eight-lane swimming pool, associated concourse and grandstand;
- gymnasium;
- food technology space;
- general learning areas;
- change facilities, amenities and storage;
- mechanical plant, on-site detention, filtration plant and chemical store; and
- rooftop multi-purpose sports courts.
- landscaping; and
- signage.

The conditions relating to this document are as follows:

B14. The Construction Traffic and Pedestrian Management Sub-Plan (CTPMSP) must be prepared to achieve the objective of ensuring safety and efficiency of the road network and address, but not be limited to, the following:

a) be prepared by a suitably qualified and experienced person(s);

b) be prepared in consultation with Council and TfNSW;

c) detail the measures that are to be implemented to ensure road safety and network efficiency during construction in consideration of potential impacts on general traffic, cyclists and pedestrians and bus services;

d) detail heavy vehicle routes, access and parking arrangements;

e) ensure that construction vehicle movements do not occur during the school drop-off (7:45am to 8:30am) and pick up (2.45pm to 3:30pm) periods on school days;

f) detail the operational requirements for a Works Zone along Bancroft Avenue, including activities to be carried out, measures for safe access and egress and hours of operation; and

g) include traffic control sub-plans for each of the following stages of work:

i. demolition;

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ii. *excavation;*

iii. *concrete pour;*

iv. *construction of vehicular crossing and reinstatement of footpath; and*

v. *traffic control for vehicles reversing into or out of the site.*

B18. A Driver Code of Conduct must be prepared and communicated by the Applicant to heavy vehicle drivers and must address the following:

a) minimise the impacts of construction on the local and regional road network;

b) minimise conflicts with other road users;

c) minimise road traffic noise; and

d) ensure truck drivers use specified routes.

B21. Prior to the commencement of construction, evidence of compliance of construction access arrangements with the following requirements must be submitted to the Certifier: (a) all vehicles must enter and leave the site in a forward direction;

a) the swept path of the longest construction vehicle entering and exiting the site in association with the new work, as well as manoeuvrability through the site, is in accordance with the latest version of AS 2890.2; and

b) the safety of vehicles and pedestrians accessing adjoining properties, where shared vehicle and pedestrian access occurs, has been addressed.

A further condition that requires a Construction Worker Transportation Strategy is stated as follows and has been addressed in a separate document prepared by ptc.

B19. Prior to the commencement of construction, the Applicant must prepare and submit a Construction Worker Transportation Strategy (CWTS) for the development to the satisfaction of the Planning Secretary. The CWTS must include the following: (a) detailed the provision of sufficient parking facilities to minimise the car parking demand for construction workers in the locality and impacts on nearby public and residential streets or public parking facilities;

a) options to secure off-site car parking on a temporary basis (such as a leasing arrangement) for the duration of construction, where practicable; and

b) *arrangements to effectively manage and monitor construction parking issues that may occur once construction works have commenced.*

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2. The Development

2.1 Site Content

Roseville College is located at 27-29 Bancroft Avenue in the suburb of Roseville, which is approximately 10 kilometres north of Sydney CBD. The College campus is located between Victoria Street to the south and Bancroft Avenue to the north. Prior to the SSDA submission 37 Bancroft Avenue was acquired by the College to facilitate the SWELL project.

The College is located within a predominantly residential area to the east of the T1 railway line, comprising a mix of large established dwellings and the Roseville Lawn Tennis Club to the west and medium density residential flat building to the south.

The Pacific Highway and Roseville railway station are located approximately 400 metres to the west of the site.

The aerial photograph in Figure 2-1 provides an overview of the area and context in relation to the surrounding land uses.

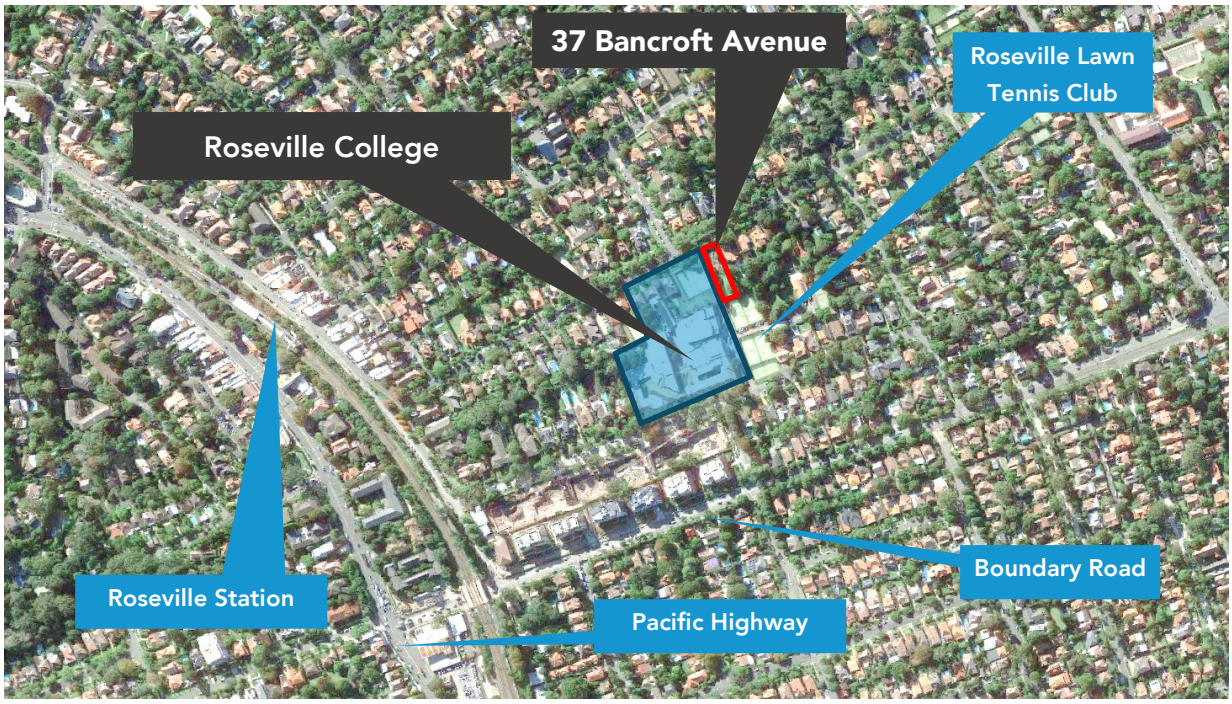

Figure 2-1: Roseville College Context

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2.2 Development Proposal

The proposed SWELL will be built on the site of the current sports courts and the site of No. 37 Bancroft Avenue.

The development will include two parts:

Part 1: Carpark (27-29 Bancroft Avenue)

- Demolition of existing sports courts;
- Construction of:
    - Two storey car park with a basement level and one semi-basement level (each level having separated access);
    - Storage areas; and
    - Amenities
- Partial demolition and modifications to existing staff carpark to the south of the new works for a new access way; and
- Landscaping.

Access to the basement level of the new carpark will be via the existing staff carpark off Recreation Avenue. A new ground-level vehicle access from Recreation Avenue will also be constructed to provide access to the new ground-level car park.

Part 2: Swimming Pool (37 Bancroft Avenue)

To adjoin the new carpark constructed in Part 1 and extending into 37 Bancroft Avenue, a new semi-recessed three / four storey building will be constructed, including:

- 25m swimming pool;
- An additional rooftop sports court;
- Gym (across two levels)
- Learning spaces;
- Amenities;
- Staff area;
- Lobby;
- Goods lift;
- Storage; and
- Landscaping

The proposed development of the SSD is shown in Figure 2-2 to Figure 2-4.

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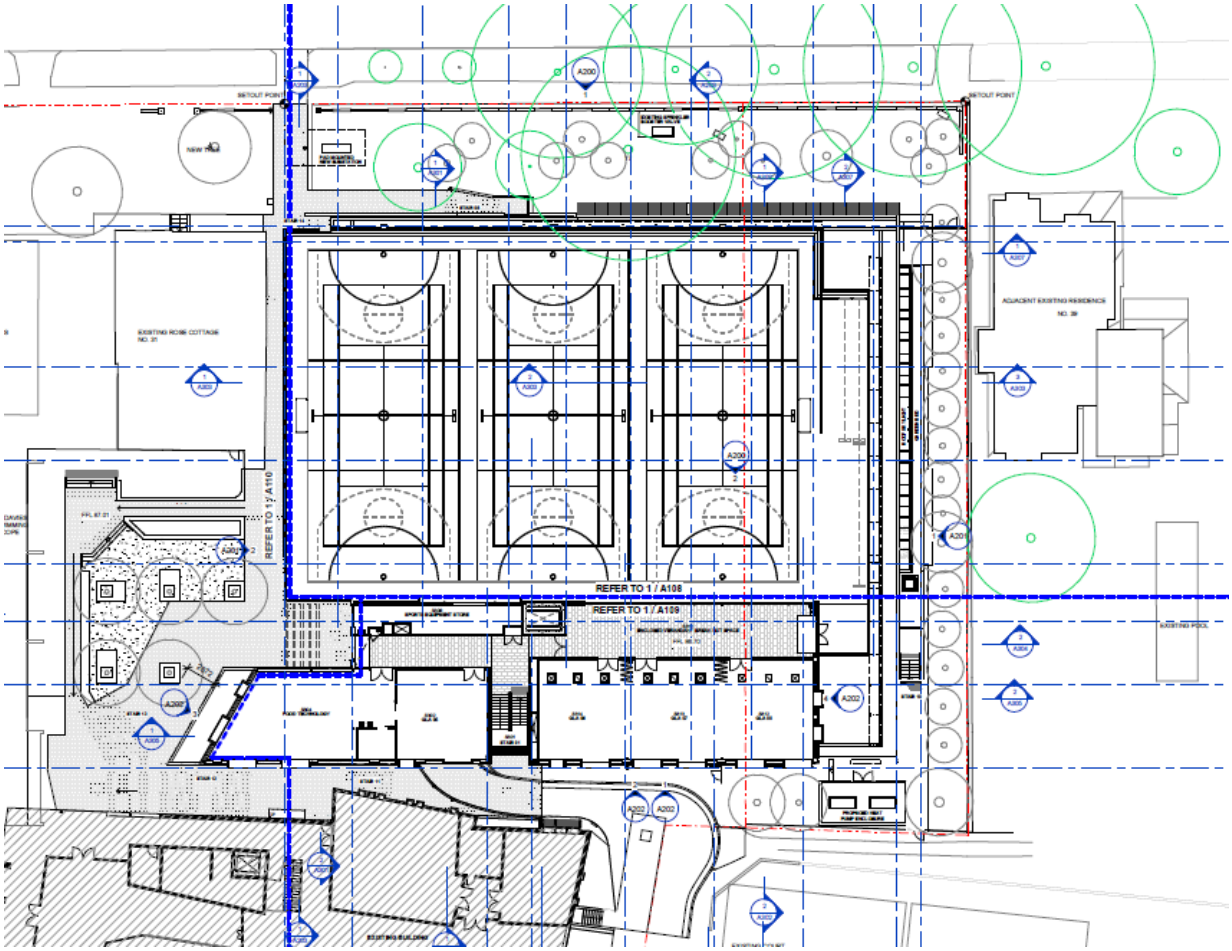

Figure 2-2: Court Level

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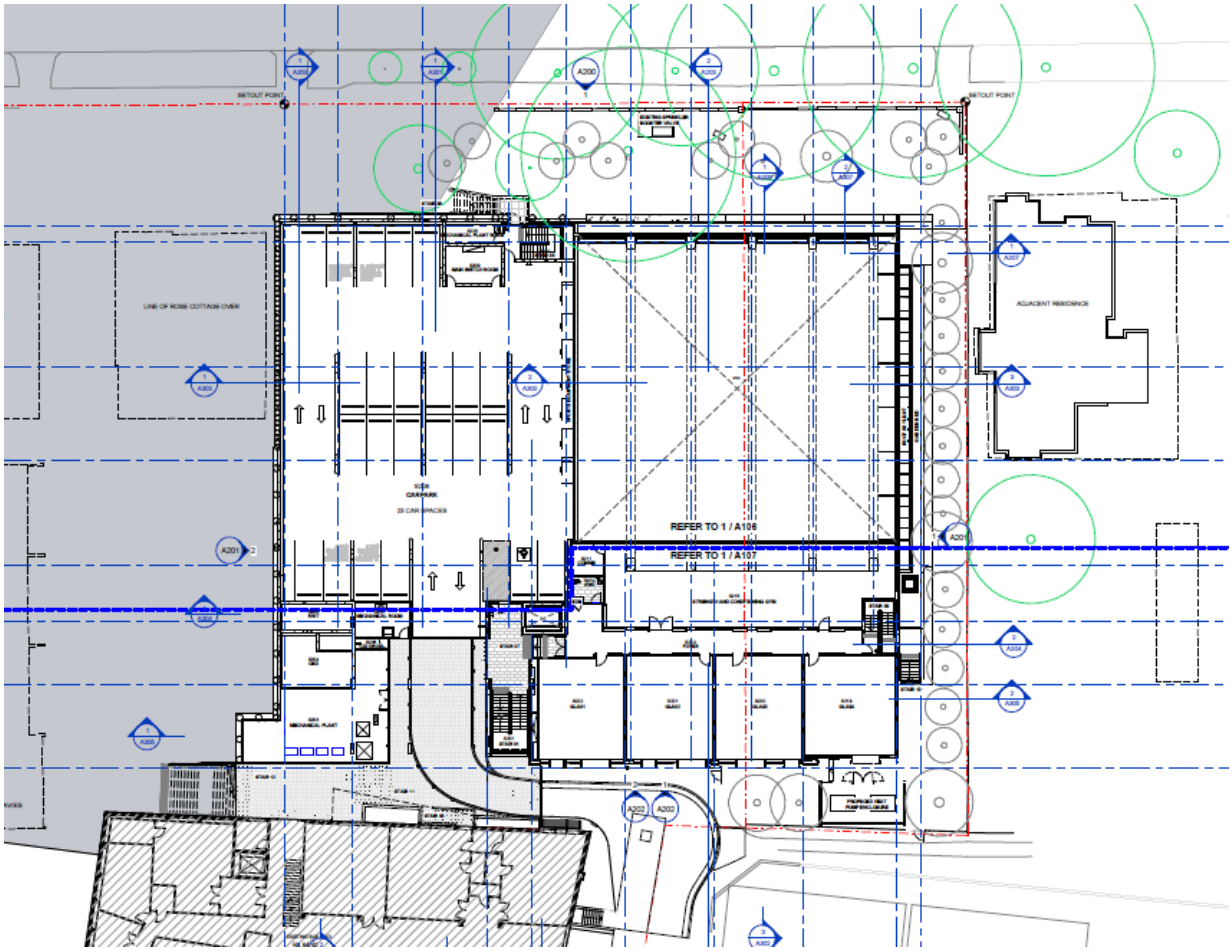

Figure 2-3: Ground Level

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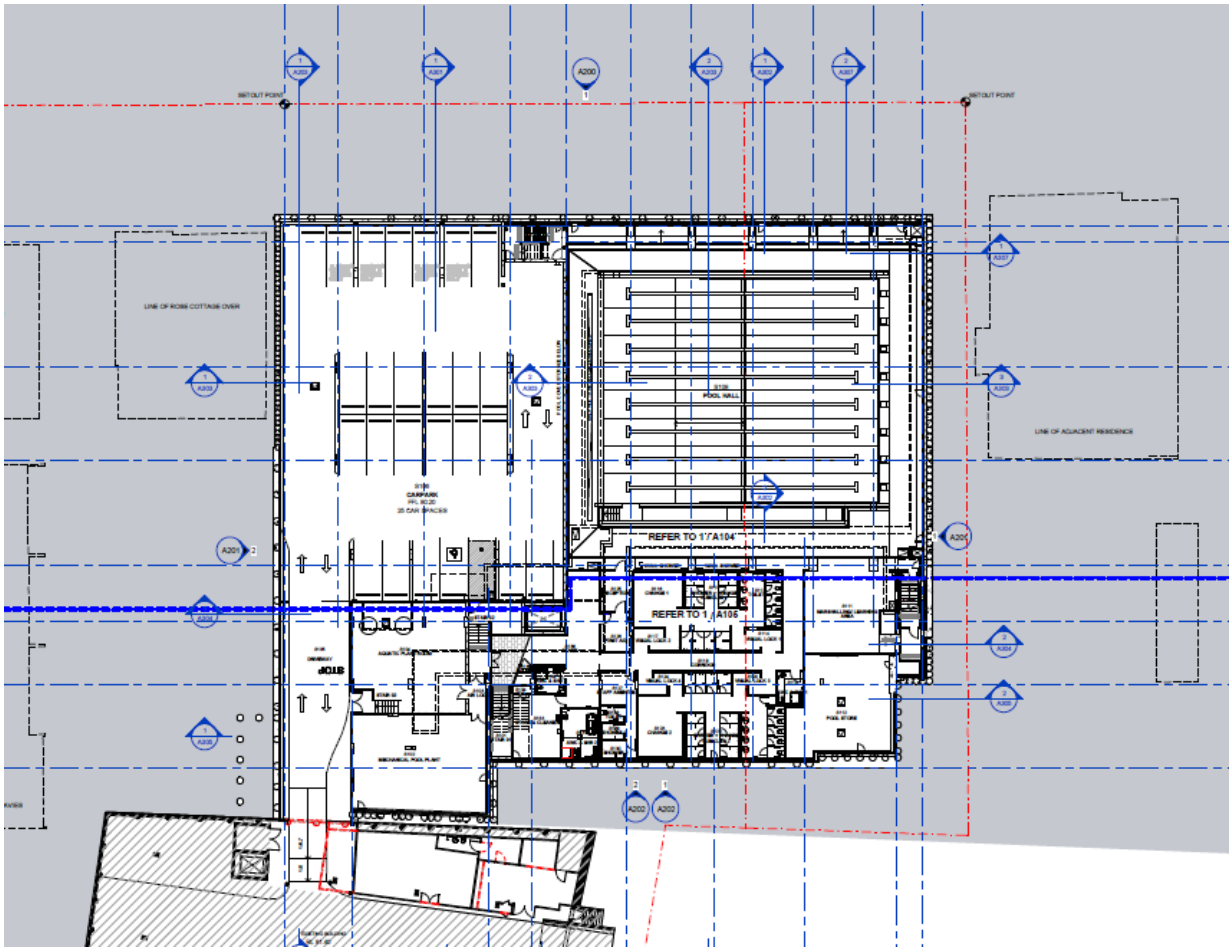

Figure 2-4: Pool Concourse Floor

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3. Existing Transport Facilities

3.1 Road Hierarchy

The College is located in Roseville to the east of the T1 railway and the Pacific Highway, and in this regard has reasonably good connections to the north shore arterial road network. However, connections to the west are somewhat limited by the North Shore Railway line, which acts as a barrier through the area.

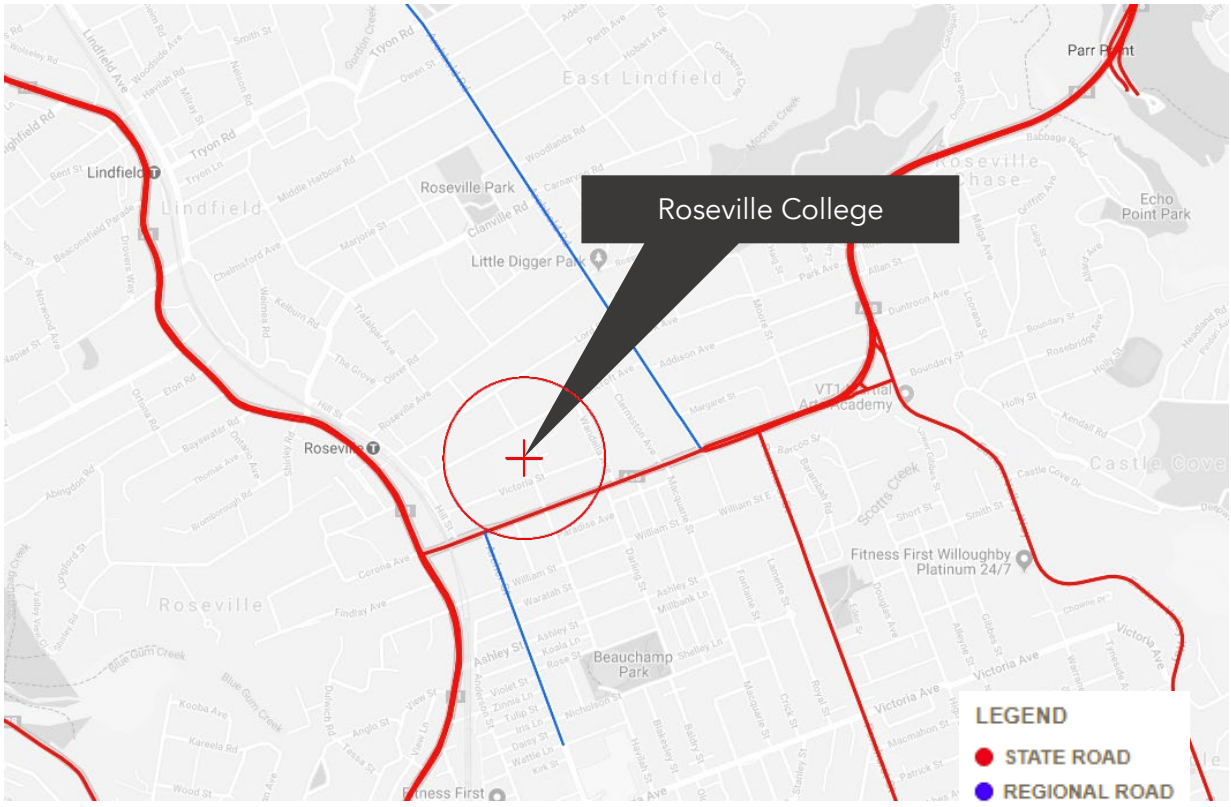

Figure 3-1: Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads	- Freeways and Primary Arterials (TfNSW Managed)
Regional Roads	- Secondary or Sub Arterials (Council Managed, partly funded by the State)
Local Roads	- Collector and Local Access Roads (Council Managed)

The road network servicing the College includes:

The Pacific Highway, which is classified as a State Road and follows a north–south alignment. Within the suburb of Roseville, the carriageway accommodates three (3) traffic lanes in each direction with auxiliary turning lanes at major intersections.

Boundary Road, which is classified as a State Road and provides a connection between Pacific Highway to the west and Warringah Road to the east.

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Recreation Avenue, which is a Local Road providing vehicular access to the existing and future car park in the College and the car park of Roseville Tennis Club. Recreation Avenue is a cul-da-sac with narrow carriageway in the width of approximately 5.5m. Access to Recreation Avenue is only available via Victoria Street.

Victoria Street, which is a Local Road providing access to the local properties. Victoria Street provides strategic access to the College frontage. Dedicated pickup and drop-off areas are provided along the northern side of Victoria Street during the school time. Most of on-street parking spaces are unrestricted parking with the exception of 1/2P on the opposite side the College during school hours.

Bancroft Avenue, which is a Local Road parallel to Victoria Street to the north of the College. Currently the College's driveway along Bancroft Avenue only provide garbage truck access for waste collection. In the vicinity of the College the carriageway accommodates single marked traffic lanes in each direction, with parking along both sides.

3.2 Surrounding Traffic Controls

The traffic controls in the vicinity of the College comprise a general 50kph speed limit with a 40kph school zone applicable to Victoria Street and Bancroft Avenue.

Local Area Traffic Management treatments are installed on both Victoria Street and Bancroft Avenue at Hill Street, which intersect with Boundary Road on the south end. Wombat pedestrian crossings are provided in front of the College's main accesses at both Victoria Street and Bancroft Avenue.

3.3 College Traffic and Parking Arrangements

The College benefits from two road frontages comprising Victoria Street and Bancroft Avenue. Vehicular access to the basement car park is currently only available via two driveways off Recreation Avenue. There is another driveway off Bancroft Avenue, which is only used by emergency vehicles and garbage trucks for waste collection. Both of these roads are classified as "local roads" according to the TfNSW Road Classification map and are residential in character (refer to Section 3.1 for further details).

The primary on-street drop-off and pick-up area is provided along Victoria Street.

3.3.1 On-Street Parking Controls

The College has two road frontages; Victoria Street and Bancroft Avenue with on-street parking. The on-street parking restrictions vary subject to different time of day. The various parking controls are presented in Figure 3-2 which comprise either unrestricted parking, 'No Parking', or 'No Parking during student drop-off and pick-up periods' ('No Parking' permits a driver to stop for up to two minutes, however, they must remain within three metres of the vehicle) and 1/2P during school pickup and drop-off periods. The on-street drop-off parking will need to be relocated to accommodate the Works Zone.

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Figure 3-2: Existing On-Street Parking Controls

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3.4 Public Transport

The College is well serviced by both train and bus services operating on the T1 Railway Line and a number of buses operating along Boundary Road and Pacific Highway and Hills Street.

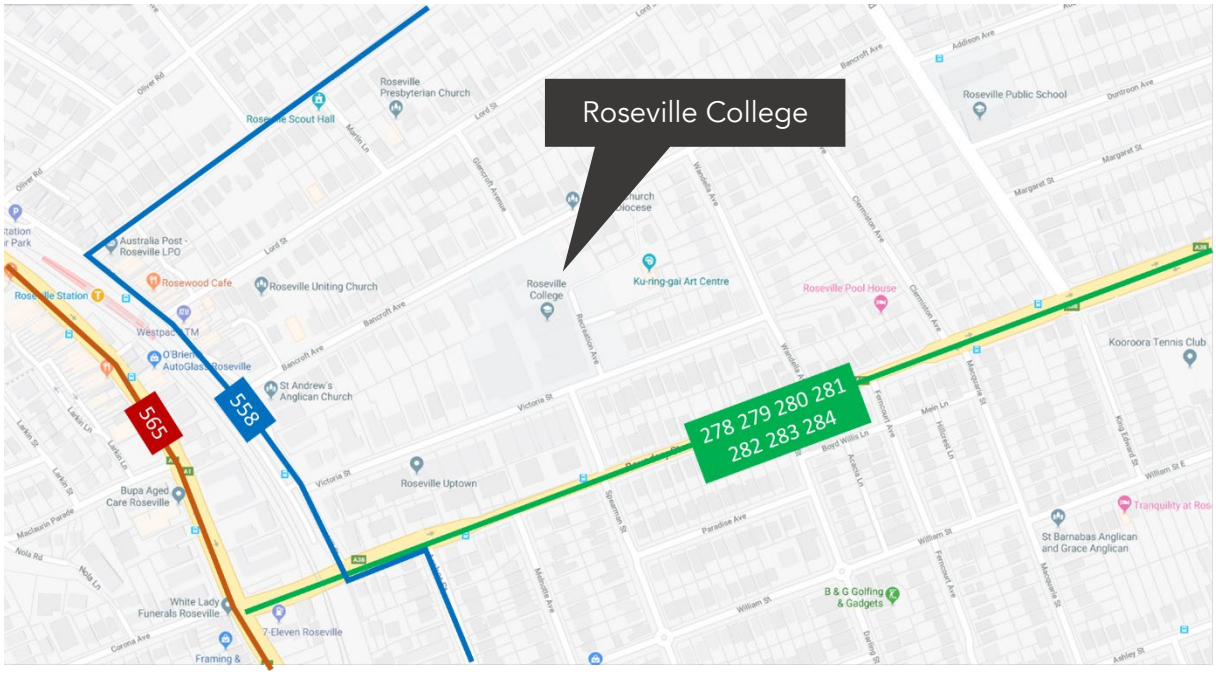

Figure 3-3: Surrounding Public Transport (Bus and Train Services)

3.4.1 Rail

Roseville Station is located approximately 300m walking distance from the Bancroft Avenue entrance and is situated on the T1 North Shore Line, providing access to the College from Northern, Southern and Western suburbs (via interchange at Sydney CBD stations).

Table 3.1: Rail Services

Rail Route	From	To	Frequency on Weekdays (approx.)
Northern Line (Southbound)	Berowra/Hornsby	Parramatta (via Central)	Arrive every 15 minutes (morning peak and afternoon school peak)
Northern Line (Northbound)	Parramatta (via Central)	Hornsby/Berowra	Arrive every 6-9 minutes (morning peak) Depart Every 6-9 minutes (afternoon school peak)

Services via the North Shore/Northern Line are frequent and provide excellent availability throughout the day, especially during peak hours.

3.4.2 Bus

A bus stop is located approximately a 2 min walk (120m) from the College at the corner of Boundary Road and Spearman Street. The buses on the opposite direction can be accessed via the signalised crossing at the intersection of Boundary Road and Archer Street.

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3.5 Active Travel

In addition to public transport, the locality has been assessed for its active transport potential.

3.5.1 Walking

In terms of public infrastructure, the local road network offers a high level of amenity and safety for pedestrians, providing footpaths on either side of most roadways, wombat crossings, supporting signage and appropriate lighting throughout the locality.

3.5.2 Cycling

The subject site is located within a well-connected bicycle network. Figure 3-4 presents a screenshot of the cycle map published by Council. This will encourage and promote cycling as an alternative mode of transport for its occupants which is a healthy, low cost and environmentally-friendly method of travel.

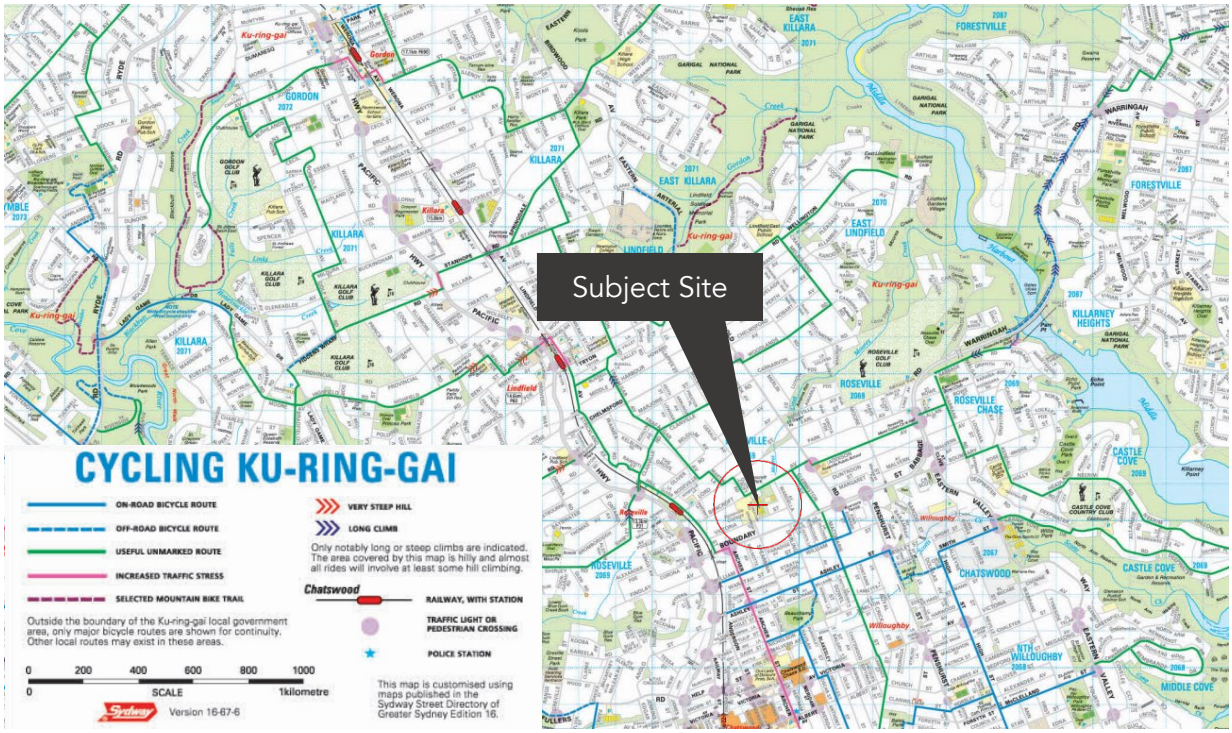

Figure 3-4: Surrounding cycle paths (Source: Ku-ring-gai Cycleways Map)

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4. Construction Traffic Management Plan

4.1 Objective

The traffic management plan associated with the construction activity aims to ensure the safety of all workers and road users in the vicinity of the construction site and the following are the primary objectives:

- To minimise the impact of the construction vehicle traffic on the overall operation of the road network;
- To ensure continuous, safe and efficient movement of traffic for both the general public and construction workers;
- Installation of appropriate advance warning signs to inform users of the changed traffic conditions;
- To provide a description of the construction vehicles and the volume of these construction vehicles accessing the construction site;
- To provide information regarding the changed access arrangement and also a description of the proposed external routes for vehicles including the construction vehicles accessing the site; and
- Establishment of a safe pedestrian environment in the vicinity of the site.

4.2 General Requirements

In accordance with Transport for NSW (TfNSW) requirements, all vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site.

All subcontractors must be inducted by the lead contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The lead contractors will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicles operating to, from and within the site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points will not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

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4.3 Staging and Program

The proposed overall development of the site will involve demolition, shoring, earthworks / excavation and construction, to which this CTMP relates.

The estimated staging, description and programming of the works is summarised in Table 4.1.

Table 4.1: Staging and Program of the Overall Project

Phase	Duration	Estimated Commencement
Enabling Works	2 weeks	25th July 2022
Demolition Works	3 weeks	
Shoring Systems	8 weeks	
Bulk Excavation	11 weeks	
Structure	26 weeks	
Roadworks to Recreation Avenue	4 weeks	
Fit-off and Facades	24 weeks	

The enabling works involve road works to Recreation Avenue.

Major concrete pours and crane/plant erection and dismantle will only take place during school holiday periods where possible. Fixed cranes, excavation plants as well as piling plants will enter the site after hours via Bancroft Avenue with appropriate traffic control.

4.4 Hours of Work

All works, associated with the project will be restricted to the time periods by conditions C4 of the consent as follows:

Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:

(a) between 7am and 6pm, Mondays to Fridays inclusive; and

(b) between 8am and 1pm, Saturdays.

No work may be carried out on Sundays or public holidays.

Construction vehicle movements will not occur during the school drop-off (7:45am to 8:30am) and pick up (2.45pm to 3:30pm) periods on school days.

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4.5 Construction Vehicle Types

As discussed in Section 4.3, the construction will be undertaken in six stages and each stage will require ingress and egress for various vehicles dependent on the stage of construction.

Table 4.2: Construction Vehicles and Estimated Vehicle Trips

Phase	Maximum Size of Vehicle	Estimated Max Daily Trips
Enabling Works	HRV	4
Demolition Works	19m Truck and dog	8
Shoring Systems	HRV	10
Bulk Excavation	19m Truck and dog	16
Structure	HRV	Generally 4 trips; maximum of 50 trips on days of concrete pours
Roadworks to Recreation Avenue	HRV	4
Fit-off and Facades	HRV	4

**These are the estimated maximum trips during each stage and the intensity will vary dependent on the construction activity being undertaken, i.e. – concrete pours, material deliveries, etc.*

Any oversized vehicle that is required to travel to the project will be dealt with separately, with the submission of required permits to and subsequent approval by Ku-ring-gai Council prior to any delivery.

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4.6 Construction Vehicle Routes

The site is located in Roseville and the proposed construction vehicle routes have regard for the surrounding traffic arrangements within the vicinity of the site, as shown in Figure 4-1 and Figure 4-2.

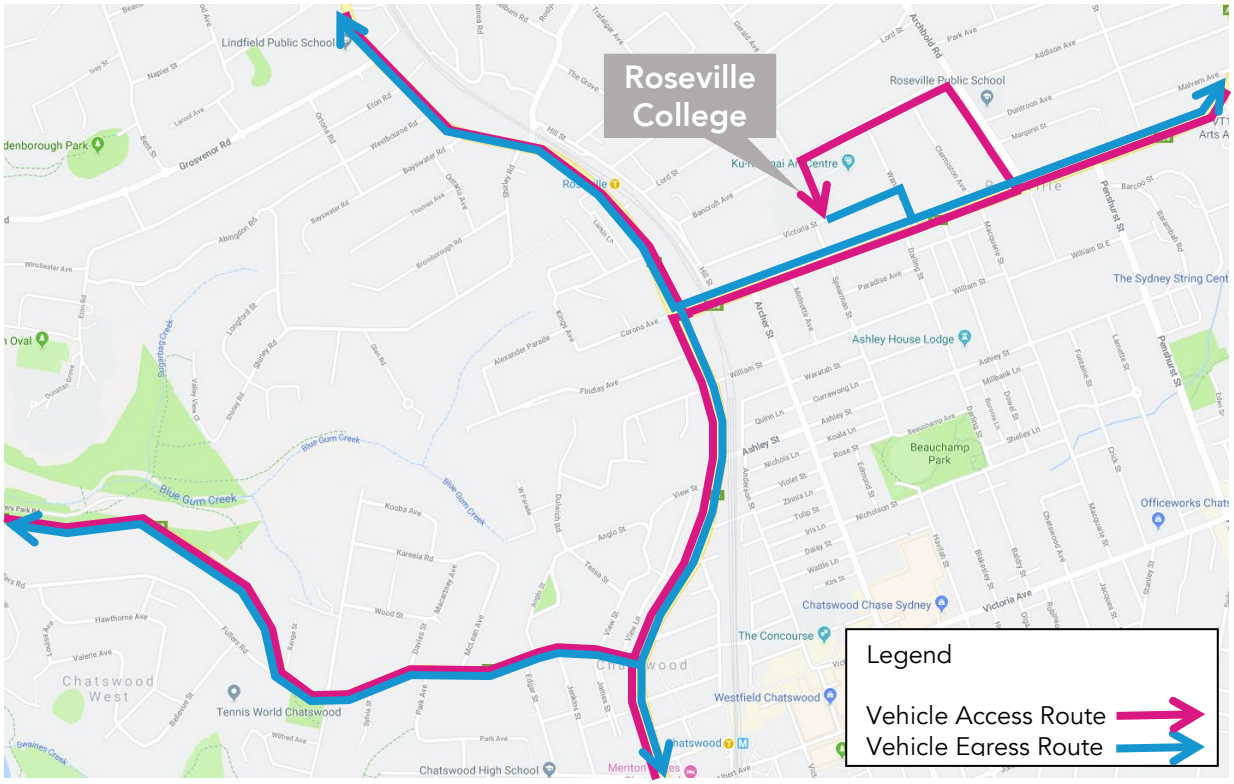

Figure 4-1: Construction Vehicle Routes – 19m Truck & Dog (Demolition, Shoring and Excavation Stages)

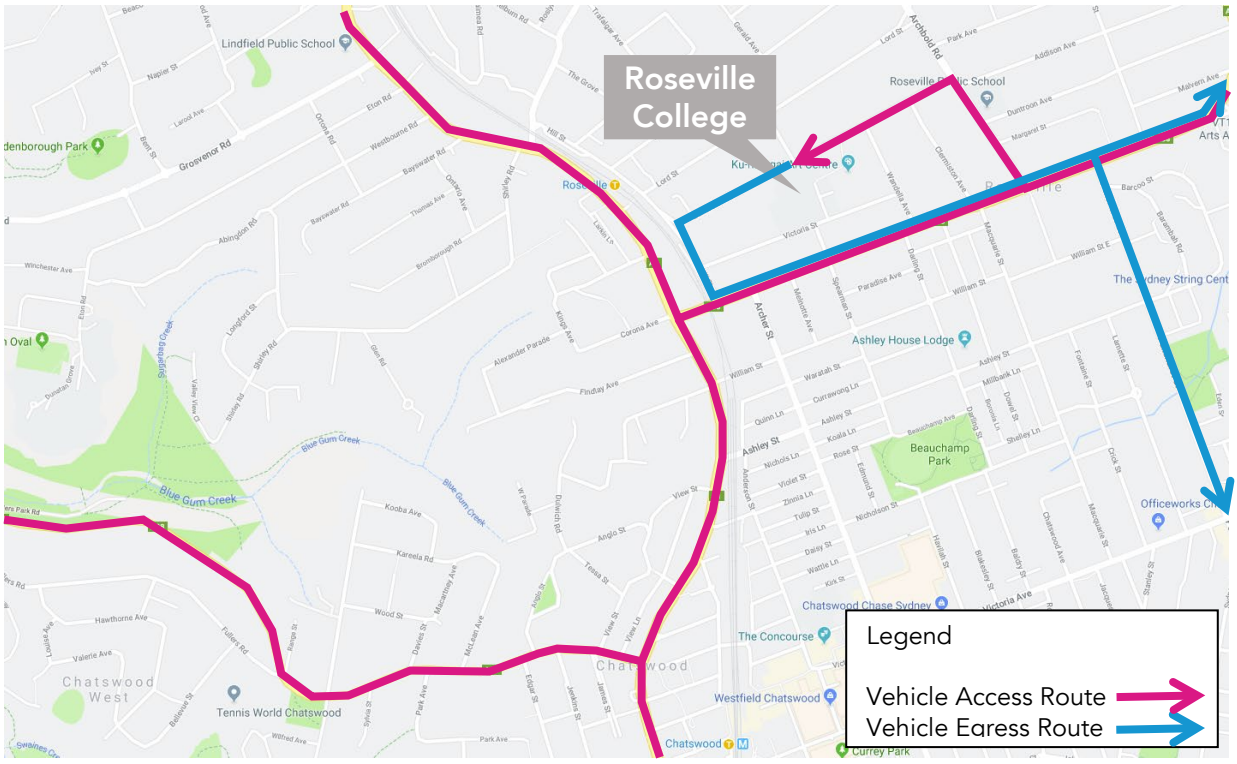

Figure 4-2: Construction Vehicle Routes - 12.5m HRV (Construction Stage)

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No queuing or marshalling of trucks is permitted on any public road.

All vehicle routes are constrained to existing public roads that have the physical geometry to accommodate the turning movements.

All access gates to the site will be managed by gate controllers to ensure the safe management of the access and egress to the site and its interaction with non-construction traffic on the road network.

A swept path analysis of the longest construction vehicle entering and exiting the site in association with the new work, as well as manoeuvrability through the site has been conducted in accordance with AS 2890.2:2018 (see Appendix A).

Swept path analysis has also been undertaken utilising a truck and dog truck being the largest expected vehicle type on the key intersections to confirm that the exiting intersections can accommodate these vehicles.

Figure 4-3: Intersection Overview

The swept path analysis for each intersection can be found in Figure 4-8 through Figure 4-9.

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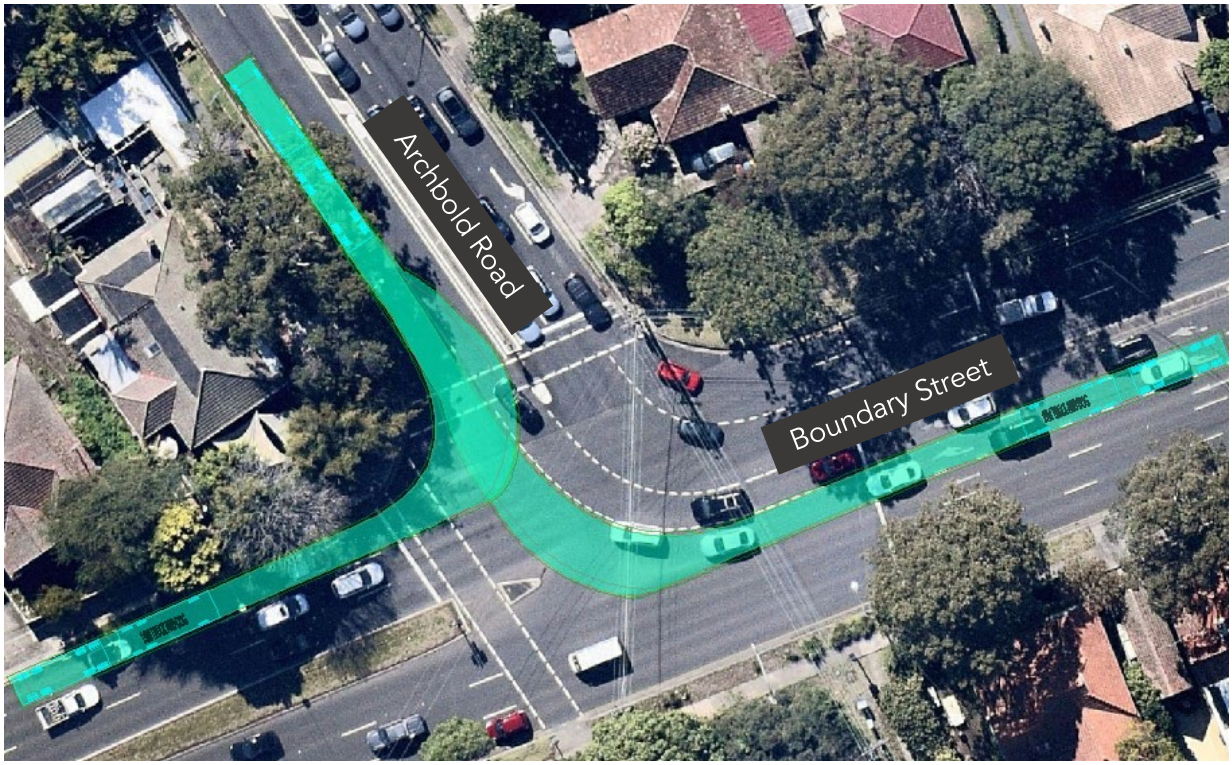

Figure 4-4: 19m Truck and Dog at intersection 1 (Boundary Street/Archbold Road)

Figure 4-5: 19m Truck and Dog at intersection 2 (Archbold Road/Bancroft Avenue)

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Figure 4-6: 19m Truck and Dog at intersection 3 (Bancroft Avenue/Wandella Avenue)

Figure 4-7: 19m Truck and Dog at intersection 4 (Wandella Avenue/Victoria Street)

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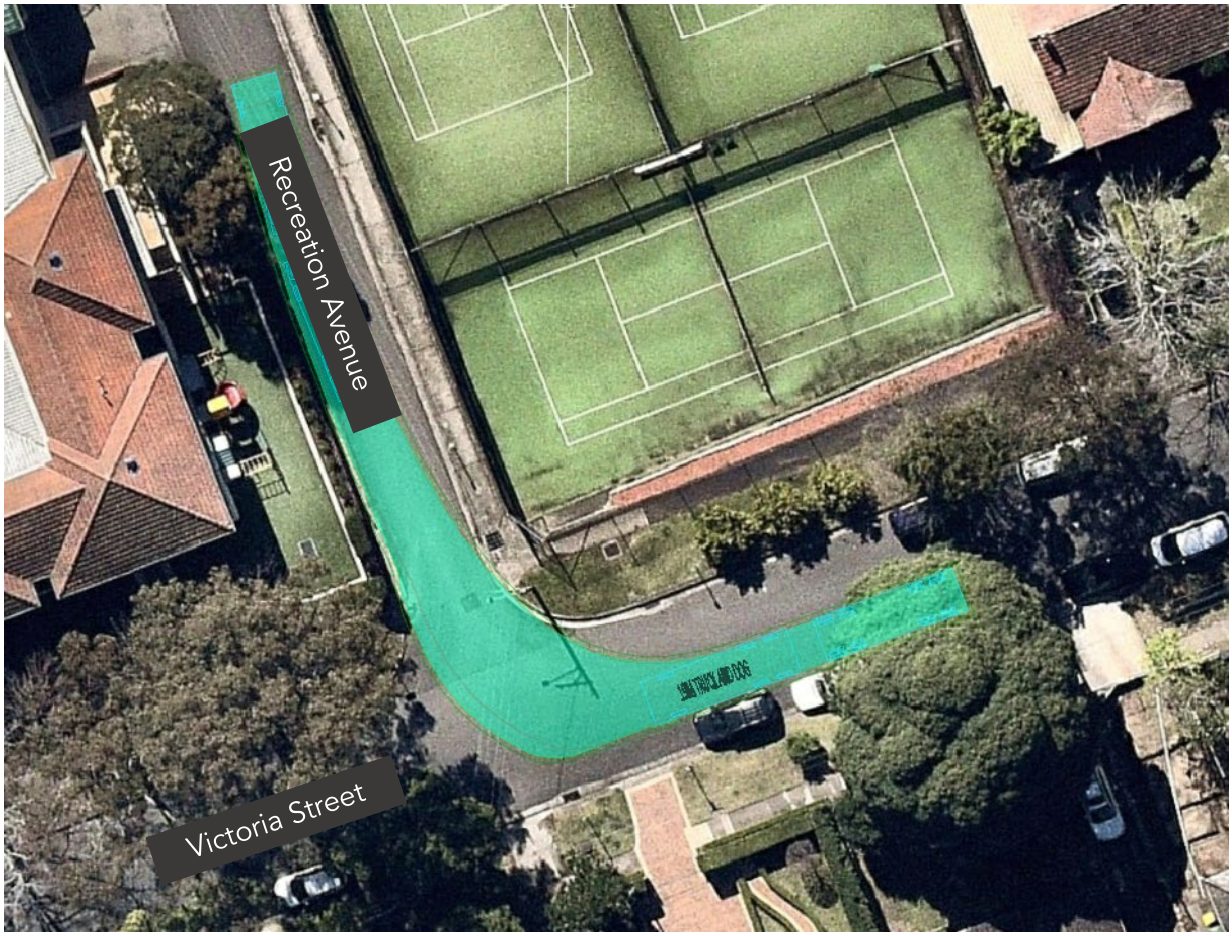

Figure 4-8: 19m Truck and Dog at intersection 5 (Victoria Street/Recreation Avenue)

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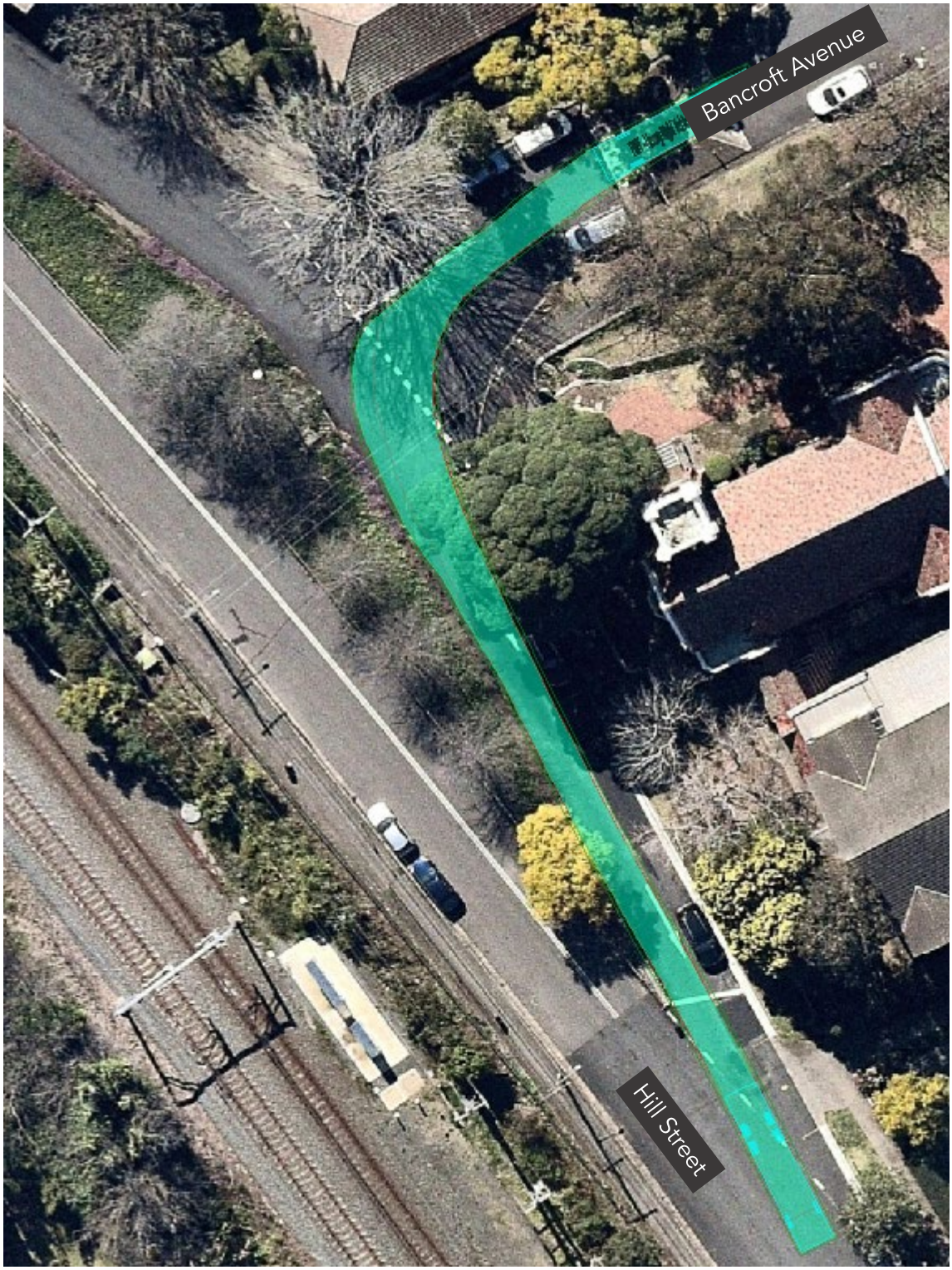

Figure 4-9: HRV at intersection 6 (Hill Street/Bancroft Avenue)

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4.7 Construction Vehicle Site Access and Egress

During the demolition, shoring and excavation phases, the construction vehicles will access the site via Recreation Avenue and exit onto Bancroft Avenue in a one-way arrangement.

During the construction stage, a Works Zone is required on Bancroft Avenue for delivery trucks and concrete trucks. Unloading of materials and excavation plants will occur within the Works Zone. Construction vehicles will not access the site via Recreation Avenue at this stage.

Gate controllers will be utilised to safely manage access and egress from the site at all times.

The site arrangements and extents of the Works Zone for the earthworks and construction stages are shown in Figure 4-10 and Figure 4-11.

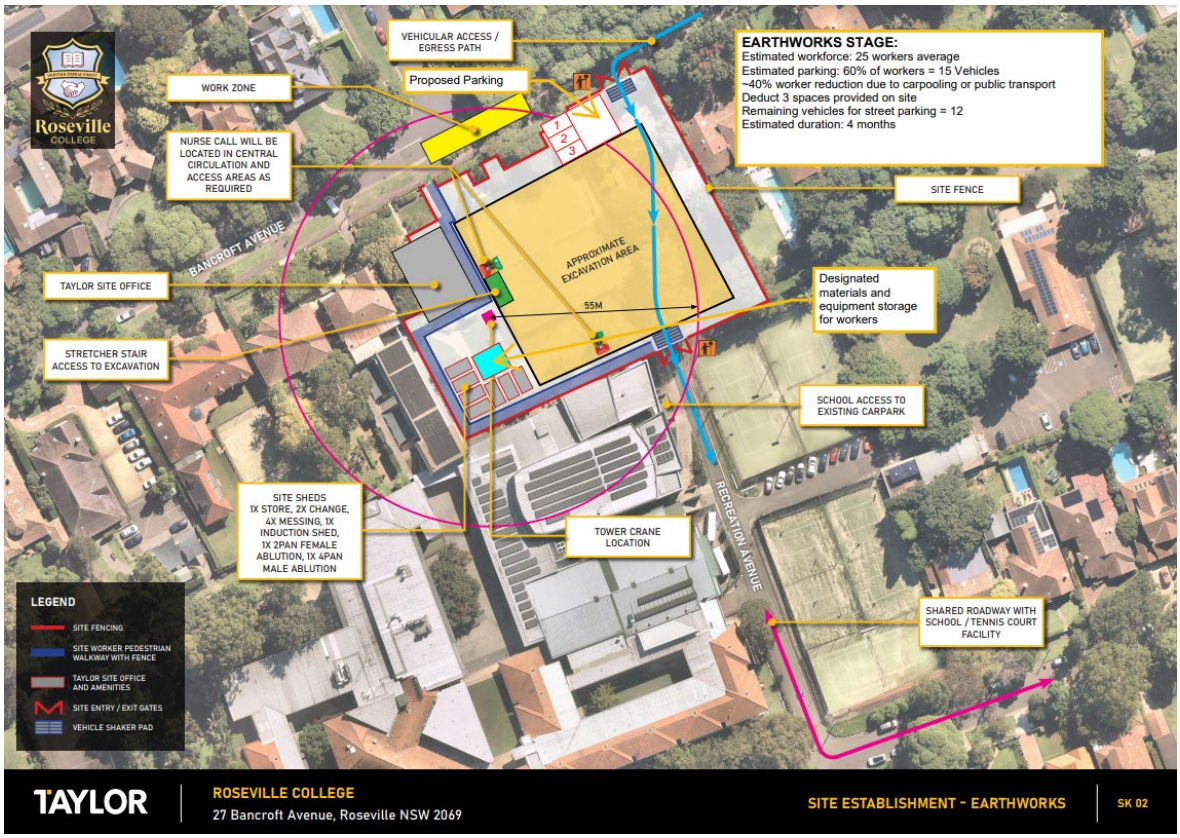

Figure 4-10: Earthworks site arrangement

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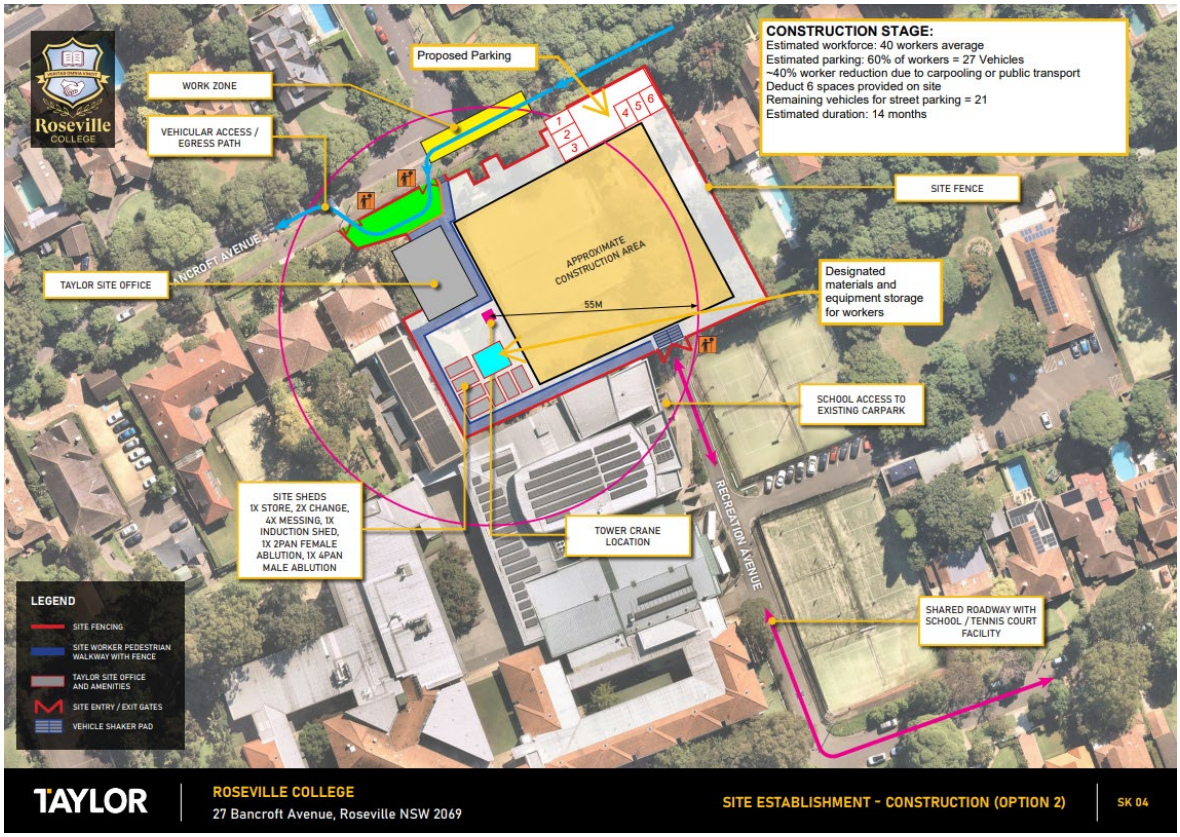

Figure 4-11: Construction site arrangement

Traffic Controllers will be utilised to safely manage access and egress from the Works Zone.

4.8 Works Zone

A Works Zone is proposed on Bancroft Avenue. The Works Zone operational hours are expected to align with the hours of work:

7am and 6pm, Mondays to Fridays inclusive; and

8am and 1pm, Saturdays.

Work Zone applications will be submitted as part of the Detail Construction Traffic Management Plan.

4.9 Pedestrian Access

Pedestrian access to and around the site is to be maintained at all times. To provide segregation and protection for pedestrians, it is proposed a 2.4m high Class A hoarding is to be erected along the site boundary. This fencing will define the extent of the works site.

Pedestrian access to the site will be via two designated pedestrian gates and the exact location of these gates will be determined during the CC process.

All access points are to be securely locked when construction activities are not in progress.

The exact location of this fence is to be agreed on site, prior to commencement of the works.

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Sections of the footway along the development frontages may be required for short term closure during the construction process. The extent and timings will be determined during the CC process and traffic control, in accordance with the TfNSW Traffic Control at Works Sites, will be provided accordingly.

4.10 Special Deliveries

Whilst not anticipated, any oversized vehicle that is required to travel to the site will be dealt with separately, with the submission of required permits to and subsequent approval by Council prior to any delivery. Requests shall be submitted 28 days prior to the scheduled date of use of an oversized vehicle.

4.11 Staff Parking

It is expected that there will be on average 35 workers on site with a peak of 85 workers on site at any given time. There will be three parking available within the site during the initial earthworks stage, which will be increased to six spaces during the primary construction stage. All site personnel are to be advised that they are not to park in the on-street parking in the vicinity of the development site. For the purposes of this project we have nominated that no parking should occur within 300 metres of the site as shown in the following image.

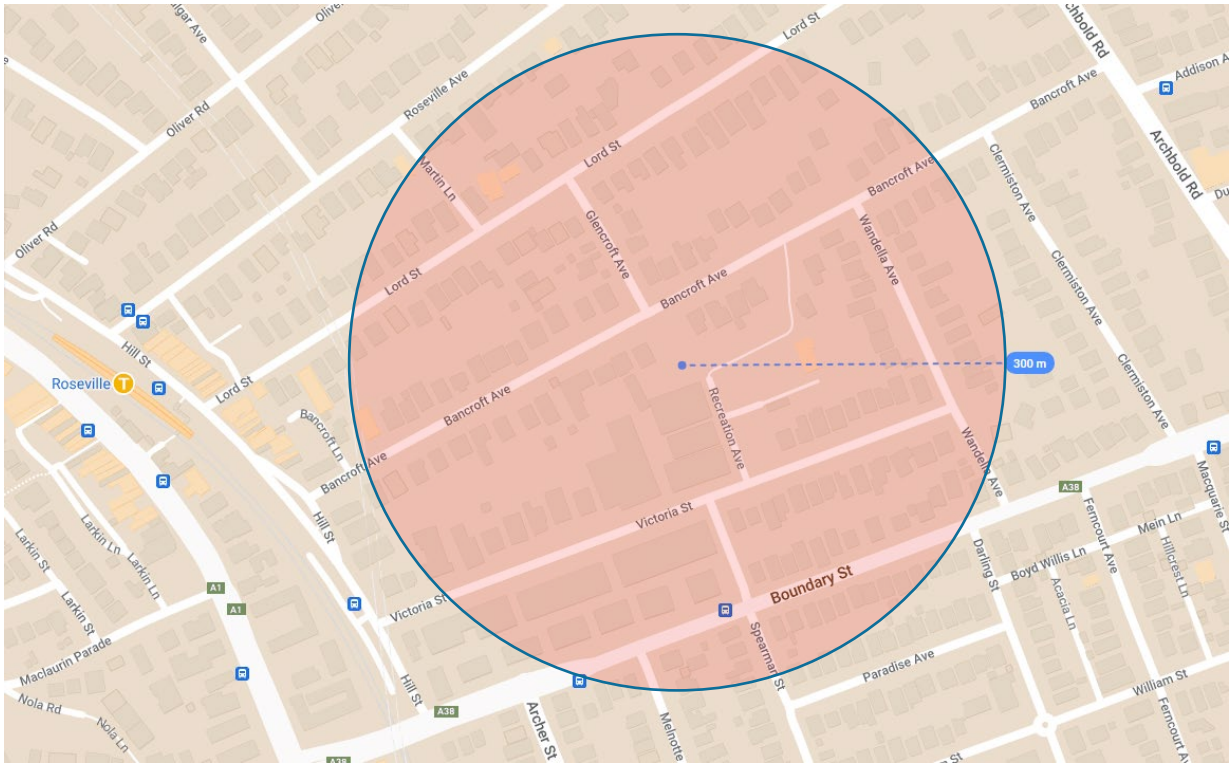

Figure 4-12: 300m No Parking Zone

The prohibition of parking will be communicated to the subcontractors throughout the entire process. The subcontractor's scope of works will have the parking strategy in it which includes off limit areas. These same requirements will also be communicated in the subcontract itself, on site induction for all workers and through signage on site.

To minimise the required parking, the contractor will be encouraged to assist in the transportation of workers to the site. The following outlines the methods to be adopted to *"effectively manage and monitor construction parking issues that may occur"* :

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- The parking restrictions and a public transport information pack is to be provided to all staff and contractors as part of the induction, advising them of the public transport options available.
- Site personnel will be advised to car pool (where ever practicable). Carpooling can be encouraged in the tender interview process, as a part of the "transport information pack" and also input in the scope of works as a preferred method of transport over individual vehicle transport. Usually this would be limited to workers within the same subcontractor company as they consistently work on site at the same time.
- The parking restrictions and transport options will be discussed in the daily tool box talks.
- Monthly spot checks of the on-street parking activity by the contractor. Any non-conformances either through complaints or spot checks can be tracked in a register to identify patterns (i.e. repeat offenders) who can be addressed accordingly, and contractually.
- Consultation will be undertaken with the local community and complaints managed in accordance with the 'Approved Community Consultation Strategy' which has been prepared in accordance with Consent Condition B8 and approved by the Department on 10 June 2022 (ref: SSD-9912-PA-1).

It is noted that the Chatswood commercial centre includes a number of car parks that are available for use by the public in connection with the retail centres (Chatswood Chase, Westfield, Mandarin Centre etc.). we have considered these in our assessment of available parking and consider that they are not suitable due to the distance / time required to travel to the site and also that there is no formal instrument available for using parking that, while open to the public, is provided for the connected land-uses.

4.12 Work Site Security

As discussed in Section 4.9, to provide security to the works site and protection to the general public, it is proposed that a 2.4m high, Class A hoarding is to be erected along the development site boundary. This fencing will define the extent of the works site. All access points are to be securely locked when construction activities are not in progress. The exact locations of the access points are to be agreed on site, prior to commencement of the works.

4.13 Staff Induction

All staff and subcontractors engaged on site will be required to undergo a site induction. The induction will include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, OH&S, driver protocols and emergency procedures. Additionally, the lead contractor will discuss TMP requirements regularly as a part of toolbox talks and advise workers of public transport and car-pooling opportunities.

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4.14 Emergency Vehicle Access

The proposed traffic control arrangements propose partial closure of Recreation Avenue and full closure of the end of Recreation Avenue temporarily during the erection and dismantling of the crane/hoist.

Any emergency vehicles requiring access to the project site will do so via the site access on Bancroft Avenue or Recreation Avenue.

4.15 Access to adjoining properties

Access to all adjoining properties will be maintained throughout the works.

4.16 Occupational Health and Safety

Any workers required to undertake works or traffic control within the public domain shall be suitably trained and will be covered by adequate and appropriate insurances. All traffic control personnel will be required to hold TfNSW accreditation in accordance with Section 8 of Traffic Control at Worksites.

4.17 Traffic Guidance Schemes

The Traffic Guidance Schemes (TGS) in Appendix C have been developed in accordance with Australian Standards (AS 1742.3 – Traffic Control Devices for Works on Roads) and TfNSW, Traffic Control at Worksites manual will advise motorist of upcoming changes in the road network.

Whilst the site is not considered to have significant risks, this document has been used to inform the design of the TGSs in Appendix C to minimise risk potential.

During construction the contractor shall each morning, prior to work commencing, ensure all signage is erected in accordance with the TGS and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is either covered or removed as required. Sign size is to be size "A".

No deviation from the approved TGS shall be permitted, unless otherwise approved by Council and certified by an TfNSW accredited personnel.

The associated TGS road signage will inform drivers of works activities in the area including truck movements in operation.

Prior to commencement of works on site the contractor is to inform neighbouring properties of proposed works and provide site contact information by means of a letter box distribution.

4.18 Contact Details for On-Site Enquiries and Site Access (to be advised)

For information regarding on-site enquiries and site access, …….....…….. Taylor (the Principal Contractor) can be contacted via phone on …… or email on ……

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5. Summary

This CTMP has been prepared to outline the construction traffic measures to improve site safety to the public and workers and the construction process.

The construction activity is anticipated to have minimal disruption to the daily activities within the vicinity of the site and does not require mitigation of impacts for network efficiency.

It is envisaged that this document will be continually reviewed and amended if required, due to changes in design, TfNSW, Councils or any other authority requirements.

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Appendix A Swept Paths

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Appendix B Driver's Code of Conduct

Driver Code of Conduct

Safe Driving Policy for SWELL, Roseville College

In addition to the requirements below, appropriate traffic rules are to be incorporated into the subcontracts for trades associated with the site along with inductions on the material.

Objectives of the Drivers Code of Conduct

- Minimise the impact of earthworks on the local and regional road network;
- Minimise conflict with other road users;
- Minimise road traffic noise; and
- Ensure truck drivers use specified heavy vehicles routes between the Site and the sub-regional road network.

Code of Conduct

- All vehicle operators accessing the site must:
- Take reasonable care for his or her own personal health and safety;
- Not adversely, by way of actions or otherwise, impact on the health and safety of other persons;
- Notify their employer if they are not fit for duty prior to commencing their shift;
- Obey all applicable road rules and laws at all times;
- In the event an emergency vehicle behind your vehicle, pull over and allow the emergency vehicle to pass immediately;
- Obey the applicable driving hours in accordance with legislation and take all reasonable steps to manage their fatigue and not drive with high levels of drowsiness;
- Obey all on-site signposted speed limits and comply with directions of traffic control supervisors in relation to movements in and around temporary or fixed work areas;
- Ensure all loads are safely contained / restrained, as necessary;
- Drive over devices – located at the site's access – to vibrate off and wash off any loose material attached to heavy vehicles;
- Operate their vehicles in a safe and professional manner, with consideration for all other road users;
- Hold a current Australian State or Territory issued driver's licence;
- Notify their employer or operator immediately should the status or conditions of their driver's license change in any way;
- Comply with other applicable workplace policies, including a zero tolerance of driving while under the influence of alcohol and/or illicit drugs;
- Not use mobile phones when driving a vehicle or operating equipment. If the use of a mobile device is required, the driver shall pull over in a safe and legal location prior to the use of any mobile device;
- Advise management of any situations of which you know, or think, may present a threat to workplace health and safety;
- Drive according to prevailing conditions (such as during inclement weather) and reduce speed, if necessary; and
- Have necessary identification documentation at hand and ready to present to security staff on entry and departure from the Site, as necessary, to avoid unnecessary delays to other vehicles.

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Crash or Incident Procedure

- Stop your vehicle as close to it as possible to the scene, making sure you are not hindering traffic. Ensure your own safety first, then help any injured people and seek assistance immediately if required.
    - Ensure the following information is noted:
        - Details of the other vehicles and registration numbers;
        - Names and addresses of the other vehicle drivers;
        - Names and addresses of witnesses; and
        - Insurers details.
    - Give the following information to the involved parties:
        - Name;
        - Address; and
        - Company details
- If the damaged vehicle is not occupied, provide a note with your contact details for the owner to contact the company.
    - Ensure that the police are contacted should the following circumstances occur:
        - If there is a disagreement over the cause of the crash;
        - If there are injuries; and / or
        - If you damage property other than your own.
    - As soon as reasonably practical, report all incident details to your manager.
- Additional Measures to be complied with:
  Operating in a sensitive area, drivers must operate in a safe and considerate manner. Engine brakes must not be applied whilst on surrounding streets. Engine brakes must also not be used on any other roads within built up areas, in accordance with the NSW road regulations. In addition, all vehicles must strictly follow all posted speed limits, traffic signs, traffic lights and instructions from Police or RMS officers, as well as this code. These conditions are strictly enforced to manage safety, environmental and social impacts in accordance with the Project Approval.

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Appendix C Traffic Guidance Schemes

© Copyright; ptc.

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LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP

1300 008 274

Traffic@varigroup.com.au

Traffic Controllers Installation Sign Off:

Name:

Date:

Supervisor Sign Off:

Name:

Date:

TCP IMPLEMENTATION:

VARI GROUP DOES NOT ACCEPT LIABILITY FOR OR ENDORSE THE USE OF THE TCP UNLESS IMPLEMENTED DIRECTLY BY AN AUTHORIZED REPRESENTATIVE OF VARI GROUP, HOLDING VALID QUALIFICATIONS TO CARRY OUT SUCH WORKS.

VEHICLE MOVEMENT PLAN:

ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLERS WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL.

RECOMMENDED TAPER LENGTH:

APPROXIMATE SPEED OF TRAFFIC KM/H	TRAFFIC CONTROL AT BEGINNING OF TAPER	LATERAL SHIFT TAPER	MERGE TAPER
45 OR LESS	15	0	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

TOLERANCES:

POSITIONING OF SIGNS MINIMUM 10% LESS THAN THE DISTANCE OR LENGTHS GIVEN MAXIMUM 25% MORE THAN THE DISTANCE OR LENGTHS GIVEN SPACING OF DELINEATING DEVICES MAXIMUM 10% MORE THAN THE SPACING GIVEN NO MINUMUM.

LANE WIDTHS:

THE MIN LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE 3.0m (3.5m DESIRABLE).

QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .

Notes: Work Zone Plan

(All surroundings impacted by our works)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

TINSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TINSW Accredited Traffic Controllers To Implement Extendable Barriers To Assist With Pedestrian Management.

TINSW Accredited Traffic Controllers To Guide And Assist The General Public As Well As Construction Vehicles When Required.

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Construction Vehicles To Take Note Of School Zone Hours (8 - 9:30am & 2:30 - 4pm)

Pedestrians To Be Prioritised At All Times.

All Signs To Be Placed As Per Dimension "D"

Scope Of Works:

- Construction vehicle Movements,
- Pedestrian Management,
- Work Zone

N

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GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AS1742.3 & TCAWS 2010
2. ALL TRAFFIC CONTROL DIAGRAMS TO BE READ CONJUNCTION WITH THE TCAWS 2010.
3. NON APPLICABLE EXISTING SIGNAGE SHALL BE COVERED E.G. SPEEDS SIGNS DUE TO THE TEMPORARY SPEED ZONE.
4. ALL SIGNAGE DISTANCE SHALL COMPLY WITH AS 1742.3 & TCAWS 2010
5. IN ACCORDANCE WITH TCAWS 2010 TRAFFIC CONTROLLERS TO ASSIST PEDESTRIANS WITH MOVEMENT THROUGH & AROUND THE WORKSITE.
6. SIGNAGE SHALL BE PLACED ON THE SIDE OF THE ROAD ADJACENT TO THE TRAFFIC FLOW.
7. REMOVAL OF TRAFFIC CONTROL SIGNS AND DEVICES SHOULD BE UNDERTAKEN IN THE REVERSE ORDER OF ERECTION, PROGRESSING FROM THE WORK AREA OUT TOWARD THE APPROACHES.

DIMENSON "D"

DIMENSON "D"		
SPEED OF TRAFFIC KM/H	DIMINESON D=M AS.1742.3	TC@WS
45 OR LESS	15m	15m
46 - 55	15m	50m
56 - 65	45m	60m
GREATER THAN 65 KM/H	EQUAL TO POSTED SPEED	

CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 12/08/22	DESIGNED BY Noah Nguyen-Luu	TAYLOR
ROAD NAME:	Bancroft Ave	Speed Limit:	50km/h	ROL Number:	TBC	Date Revised: 15/08/22	License #1025516	
SUBURB:	Rosevill	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan	
T/Cs REQUIRED:	2	Operation:	Work Zone	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601	
Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:15/08/22	Plan Ref #:00TBA00	

LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP
1300 008 274
Traffic@varigroup.com.au

Traffic Controllers Installation
Sign Off:
Name:
Date:
Supervisor Sign Off:
Name:
Date:

TCP IMPLEMENTATION:

VARI GROUP DOES NOT ACCEPT LIABILITY FOR OR ENDORSE THE USE OF THE TCP UNLESS IMPLEMENTED DIRECTLY BY AN AUTHORIZED REPRESENTATIVE OF VARI GROUP, HOLDING VALID QUALIFICATIONS TO CARRY OUT SUCH WORKS.

VEHICLE MOVEMENT PLAN:

ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLERS WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL.

RECOMMENDED TAPER LENGTH:

APPROXIMATE SPEED OF TRAFFIC KM/H	TRAFFIC CONTROL AT BEGINNING OF TAPER	LATERAL SHIFT TAPER	MERGE TAPER
45 OR LESS	15	0	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

TOLERANCES:

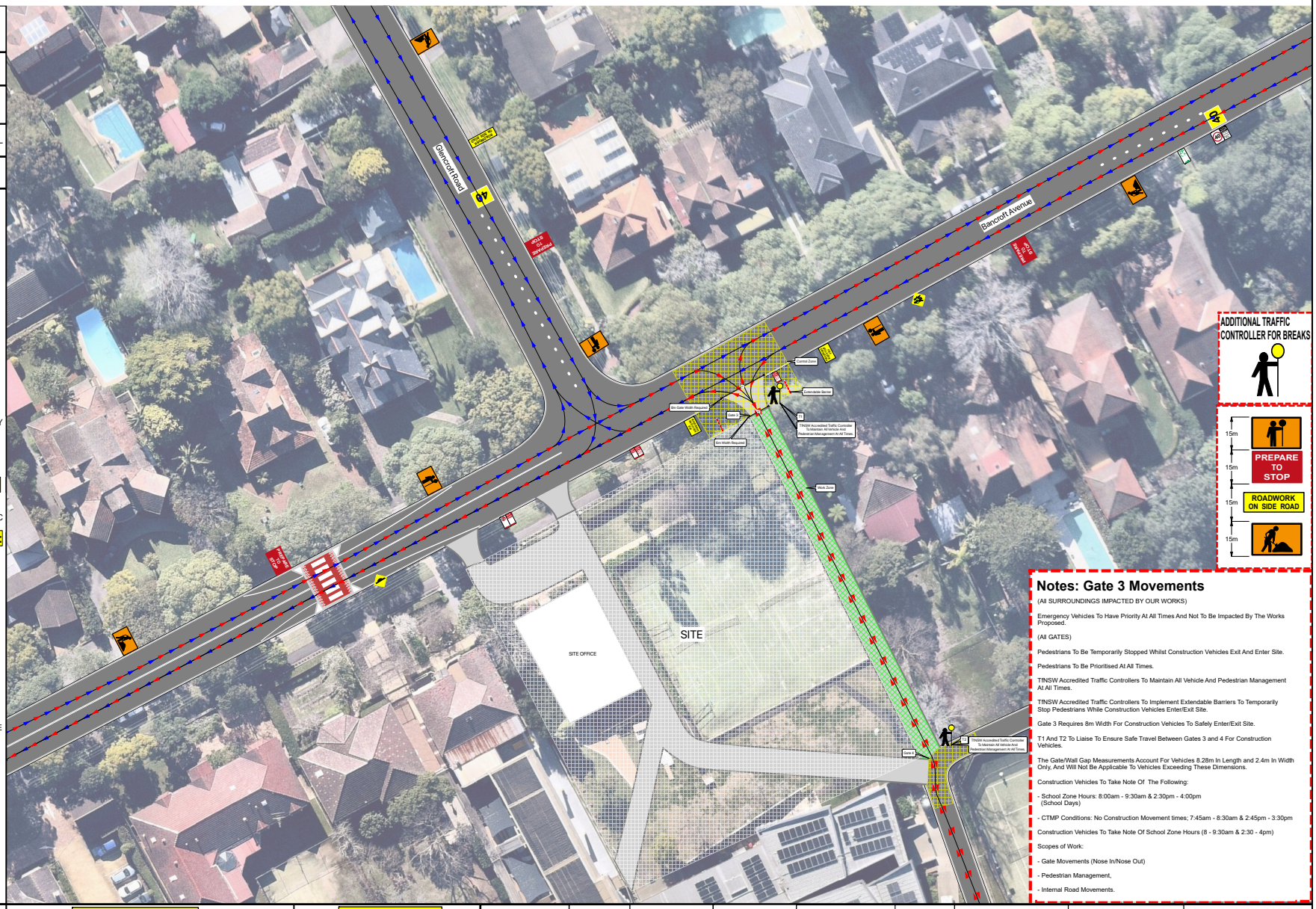
POSITIONING OF SIGNS MINIMUM 10% LESS THAN THE DISTANCE OR LENGTHS GIVEN MAXIMUM 25% MORE THAN THE DISTANCE OR LENGTHS GIVEN SPACING OF DELINEATING DEVICES MAXIMUM 10% MORE THAN THE SPACING GIVEN NO MINUMUM.

LANE WIDTHS:

THE MIN LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE 3.0m (3.5m DESIRABLE).

QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .



Notes: Gate 3 Movements

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

(All GATES)

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Pedestrians To Be Prioritised At All Times.

TINSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TINSW Accredited Traffic Controllers To Implement Extendable Barriers To Temporarily Stop Pedestrians While Construction Vehicles Enter/Exit Site.

Gate 3 Requires 8m Width For Construction Vehicles To Safely Enter/Exit Site.

T1 And T2 To Liaise To Ensure Safe Travel Between Gates 3 and 4 For Construction Vehicles.

The Gate/Wall Gap Measurements Account For Vehicles 8.28m In Length and 2.4m In Width Only, And Will Not Be Applicable To Vehicles Exceeding These Dimensions.

Construction Vehicles To Take Note Of The Following:

- School Zone Hours: 8:00am - 9:30am & 2:30pm - 4:00pm (School Days)
- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

Construction Vehicles To Take Note Of School Zone Hours (8 - 9:30am & 2:30 - 4pm)

Scopes of Work:

- Gate Movements (Nose In/Nose Out)
- Pedestrian Management,
- Internal Road Movements.

N W E S

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AS1742.3 & TCAWS 2010
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4. ALL SIGNAGE DISTANCE SHALL COMPLY WITH AS 1742.3 & TCAWS 2010
5. IN ACCORDANCE WITH TCAWS 2010 TRAFFIC CONTROLLERS TO ASSIST PEDESTRIANS WITH MOVEMENT THROUGH & AROUND THE WORKSITE.
6. SIGNAGE SHALL BE PLACED ON THE SIDE OF THE ROAD ADJACENT TO THE TRAFFIC FLOW.
7. REMOVAL OF TRAFFIC CONTROL SIGNS AND DEVICES SHOULD BE UNDERTAKEN IN THE REVERSE ORDER OF ERECTION, PROGRESSING FROM THE WORK AREA OUT TOWARD THE APPROACHES.

DIMENSON "D"

DIMENSON "D"		
SPEED OF TRAFFIC KM/H	DIMINESON D=M	
	AS.1742.3	TC@WS
45 OR LESS	15m	15m
46 - 55	15m	50m
56 - 65	45m	60m
GREATER THAN 65 KM/H	EQUAL TO POSTED SPEED	

CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 12/08/22	DESIGNED BY	Noah Nguyen-Luu
ROAD NAME:	Bancroft Ave	Speed Limit:	50km/h	ROL Number:	TBC	Date Revised: 15/08/22	License #1025516	
SUBURB:	Rosevill	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan	
T/Cs REQUIRED:	2	Operation:	Concrete Trucks	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601	
Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:15/08/22	Plan Ref #:00TBA04	

TAYLOR

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LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP

1300 008 274

Traffic@varigroup.com.au

Traffic Controllers Installation Sign Off:

Name:

Date:

Supervisor Sign Off:

Name:

Date:

TCP IMPLEMENTATION:

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VEHICLE MOVEMENT PLAN:

ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLERS WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL.

RECOMMENDED TAPER LENGTH:

APPROXIMATE SPEED OF TRAFFIC KM/H	TRAFFIC CONTROL AT BEGINNING OF TAPER	LATERAL SHIFT TAPER	MERGE TAPER
45 OR LESS	15	0	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

TOLERANCES:

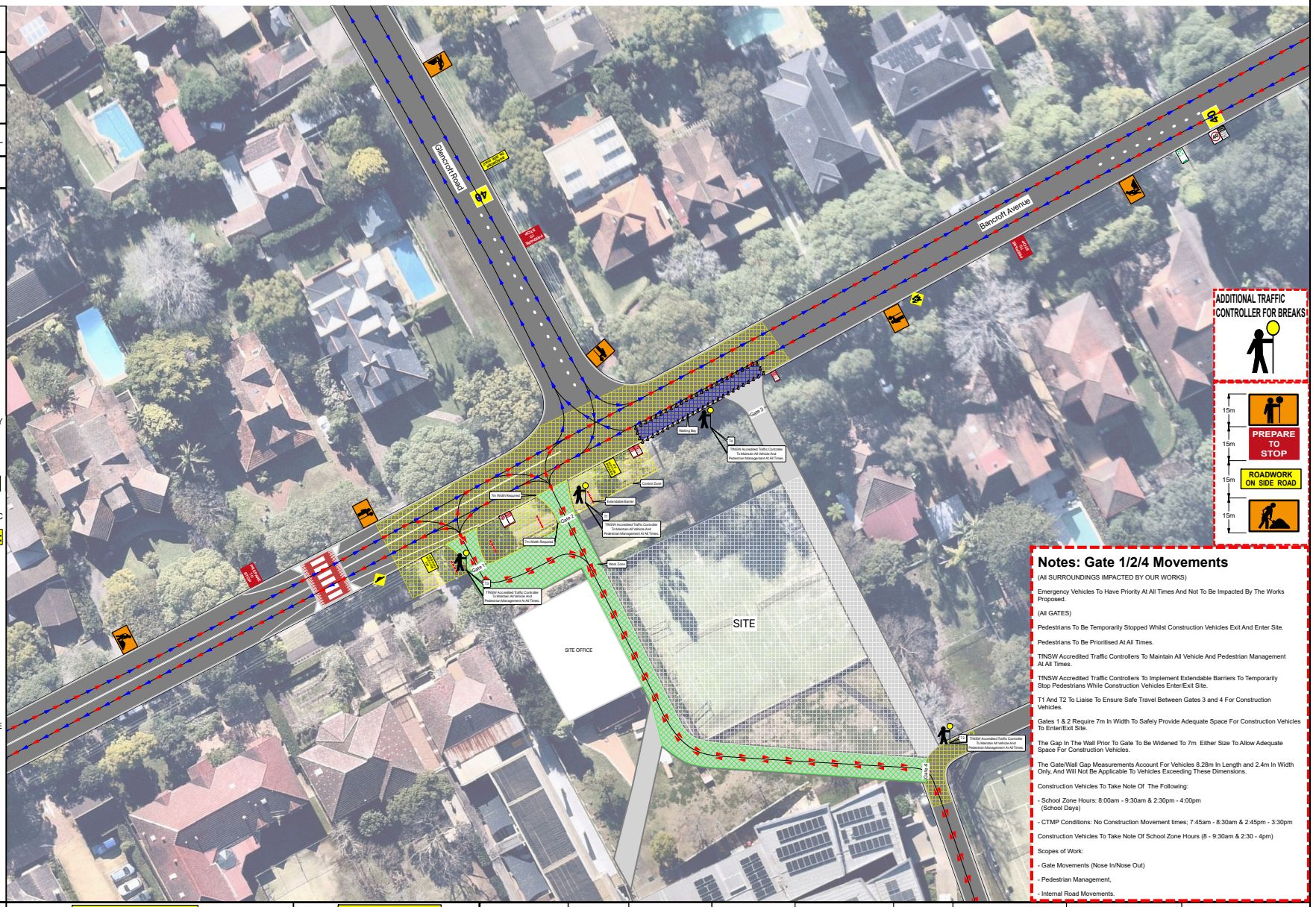
POSITIONING OF SIGNS MINIMUM 10% LESS THAN THE DISTANCE OR LENGTHS GIVEN MAXIMUM 25% MORE THAN THE DISTANCE OR LENGTHS GIVEN SPACING OF DELINEATING DEVICES MAXIMUM 10% MORE THAN THE SPACING GIVEN NO MINUMUM.

LANE WIDTHS:

THE MIN LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE 3.0m (3.5m DESIRABLE).

QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .



Notes: Gate 1/2/4 Movements

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

(All GATES)

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Pedestrians To Be Prioritised At All Times.

TINSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TINSW Accredited Traffic Controllers To Implement Extendable Barriers To Temporarily Stop Pedestrians While Construction Vehicles Enter/Exit Site.

T1 And T2 To Liaise To Ensure Safe Travel Between Gates 3 and 4 For Construction Vehicles.

Gates 1 & 2 Require 7m In Width To Safely Provide Adequate Space For Construction Vehicles To Enter/Exit Site.

The Gap In The Wall Prior To Gate To Be Widened To 7m Either Side To Allow Adequate Space For Construction Vehicles.

The Gate/Wall Gap Measurements Account For Vehicles 8.28m In Length and 2.4m In Width Only, And Will Not Be Applicable To Vehicles Exceeding These Dimensions.

Construction Vehicles To Take Note Of The Following:

- School Zone Hours: 8:00am - 9:30am & 2:30pm - 4:00pm (School Days)
- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

Construction Vehicles To Take Note Of School Zone Hours (8 - 9:30am & 2:30 - 4pm)

Scopes of Work:

- Gate Movements (Nose In/Nose Out)
- Pedestrian Management,
- Internal Road Movements.

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GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AS1742.3 & TCAWS 2010
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5. IN ACCORDANCE WITH TCAWS 2010 TRAFFIC CONTROLLERS TO ASSIST PEDESTRIANS WITH MOVEMENT THROUGH & AROUND THE WORKSITE.
6. SIGNAGE SHALL BE PLACED ON THE SIDE OF THE ROAD ADJACENT TO THE TRAFFIC FLOW.
7. REMOVAL OF TRAFFIC CONTROL SIGNS AND DEVICES SHOULD BE UNDERTAKEN IN THE REVERSE ORDER OF ERECTION, PROGRESSING FROM THE WORK AREA OUT TOWARD THE APPROACHES.

DIMENSON "D"

DIMENSON "D"		
SPEED OF TRAFFIC KM/H	DIMINESON D=M	
	AS.1742.3	TC@WS
45 OR LESS	15m	15m
46 - 55	15m	50m
56 - 65	45m	60m
GREATER THAN 65 KM/H	EQUAL TO POSTED SPEED	

CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 12/08/22	DESIGNED BY	Noah Nguyen-Luu
ROAD NAME:	Bancroft Ave	Speed Limit:	50km/h	ROL Number:	TBC	Date Revised:15/08/22	License #1025516	
SUBURB:	Rosevill	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan	
T/Cs REQUIRED:	5	Operation:	Movements	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601	
Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:15/08/22	Plan Ref #:00TBA05.1	

TAYLOR

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LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP

1300 008 274

Traffic@varigroup.com.au

Traffic Controllers Installation

Sign Off:

Name:

Date:

Supervisor Sign Off:

Name:

Date:

TCP IMPLEMENTATION:

VARI GROUP DOES NOT ACCEPT LIABILITY FOR OR ENDORSE THE USE OF THE TCP UNLESS IMPLEMENTED DIRECTLY BY AN AUTHORIZED REPRESENTATIVE OF VARI GROUP, HOLDING VALID QUALIFICATIONS TO CARRY OUT SUCH WORKS.

VEHICLE MOVEMENT PLAN:

ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLERS WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL.

RECOMMENDED TAPER LENGTH:

APPROXIMATE SPEED OF TRAFFIC KM/H	TRAFFIC CONTROL AT BEGINNING OF TAPER	LATERAL SHIFT TAPER	MERGE TAPER
45 OR LESS	15	0	15
46 - 55	15	15	30
56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

TOLERANCES:

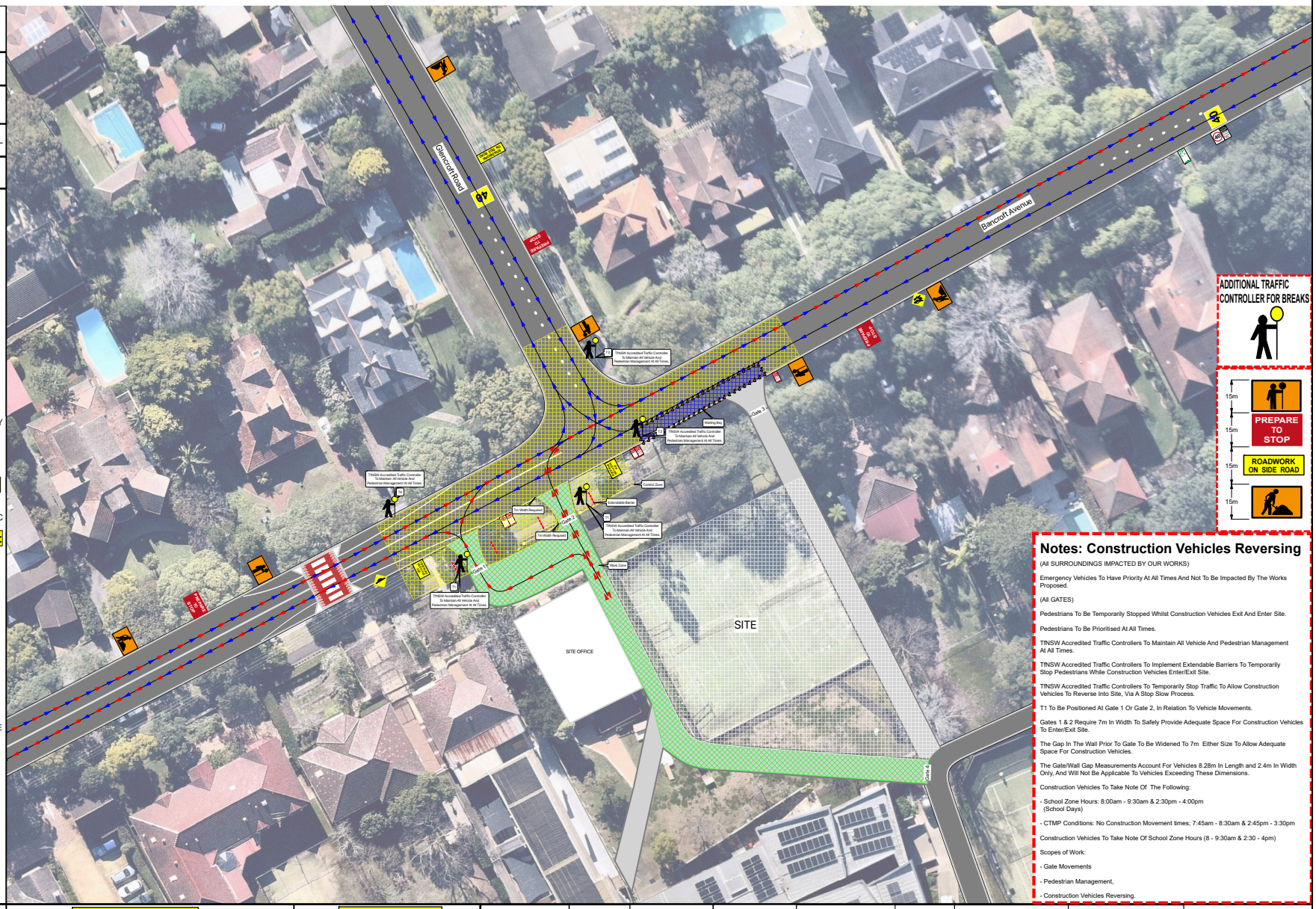
POSITIONING OF SIGNS MINIMUM 10% LESS THAN THE DISTANCE OR LENGTHS GIVEN MAXIMUM 25% MORE THAN THE DISTANCE OR LENGTHS GIVEN SPACING OF DELINEATING DEVICES MAXIMUM 10% MORE THAN THE SPACING GIVEN NO MINUMUM.

LANE WIDTHS:

THE MIN LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE 3.0m (3.5m DESIRABLE).

QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .



Notes: Construction Vehicles Reversing

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

(All GATES)

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Pedestrians To Be Prioritised At All Times.

TINSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TINSW Accredited Traffic Controllers To Implement Extendable Barriers To Temporarily Stop Pedestrians While Construction Vehicles Enter/Exit Site.

TINSW Accredited Traffic Controllers To Temporarily Stop Traffic To Allow Construction Vehicles To Reverse Into Site, Via A Stop Slow Process.

T1 To Be Positioned At Gate 1 Or Gate 2, In Relation To Vehicle Movements.

Gates 1 & 2 Require 7m In Width To Safely Provide Adequate Space For Construction Vehicles To Enter/Exit Site.

The Gap In The Wall Prior To Gate To Be Widened To 7m Either Side To Allow Adequate Space For Construction Vehicles.

The Gate/Wall Gap Measurements Account For Vehicles 8.28m In Length and 2.4m In Width Only, And Will Not Be Applicable To Vehicles Exceeding These Dimensions.

Construction Vehicles To Take Note Of The Following:

- School Zone Hours: 8:00am - 9:30am & 2:30pm - 4:00pm (School Days)
- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

Construction Vehicles To Take Note Of School Zone Hours (8 - 9:30am & 2:30 - 4pm)

Scopes of Work:

- Gate Movements
- Pedestrian Management,
- Construction Vehicles Reversing.

N W E S

GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AS1742.3 & TCAWS 2010
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DIMENSON "D"

DIMENSON "D"		
SPEED OF TRAFFIC KM/H	DIMINESON D=M	
	AS.1742.3	TC@WS
45 OR LESS	15m	15m
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GREATER THAN 65 KM/H	EQUAL TO POSTED SPEED	

CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 12/08/22	DESIGNED BY	Noah Nguyen-Luu
ROAD NAME:	Bancroft Ave	Speed Limit:	50km/h	ROL Number:	TBC	Date Revised: 15/08/22	License #1025516	
SUBURB:	Rosevill	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan	
T/Cs REQUIRED:	5	Operation:	Movements	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601	
Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:15/08/22	Plan Ref #:00TBA06	

TAYLOR

LEGEND:

WORK AREA	
TRAFFIC CONTROLLER	
PUBLIC VEHICLE ROUTE	
ARROW BOARD	

VARI GROUP
1300 008 274
Traffic@varigroup.com.au

Traffic Controllers Installation
Sign Off:
Name:
Date:
Supervisor Sign Off:
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TCP IMPLEMENTATION:

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VEHICLE MOVEMENT PLAN:

ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLERS WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL.

RECOMMENDED TAPER LENGTH:

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TOLERANCES:

POSITIONING OF SIGNS MINIMUM 10% LESS THAN THE DISTANCE OR LENGTHS GIVEN MAXIMUM 25% MORE THAN THE DISTANCE OR LENGTHS GIVEN SPACING OF DELINEATING DEVICES MAXIMUM 10% MORE THAN THE SPACING GIVEN NO MINUMUM.

LANE WIDTHS:

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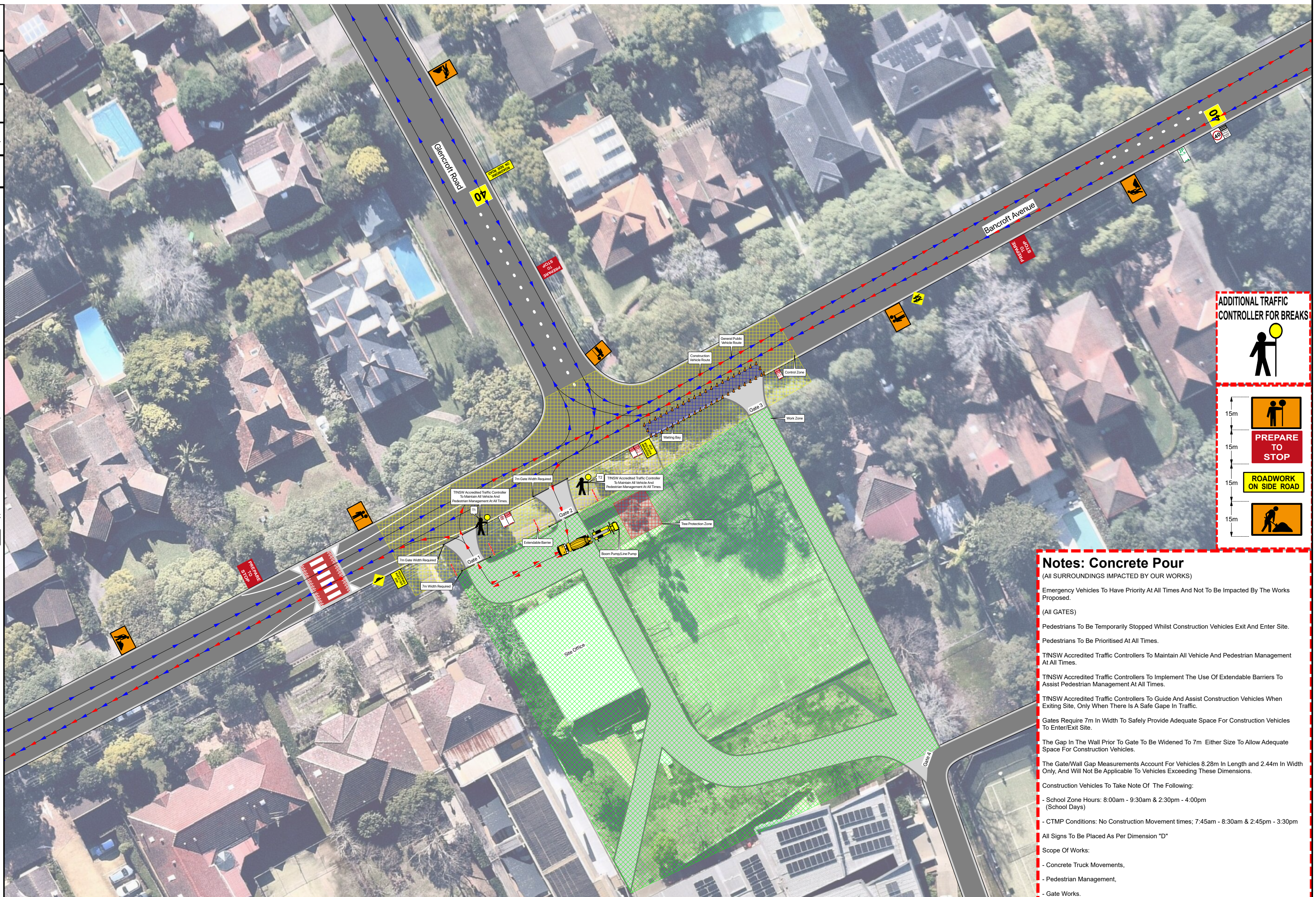
QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .



Notes: Concrete Pour

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

(All GATES)

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Pedestrians To Be Prioritised At All Times.

TfNSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TfNSW Accredited Traffic Controllers To Implement The Use Of Extendable Barriers To Assist Pedestrian Management At All Times.

TfNSW Accredited Traffic Controllers To Guide And Assist Construction Vehicles When Exiting Site, Only When There Is A Safe Gape In Traffic.

Gates Require 7m In Width To Safely Provide Adequate Space For Construction Vehicles To Enter/Exit Site.

The Gap In The Wall Prior To Gate To Be Widened To 7m Either Size To Allow Adequate Space For Construction Vehicles.

The Gate/Wall Gap Measurements Account For Vehicles 8.28m In Length and 2.44m In Width Only, And Will Not Be Applicable To Vehicles Exceeding These Dimensions.

Construction Vehicles To Take Note Of The Following:

- School Zone Hours: 8:00am - 9:30am & 2:30pm - 4:00pm (School Days)
- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

All Signs To Be Placed As Per Dimension "D"

Scope Of Works:

- Concrete Truck Movements,
- Pedestrian Management,
- Gate Works.

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W E
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GENERAL NOTES:

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH AS1742.3 & TCAWS 2010
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5. IN ACCORDANCE WITH TCAWS 2010 TRAFFIC CONTROLLERS TO ASSIST PEDESTRIANS WITH MOVEMENT THROUGH & AROUND THE WORKSITE.
6. SIGNAGE SHALL BE PLACED ON THE SIDE OF THE ROAD ADJACENT TO THE TRAFFIC FLOW.
7. REMOVAL OF TRAFFIC CONTROL SIGNS AND DEVICES SHOULD BE UNDERTAKEN IN THE REVERSE ORDER OF ERECTION, PROGRESSING FROM THE WORK AREA OUT TOWARD THE APPROACHES.

DIMENSON "D"

DIMENSON "D"		
SPEED OF TRAFFIC KM/H	DIMINESON D=M	
	AS.1742.3	TC@WS
45 OR LESS	15m	15m
46 - 55	15m	50m
56 - 65	45m	60m
GREATER THAN 65 KM/H	EQUAL TO POSTED SPEED	

CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 12/08/22	DESIGNED BY Noah Nguyen-Luu
ROAD NAME:	Bancroft Ave	Speed Limit:	50km/h	ROL Number:	TBC	Date Revised: 15/08/22	License #1025516
SUBURB:	Rosevill	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan
T/Cs REQUIRED:	3	Operation:	Concrete Trucks	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601
Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:15/08/22	Plan Ref #:00TBA01.1

TAYLOR

www.invarion.com

LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP

1300 008 274

Traffic@varigroup.com.au

Traffic Controllers Installation

Sign Off:

Name:

Date:

Supervisor Sign Off:

Name:

Date:

TCP IMPLEMENTATION:

VARI GROUP DOES NOT ACCEPT LIABILITY FOR OR ENDORSE THE USE OF THE TCP UNLESS IMPLEMENTED DIRECTLY BY AN AUTHORIZED REPRESENTATIVE OF VARI GROUP, HOLDING VALID QUALIFICATIONS TO CARRY OUT SUCH WORKS.

VEHICLE MOVEMENT PLAN:

ALL WORK VEHICLES TO ENTER AND EXIT WORKSITE UNDER THE DIRECTION OF TRAFFIC CONTROLLERS WITH THE TRAFFIC FLOW ON DESIGNATED UHF CHANNEL.

RECOMMENDED TAPER LENGTH:

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45 OR LESS	15	0	15
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56 - 65	30	30	60
66 - 75	N/A	70	115
76 - 85	N/A	80	130
86 - 95	N/A	90	145
96 - 105	N/A	100	160
> 105	N/A	110	180

TOLERANCES:

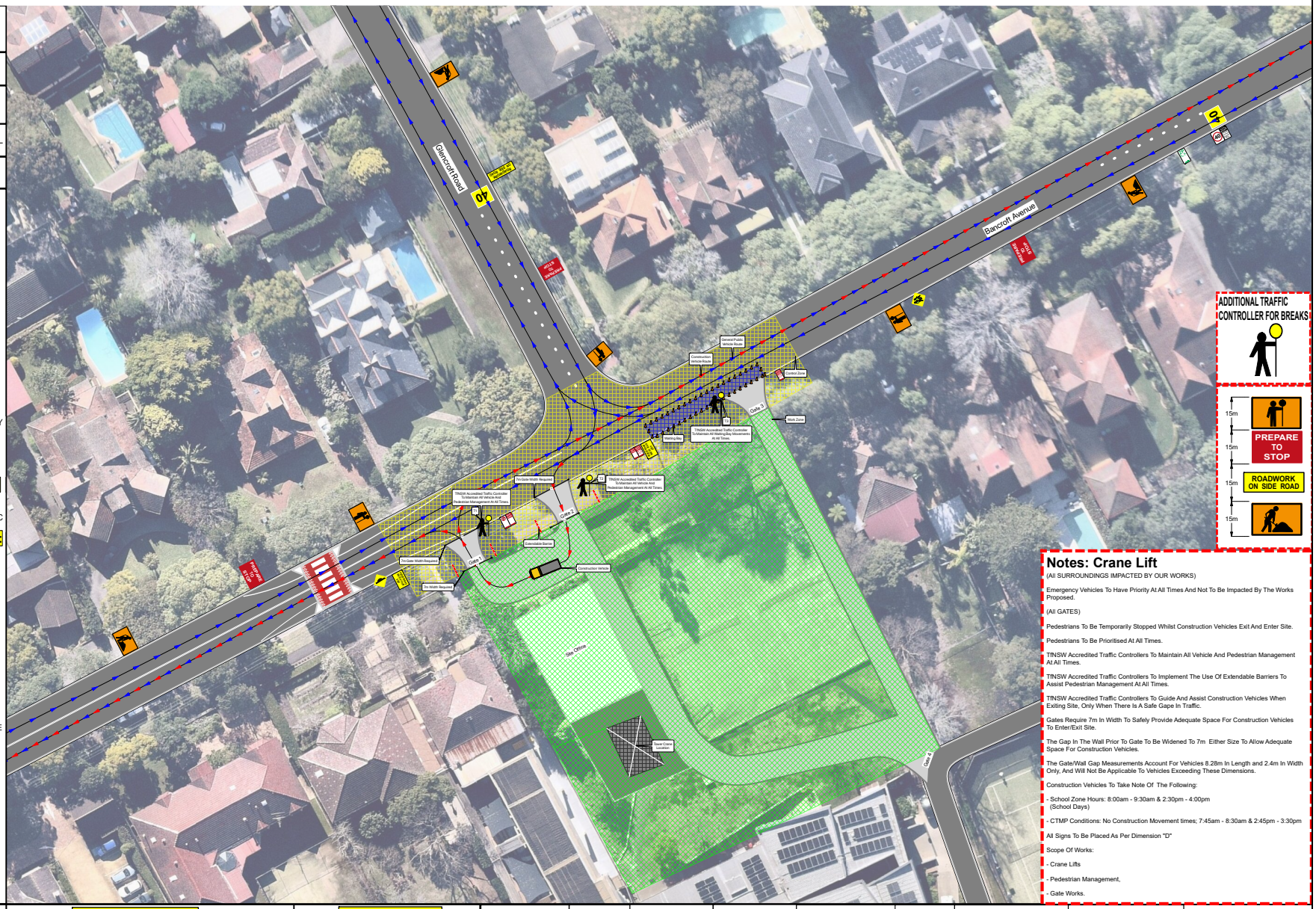
POSITIONING OF SIGNS MINIMUM 10% LESS THAN THE DISTANCE OR LENGTHS GIVEN MAXIMUM 25% MORE THAN THE DISTANCE OR LENGTHS GIVEN SPACING OF DELINEATING DEVICES MAXIMUM 10% MORE THAN THE SPACING GIVEN NO MINUMUM.

LANE WIDTHS:

THE MIN LANE WIDTH TO BE PROVIDED THROUGH OR PAST THE WORKSITE SHALL BE 3.0m (3.5m DESIRABLE).

QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .



Notes: Crane Lift

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

(All GATES)

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Pedestrians To Be Prioritised At All Times.

TINSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TINSW Accredited Traffic Controllers To Implement The Use Of Extendable Barriers To Assist Pedestrian Management At All Times.

TINSW Accredited Traffic Controllers To Guide And Assist Construction Vehicles When Exiting Site, Only When There Is A Safe Gape In Traffic.

Gates Require 7m In Width To Safely Provide Adequate Space For Construction Vehicles To Enter/Exit Site.

The Gap In The Wall Prior To Gate To Be Widened To 7m Either Size To Allow Adequate Space For Construction Vehicles.

The Gate/Wall Gap Measurements Account For Vehicles 8.28m In Length and 2.4m In Width Only, And Will Not Be Applicable To Vehicles Exceeding These Dimensions.

Construction Vehicles To Take Note Of The Following:

- School Zone Hours: 8:00am - 9:30am & 2:30pm - 4:00pm (School Days)
- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

All Signs To Be Placed As Per Dimension "D"

Scope Of Works:

- Crane Lifts
- Pedestrian Management,
- Gate Works.

N W E S

GENERAL NOTES:

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CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 12/08/22	DESIGNED BY	Noah Nguyen-Luu
ROAD NAME:	Bancroft Ave	Speed Limit:	50km/h	ROL Number:	TBC	Date Revised: 15/08/22	License #1025516	
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Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:15/08/22	Plan Ref #:00TBA03.1	

TAYLOR

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LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP

1300 008 274

Traffic@varigroup.com.au

Traffic Controllers Installation Sign Off:

Name:

Date:

Supervisor Sign Off:

Name:

Date:

TCP IMPLEMENTATION:

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TOLERANCES:

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QUEUE MANAGEMENT PLAN:

AT ALL TIMES DURING THE COURSE OF THE WORK, TRAFFIC QUEUES SHALL BE MONITORED TO ENSURE THAT TRAFFIC DOES NOT EXCEED BEYOND THE LIMITS OF ADVANCED WARDING SIGNS .

Notes: Construction Vehicles Movements Gate 4 (N.I/N.O)

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

Pedestrians To Be Prioritised At All Times.

TfNSW Accredited Traffic Controllers To Maintain All Vehicle And Pedestrian Management At All Times.

TfNSW Accredited Traffic Controllers/Construction Workers To Take Note Of The Following:

- School Zone Hours: 8:00am - 9:30am & 2:30pm - 4:00pm (School Days)

- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

Construction Vehicles To Take Note Of School Zone Hours (8 - 9:30am & 2:30 - 4pm)

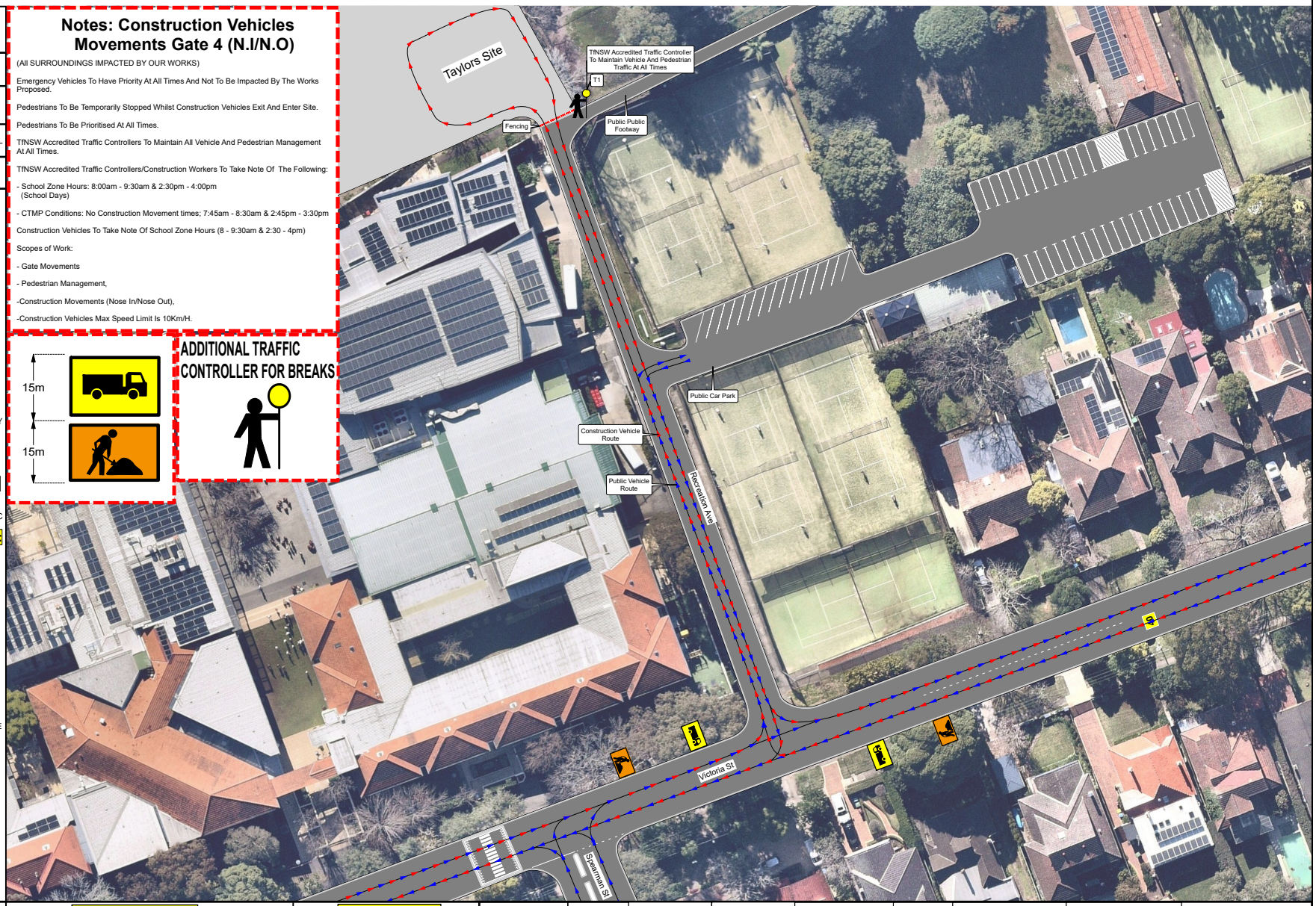
Scopes of Work:

- Gate Movements

- Pedestrian Management,

-Construction Movements (Nose In/Nose Out),

-Construction Vehicles Max Speed Limit Is 10Km/H.



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CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 25/08/22	DESIGNED BY Noah Nguyen-Luu
ROAD NAME:	Recreation Ave	Speed Limit:	10km/h	ROL Number:	TBC	Date Revised:	License #1025516
SUBURB:	Roseville	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan
T/Cs REQUIRED:	1	Operation:	Gate 4 N.I/N.O	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601
Vehicles Required:	0	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:25/08/22	Plan Ref #:00TBA10

TAYLOR

LEGEND:

WORK AREA

TRAFFIC CONTROLLER

PUBLIC VEHICLE ROUTE

ARROW BOARD

VARI GROUP
1300 008 274
Traffic@varigroup.com.au

Traffic Controllers Installation Sign Off:
Name:
Date:
Supervisor Sign Off:
Name:
Date:

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Notes: Construction Vehicles Movements Gate 4 (Concrete Pour Reverse In)

(All SURROUNDINGS IMPACTED BY OUR WORKS)

Emergency Vehicles To Have Priority At All Times And Not To Be Impacted By The Works Proposed.

Pedestrians To Be Temporarily Stopped Whilst Construction Vehicles Exit And Enter Site.

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- CTMP Conditions: No Construction Movement times; 7:45am - 8:30am & 2:45pm - 3:30pm

Construction Vehicles To Take Note Of School Zone Hours (8 - 9:30am & 2:30 - 4pm)

Scopes of Work:

- Gate Movements

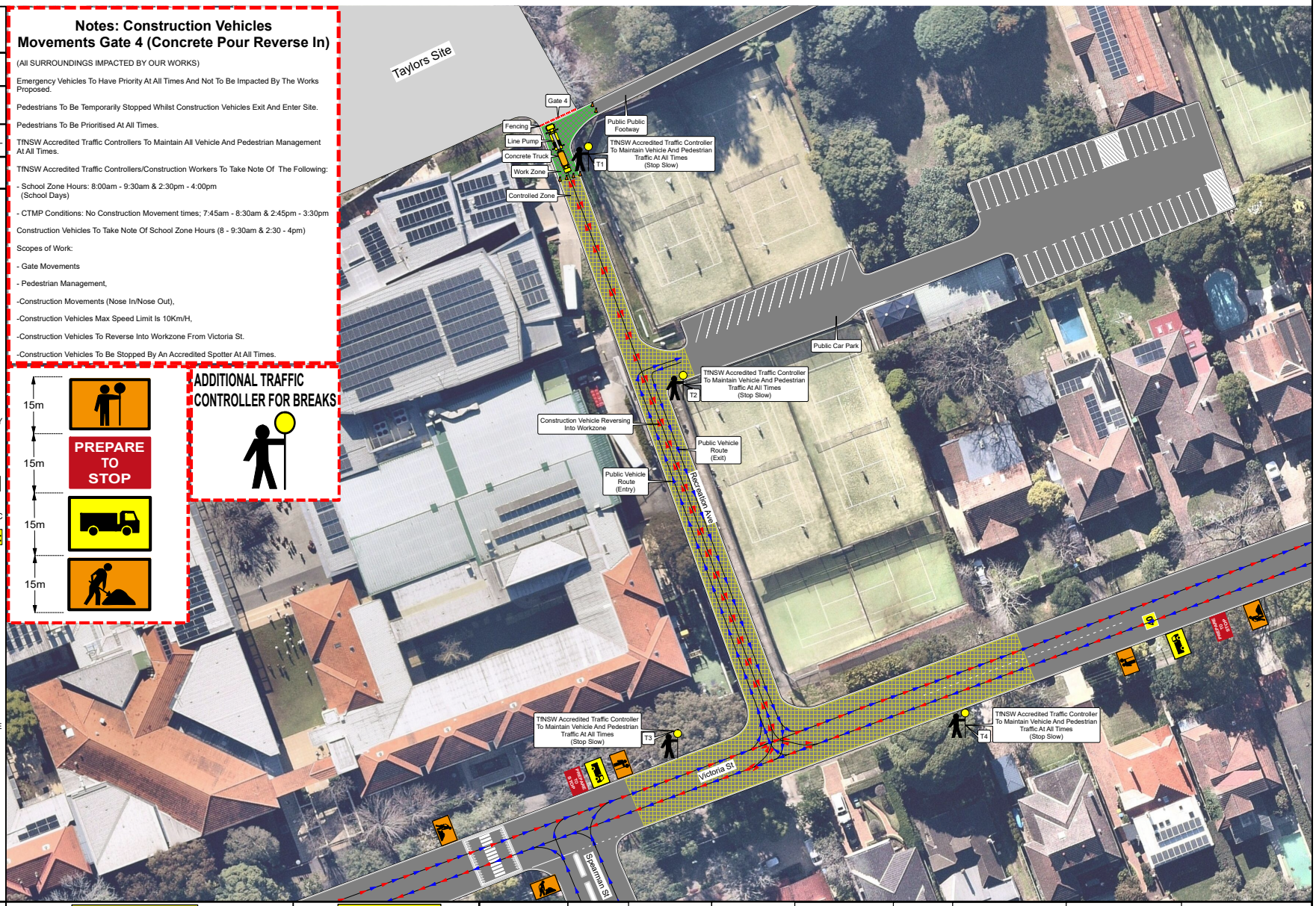
- Pedestrian Management,

-Construction Movements (Nose In/Nose Out),

-Construction Vehicles Max Speed Limit Is 10Km/H,

-Construction Vehicles To Reverse Into Workzone From Victoria St.

-Construction Vehicles To Be Stopped By An Accredited Spotter At All Times.



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GREATER THAN 65 KM/H	EQUAL TO POSTED SPEED	

CLIENT:	Taylors	Term:	Short	ROL Required:	TBC	Date Prepared: 25/08/22	DESIGNED BY Noah Nguyen-Luu
ROAD NAME:	Recreation Ave	Speed Limit:	10km/h	ROL Number:	TBC	Date Revised:	License #1025516
SUBURB:	Roseville	Travelled Path	Past	ROL Classification:	Council Rd/RMS/ Private	TC@WS REFERENCE: BASED ON TCP #92	Prepare a Work Zone Traffic Management Plan
T/Cs REQUIRED:	4	Operation:	Gate 4 N.I/N.O	Speed Reduction:	N/A	APPROVED	Daneil Marzetti License #0052242601
Vehicles Required:	1	Road Type:	2 Lane 2 Way	N,C,S:	Glencroft Ave	Date Approved:25/08/22	Plan Ref #:00TBA11

TAYLOR

Appendix 9 – Construction Noise and Vibration Management Sub-Plan

MATTHEW PALAVIDIS
VICTOR FATTORETTO
MATTHEW SHIELDS

Roseville Anglican College Sports & Wellbeing Centre

Construction Noise and Vibration Management Sub Plan

SYDNEY
9 Sarah St
MASCOT NSW 2020
(02) 8339 8000

ABN 98 145 324 714
www.acousticlogic.com.au

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Project ID	20220917.1
Document Title	Construction Noise and Vibration Management
Attention To	Taylor Construction Group Pty Ltd

Revision	Date	Document Reference	Prepared By	Checked By	Approved By
0	19/07/2022	20220917.1/1907A/R0/SW	SW		TA
1	20/07/2022	20220917.1/2007A/R1/SW	SW		TA

TABLE OF CONTENTS

1 INTRODUCTION

Acoustic Logic (AL) has been engaged to prepare a Noise and Vibration Management Sub Plan for Roseville Anglican College Sports & Wellbeing Centre to satisfy consent conditions B-15, C7 and C4 for SSD-9912.

The principal issues will be addressed in this report are:

- Identification of the noise and vibration standards which will be applicable to this project.
- Identification of sensitive receivers near to the site.
- Description of hours of work and type of works undertaken.
- Identify likely sources of noise and vibration generation and predicted noise levels at nearby development.
- Formulation of a strategy to comply with the standards identified and mitigation treatments in the event that compliance is not achievable.

The discussion of the processes to manage noise and vibration from the proposed demolition, excavation, pilling and construction fit out works will be referencing with the following documents:

- Development Application Acoustic Assessment Revision 3 prepared by Acoustic Dynamics (dated 2nd November 2020)
- NSW EPA '*Interim Construction Noise Guideline*' (ICNG)
- Australian Standard AS2436:2010 *"Guide to Noise Control on Construction, Maintenance and Demolition Sites"*
- DIN4150, '*Vibration in Buildings (2016-12)*
- EPA "*Assessing Vibration: A Technical guideline*".

2 SITE DESCRIPTION

The project site is surrounded by existing residential dwellings as well as existing commercial buildings of Roseville College. The proposed works on site are presented below:

- Demolition of outdoor sports courts at 27-29 Bancroft Avenue.
- Demolition of a dwelling, ancillary structures, and hardstand areas at 37 Bancroft Avenue,
- Tree removal and excavation works,
- Construction of a three-storey building comprising:
    - 48 basement car parking spaces
    - Eight- lane swimming pool, associated concourse and grandstand
    - Gymnasium
    - Food technology space
    - General learning areas
    - Change facilities, amenities and storage,
    - Mechanical plant, on-site detention, filtration plant and
    - Chemical store; and
    - Rooftop multi-purpose sports courts.
- Landscaping and Signage

2.1 RECEIVER LOCATIONS

Acoustic Logic (AL) has identified sensitive receiver locations detailed below. These locations will be used as a basis for this assessment.

- **R1**: Residential dwellings along the north-western boundary along Bancroft Avenue
- **R2**: Residential dwellings along the western boundary at 15-23 Bancroft Avenue, Roseville
- **R3**: Residential dwellings along the north-eastern boundary along Bancroft Avenue at 30-24 Bancroft Avenue
- **R4**: Residential dwellings along the eastern boundary at 39 Bancroft Avenue, Roseville.
- **C1**: Multi-storey commercial dwelling on the south-western boundary
- **A1**: Active recreational area on the south-eastern boundary

Refer to Figure 1 for the arial view of the project site and sensitive receivers.

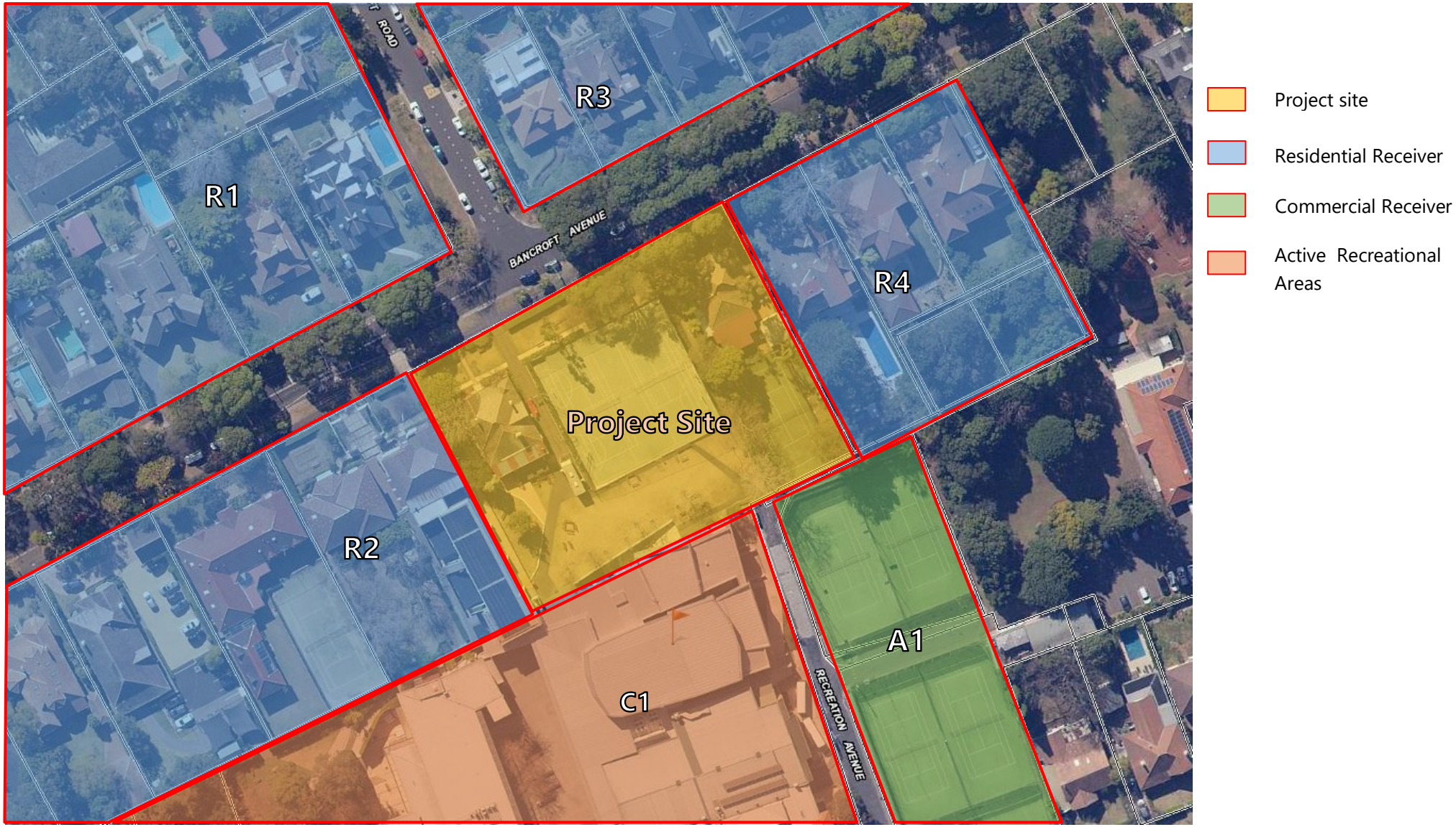


Figure 1: Arial view of the project site and the sensitive receivers (Soured : SixMaps)

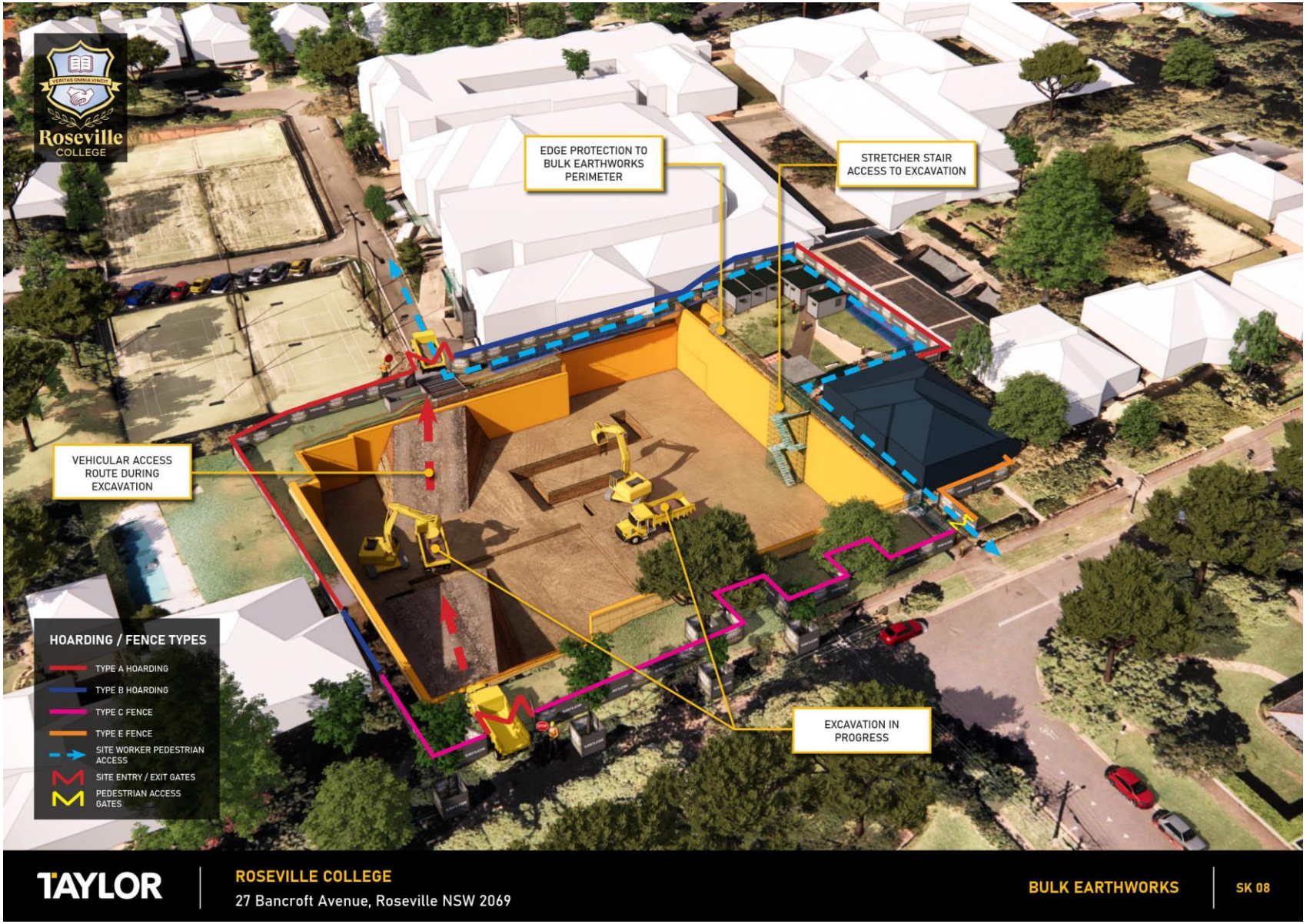


Figure 2: Site Plan and the proposed excavation works to be located

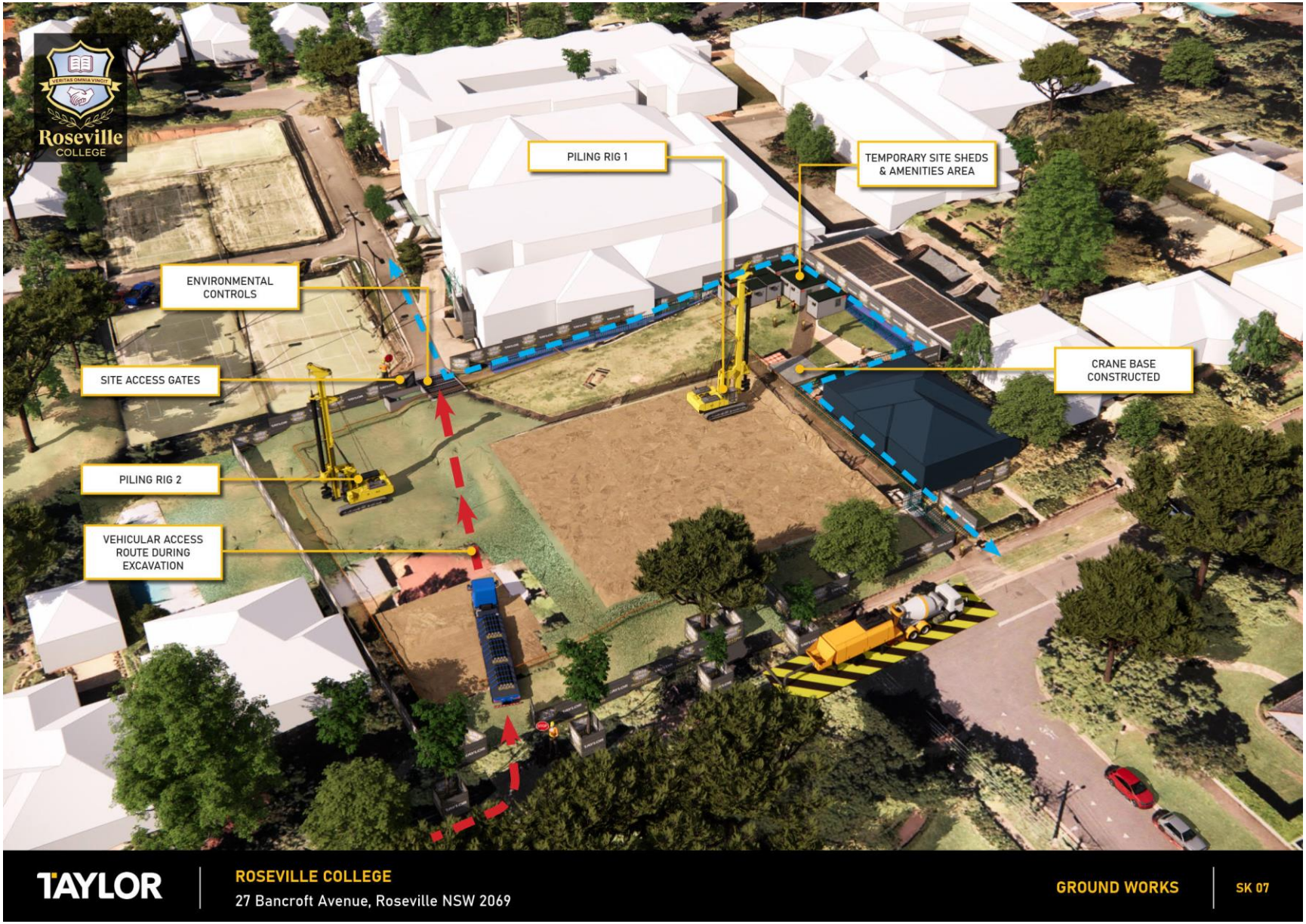


Figure 3: Proposed location of piling rigs and trucks driveway

3 CONSTRUCTION ACTIVITIES

The following information was provided to the office by Taylor's of the primary noise producing activities are as follows:

- Bulk excavation of intersect filing, natural clays and rocks with excavator. Any medium to high strength rock will require heavy bulldozer. All site vehicles are proposed to enter via Bancroft Road.
- Rock hammering may be necessary during excavation and demolition works.
- Two (2) Auger piling rigs will be used during piling phase. Refer to figure 3 for the proposed location of the piling rigs.
- Use of electrical cranes
- Erection of building structure (powered hand tools for formwork, concrete pump, vibrators).
- Façade/ roof construction (powered hand tools)
- Internal fit out of the wellbeing centre building
- Edge protecting during excavation and barriers to be erected to all boundaries of the site which adjoin to the surrounding receivers.

The duration of each phase of construction works are presented below:

- Demolition Phase (10 days)
- Excavation Phase (54 days)
- Piling Phase (41 days)
- Construction Phase (77 weeks)

4 CONDITIONS OF CONSENT

The purpose of this construction noise and vibration management sub plan (CNVMP) is to satisfy the conditions of consent SSD 9912. The following conditions are presented below:

B15. The Construction Noise and Vibration Management Sub-Plan must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced noise expert;

(b) describe procedures for achieving the noise management levels in EPA's Interim Construction Noise Guideline (DECC, 2009);

(c) describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers.

(d) include strategies that have been developed with the community for managing high noise generating works;

(e) describe the community consultation undertaken to develop the strategies in condition

(d); include a complaints management system that would be implemented for the duration of the construction; and

(g) include a program to monitor and report on the impacts and environmental performance of the development and the effectiveness of the implemented management measures in accordance with the requirements of condition B12.

4.1 HOURS OF WORK

Based on the consents of condition SSD 9912, the construction hours are as follows:

Construction Hours

C4 *Construction, including the delivery of materials to and from the site, may only be carried out between the following hours:*

(a) between 7am and 6pm, Mondays to Fridays inclusive; and

(b) between 8am and 1pm, Saturdays.

No work may be carried out on Sundays or public holidays.

C7. *Rock breaking, rock hammering, sheet piling, pile driving and similar activities may only be carried out between the following hours:*

(a) 9am to 12pm, Monday to Friday;

(b) 2pm to 5pm Monday to Friday; and

(c) 9am to 12pm, Saturday.

4.2 NOISE AND VIBRATION LIMITS

Construction Noise Limits

C12. *The development must be constructed to achieve the construction noise management levels detailed in the Interim Construction Noise Guideline (DECC, 2009). All feasible and reasonable noise mitigation measures must be implemented and any activities that could exceed the construction noise management levels must be identified and managed in accordance with the management and mitigation measures identified in the approved Construction Noise and Vibration Management Plan.*

C13. *The Applicant must ensure construction vehicles (including concrete agitator trucks) do not arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under condition C4.*

C14. *The Applicant must implement, where practicable and without compromising the safety of construction staff or members of the public, the use of 'quackers' to ensure noise impacts on surrounding noise sensitive receivers are minimised.*

Vibration Criteria

C15. Vibration caused by construction at any residence or structure outside the site must be limited to:

(a) for structural damage, the latest version of DIN 4150-3 (1992-02) Structural vibration - Effects of vibration on structures (German Institute for Standardisation, 1999); and

(b) for human exposure, the acceptable vibration values set out in the Environmental Noise Management Assessing Vibration: a technical guideline (DEC, 2006) (as may be updated or replaced from time to time).

C16. *Vibratory compactors must not be used closer than 30 metres from residential buildings unless vibration monitoring confirms compliance with the vibration criteria specified in condition C15.*

C17*. The limits in conditions C15 and C16 apply unless otherwise specified in a Construction Noise and Vibration Management Plan, approved as part of the CEMP required by condition B15 of this consent.*

5 BACKGROUND NOISE MEASUREMENT

Background noise measurement was conducted by Acoustic Dynamics (ref: Roseville College SWELL Centre Development Application Acoustic Assessment 29-37 Bancroft Avenue, Roseville,dated 2 November 2020 (Revision 3)). The following figure summarises the rating background levels obtained.

Table 2.1 Summary of Measured Noise Levels and Noise Emission Criteria – At Residences

Location	Time of Day	L_{A90} Rating Background Noise Level (RBL) [dB]	Measured L_{Aeq} [dB]	Project Intrusive Noise Level [dB]	Project Amenity Noise Level[2] L_{Aeq} [dB]	Project Noise Trigger Level L_{Aeq} [dB]
Location 1 Southern Boundary of 26 Bancroft Ave	Daytime[1] (7am to 6pm)	38	53	43	58	**43**
	Evening (6pm to 10pm)	36	52	41	48	**41**
	Night time (10pm to 7am)	31	47	36	43	**36**
Location 2 Eastern Boundary of 37 Bancroft Ave	Daytime[1] (7am to 6pm)	36	50	41	58	**41**
	Evening (6pm to 10pm)	37	47	42	48	**42**
	Night time (10pm to 7am)	31	43	36	43	**36**
School Classroom (Internal)	Daytime	-	-	35	-	**35**[3]

Figure 4: Background noise levels obtained at the residential receivers

6 NOISE AND VIBRATION CRITERIA

6.1 EPA INNTERIM CONSTRUCTION NOISE GUIDELINE

The EPA Interim Construction Noise Guideline (ICNG) assessment requires:

- Determination of noise generation goals (based on ambient noise monitoring).
- Review of operational noise levels at nearby development.
- If necessary, recommendation of noise controls strategies in the event that compliance with noise emission goals is not possible.

EPA guidelines adopt differing strategies for noise control depending on the predicted noise level at the nearest residences:

- *"Noise affected" level*. Where construction noise is predicted to exceed the "noise effected" level at a nearby residence, the proponent should take reasonable/feasible work practices to ensure compliance with the "noise effected level". For residential properties, the "noise effected" level occurs when construction noise exceeds ambient levels by more than 10dB(A)$L_{eq(15min)}$.
- "*Highly noise affected level"*. Where noise emissions are such that nearby properties are "highly noise effected", noise controls such as respite periods should be considered. For residential properties, the "highly noise effected" level occurs when construction noise exceeds 75dB(A)$L_{eq(15min)}$ at nearby residences.

Table 1 – Summarised Noise Management Levels - Residential

Receivers	**Noise Affected Level – dB(A)$L_{eq(15min)}$ BG + 10**	**Highly Noise Affected Level – dB(A)$L_{eq(15min)}$**
Residential Receivers R1 and R2,	BG(38) + 10 = 48	75
Residential Receivers R3 and R4	BG(36) + 10 = 46	75

If noise levels exceeded the management levels identified in the table above, reasonable and feasible noise management techniques will be reviewed.

6.1.1 To Active Recreational Receivers and Classrooms

In section 4.1.2 of the ICNG outlines the following noise management noise levels to active recreation areas and classrooms at schools and other educational institutions.

Table 2 – Noise Management Level – other receivers

Receivers	**Noise Management Level dB(A)$L_{eq(15min)}$**
Active Recreational Area A1	65 (external)
Classroom	45 (internal)

6.2 VIBRATION CRITERIA

Vibration caused by construction at any residence or structure outside the subject site must be limited to:

- For structural damage vibration, German Standard DIN 4150-3 *Structural Vibration: Effects of Vibration on Structures; and*
- For human exposure to vibration, the evaluation criteria presented in the British Standard BS 6472:1992 *Guide to Evaluate Human Exposure to Vibration in Buildings (1Hz to 80Hz)* for low probability of adverse comment.

6.2.1 Structure Borne Vibrations (Building Damage Criteria)

German Standard DIN 4150-3 (1992-02) provides vibration velocity guideline levels for use in evaluating the effects of vibration on structures. The criteria presented in DIN 4150-3 (1992-02) are presented in Table 3.

It is noted that the peak velocity is the value of the maximum of any of the three orthogonal component particle velocities as measured at the foundation, and the maximum levels measured in the x- and y-horizontal directions in the plane of the floor of the uppermost storey.

Table 3 – DIN 4150-3 (1999-02) Safe Limits for Building Vibration

TYPE OF STRUCTURE		PEAK PARTICLE VELOCITY (mms^{-1})			
		At Foundation at a Frequency of			Plane of Floor of Uppermost Storey
		< 10Hz	10Hz to 50Hz	50Hz to 100Hz	All Frequencies
1	Buildings used in commercial purposes, industrial buildings and buildings of similar design	20	20 to 40	40 to 50	40
2	Dwellings and buildings of similar design and/or use	5	5 to 15	15 to 20	15
3	Structures that because of their particular sensitivity to vibration, do not correspond to those listed in Lines 1 or 2 and have intrinsic value (e.g. buildings that are under a preservation order)	3	3 to 8	8 to 10	8

The surrounding educational buildings would be considered a Type 1 structure, whilst residences would be considered a Type 2 structure.

6.2.2 Assessing Amenity

The NSW EPA document "*Assessing Vibration: A Technical Guideline*" provides procedures for assessing tactile vibration and regenerated noise within potentially affected buildings and is used in the assessment of vibration impact on amenity.

Relevant criteria are presented below.

Table 4 – EPA Recommended Vibration Criteria

		RMS acceleration (m/s^2)		RMS velocity (mm/s)		Peak velocity (mm/s)	
Place	Time	Preferred	Maximum	Preferred	Maximum	Preferred	Maximum
Continuous Vibration							
Residences	Daytime	0.01	0.02	0.2	0.4	0.28	0.56
Offices, schools, educational institutions, and place of worship		0.02	0.04	0.4	0.8	0.56	1.1
Impulsive Vibration							
Residences	Daytime	0.3	0.6	6.0	12.0	8.6	17.0
Offices, schools, educational institutions, and place of worship		0.64	1.28	13.0	26.0	18.0	36.0

7 NOISE AND VIBRATION ASSESSMENT AND RECOMMENDATIONS

7.1 ACTIVITIES TO BE CONDUCTION AND THE ASSOCIATED NOISE SOURCES

Typically, the most significant sources of noise generated during a construction project will be excavation, civil works and piling. A summary of sound power levels of major construction processes/equipment is detailed in Table 5.

The highest noise levels are likely to be generated during bulk excavation and piling phases.

With respect to construction noise, the impact on nearby development will be dependent on the activity in question and where on the site the activity is undertaken. The primary construction equipment and sound power levels associated with the works are as follows:

Table 5 – Sound Power Levels of the Proposed Equipment

EQUIPMENT / PROCESS	SOUND POWER LEVEL dB(A)
Excavator with Bucket	105
Excavator with Hydraulic Hammer	118
Truck with Semi-Trailer	105
Demolition Saw	118*
Concrete Pump	108
Concrete Boom	105
Cement Mixing Truck	105
Electric Tower Crane	95
CFA Piling	103
Angle Grinder	105
General Hand Tools	95
Asphalter	105

***Noise levels take into account correction factors (for tonality, intermittency where necessary).**

The noise levels presented in the above table are derived from the following sources, namely:

- Table A1 of Australian Standard 2436-2010.
- Data held by this office from other similar studies.

Noise levels take into account correction factors (for tonality, intermittency where necessary).

7.2 PREDICTED NOISE LEVELS AND THE ASSOCIATED NOISE SOURCES

7.2.1 Noise Emission Predictions to Receiver 1 (R1)

Activity	**Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)**	**Criteria dB(A)$L_{eq(15min)}$**	**Comment**
Excavator with Bucket	58-72	Noise Management Level **<48(A)$L_{eq(15min)}$** Highly Noise Affected Level **<75(A)$L_{eq(15min)}$**	Generally, exceeds Noise Management Level
Excavator with Hydraulic Hammer	71-85		Exceeds Highly Noise Affected Level.
Truck with Semi-Trailer	58-72		Generally exceeds Noise Management Level
Demolition Saw	71-85		Exceeds Highly Noise Affected Level
Concrete Pump	61-75		Generally, exceeds Noise Management Level
Concrete Boom	58-72		
Cement Mixing Truck			
Electric Tower Crane	48-72		
CFA Piling	56-70		
Angle Grinder	58-72		
General Hand Tools	48-62		
Asphalter	58-72		

See section 7.3 for discussion and recommendations.

7.2.2 Noise Emission Prediction to Receiver 2 (R2)

Activity	**Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)**	**Criteria dB(A)$L_{eq(15min)}$**	**Comment**
Excavator with Bucket	57-69	Noise Management Level **<48(A)$L_{eq(15min)}$** Highly Noise Affected Level **<75(A)$L_{eq(15min)}$**	Generally, exceeds Noise Management Level.
Excavator with Hydraulic Hammer	70-82		Exceeds Highly Noise Affected Level.
Truck with Semi-Trailer	57-69		Generally, exceeds Noise Management Level
Demolition Saw	70-82		Exceeds Highly Noise Affected Level
Concrete Pump	60-72		Generally, exceeds Noise Management Level
Concrete Boom	57-69		
Cement Mixing Truck			
Electric Tower Crane	47-59		
CFA Piling	55-67		
Angle Grinder	57-69		
General Hand Tools	47-59		
Asphalter	57-69		

See section 7.3 for discussion and recommendations.

7.2.3 Noise Emission Prediction to Receiver 3(R3)

Activity	**Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)**	**Criteria dB(A)$L_{eq(15min)}$**	**Comment**
Excavator with Bucket	57-71	Noise Management Level **<46(A)$L_{eq(15min)}$** Highly Noise Affected Level **<75(A)$L_{eq(15min)}$**	Generally, exceeds Noise Management Level
Excavator with Hydraulic Hammer	70-84		Exceeds Highly Noise Affected Level
Truck with Semi-Trailer	57-71		Generally, exceeds Noise Management Level
Demolition Saw	70-84		Exceeds Highly Noise Affected Level
Concrete Pump	60-74		Generally, exceeds Noise Management Level
Concrete Boom	57-71		
Cement Mixing Truck			
Electric Tower Crane	47-61		
CFA Piling	55-69		
Angle Grinder	57-71		
General Hand Tools	47-61		
Asphalter	57-71		

See section 7.3 for discussion and recommendations.

7.2.4 Noise Emission Prediction to Receiver 4 (R4)

Activity	**Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)**	**Criteria dB(A)$L_{eq(15min)}$**	**Comment**
Excavator with Bucket	59-77	Noise Management Level **<46(A)$L_{eq(15min)}$** Highly Noise Affected Level **<75(A)$L_{eq(15min)}$**	Generally exceeds Noise Management Level and slightly exceeds Highly Noise Affected Level.
Excavator with Hydraulic Hammer	72-90		
Truck with Semi-Trailer	59-77		
Demolition Saw	72-90		
Concrete Pump	62-80		
Concrete Boom	59-77		
Cement Mixing Truck			
Electric Tower Crane	49-67		
CFA Piling	57-75		
Angle Grinder	59-77		
General Hand Tools	49-67		
Asphalter	59-77		

See section 7.3 for discussion and recommendations.

7.2.5 Noise Emission Prediction to Commercial (school) building - C1

Activity	**Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)**	**Criteria dB(A)$L_{eq(15min)}$**	**Comment**
Excavator with Bucket	62-81	Noise Management Level (internal) **<45dB(A)$L_{eq(15min)}$** Highly Noise Affected Level (external) **<75dB(A)$L_{ea(15min)}$**	Generally exceeds Noise Management Level and Highly Noise Affected Level.
Excavator with Hydraulic Hammer	75-94		
Truck with Semi-Trailer	62-81		
Demolition Saw	75-94		
Concrete Pump	65-84		
Concrete Boom	62-81		
Cement Mixing Truck			
Electric Tower Crane	52-71		
CFA Piling	60-79		
Angle Grinder	62-81		
General Hand Tools	52-71		
Asphalter	62-81		

See section 7.3 for discussion and recommendations.

7.2.6 Noise Emission Prediction to Active Recreational Area – A1

Activity	**Predicted Level – dB(A) $L_{eq(15min)}$ (External Areas)**	**Criteria dB(A)$L_{eq(15min)}$**	**Comment**
Excavator with Bucket	58-77	Noise Management Level **<65(A)$L_{eq(15min)}$** Highly Noise Affected Level **<75(A)$L_{eq(15min)}$**	Exceeds Highly Noise Affected Level
Excavator with Hydraulic Hammer	71-90		Generally exceeds Noise Management Level and Highly Noise Affected Level
Truck with Semi-Trailer	58-77		Exceeds Highly Noise Affected Level.
Demolition Saw	71-90		Generally exceeds Noise Management Level and Highly Affected Level
Concrete Pump	61-80		Generally exceeds Noise Management Level and slightly exceeds Highly Noise Affected Level.
Concrete Boom	58-77		
Cement Mixing Truck			
Electric Tower Crane	48-67		
CFA Piling	56-75		
Angle Grinder	58-77		
General Hand Tools	48-67		Exceeds Noise Management Level
Asphalter	58-77		Exceeds Highly Noise Affected Level.

See section 7.3 for discussion and recommendations.

7.3 DISCUSSION- NOISE

The proposed equipment to be used during the demolition, excavation and piling phase of the development (excavator, CFA piling rig, rock hammering) is expected to exceed highly noise affected management levels. Noise impacts to the surrounding sensitive receivers is expected during this time.

Notwithstanding we note the following:

- Excavation of intersect filling, natural clays and extremely low strength rocks are to be expected. The anticipated depth of excavation will be 6 to 8m deep for the proposed basement levels and car park. In the event where high strength rock is required to be pulled, bulldozer or rock hammering to be used. However, the demolition and excavation works are anticipated to last for only 64 days.
- Due to the proximity of the surrounding sensitive receivers, it is expected that piling works will exceed the highly noise affected level. See section 8 for recommendations. We note that piling works will only last for 41 days.
- Other work practices which are above the noise affected management level (but generally below the 'highly noise affected level') are expected to be of a shorter duration (piling, hydraulic hammering) or are able to be effectively scheduled to minimise impact (concrete pump, deliveries).
- Once the façade is erected, fit-out work and other activities caried out internally will have a lesser impact on the amenity of neighbouring receivers and is expected to generally comply with the noise level. See Section 8.2 for further recommendations.

7.4 DISCUSSION- VIBRATION

Typically, the greatest potential for generation of vibration are excavation of rocks and vibration from piling rigs.

For this project, due to the expected demolition, excavation and piling works on site and the proximity of the nearest sensitive receivers, the vibration levels are expected to reach or exceed the criteria set out in section 6.2, 6.3 and 6.4. See section 8.1.1 for recommendation for vibration monitoring.

8 MITIGATION RECOMMENDATIONS

8.1 RECOMMENDATIONS

In light of the above assessment, and to mitigate any potential noise impacts from the development, we recommend the following management controls be implemented:

- The scheduling of construction activities should be undertaken to reasonably minimise noise impacts to all surrounding residents.
    - Based on condition C7 of the Consent Conditions SSD9912, a respite period is to be implemented where rock hammering, piling or rock cutting works are required as follows:
        - Monday – Friday: 9:00am – 12:00pm
        - Monday – Friday: 2:00pm – 5:00pm
        - Saturday: 9:00am – 12:00pm
- Community consultation is proposed be undertaken throughout the construction process. In this regard regular letterbox drops detailing site progress and scheduled works is proposed. In particular, these should detail the extent and times of rock hammering which is planned to be undertaken.
- Quiet work methods/technologies:
    - The primary noise generating activity at the site will be the bulk excavation period. As much as practicable, use of quieter excavation methods is adopted.
    - Excavation is conducted initially using excavator with bucket (quietest excavation method), then use of rock rippers (as opposed to hydraulic hammers and rock saws) when rock strength permits. Use of the loudest excavation equipment (hydraulic hammers/rock saws) is used only with other options are not available.
- Materials handling/vehicles:
    - Trucks and forklifts in general use on site are to use a non-tonal reversing beacon where possible (subject to OH&S requirements) to minimise potential disturbance of surrounding receivers.
    - Avoid careless dropping of construction materials into empty trucks.
    - As per Condition C13, trucks are not to arrive at the site or surrounding residential precincts outside of the construction hours of work outlined under condition C4.
    - Trucks, trailers and delivery vehicles are to turn off engines when idling to reduce noise impacts (unless required for concrete pumping or similar).
    - Deliveries should use straps in place of chains for handling materials wherever possible.
- A conscientious effort should be made to avoid works near the nearest sensitive receivers (R4 when occupied and C1) wherever feasible. Compounding various high generating activities simultaneously near receivers should be avoided where possible.
- Unnecessary shouting should be avoided on site, and appropriate signage should be installed to remind workers of their responsibility to reduce noise impacts where feasible. Loud music from radios and stereos should not be permitted.
- When selecting construction equipment to be used on the project, the noise levels of plant and equipment should be considered, whereby equipment selected has an equivalent or lower sound power level than the predictive sound power levels of equipment maintained within this report.

- Complaints handling:
    - An after-hours contact number is displayed outside of the building site, so that in the event that surrounding development believes that a noise breach is occurring, they may contact the site.
    - In the event of complaint, the procedures outlined in Section 8 are adopted.
- Maximum delivery vehicle speed of 10km/h through service road.
- Site Induction:
    - A copy of the Noise Management Plan is to be available to contractors. The location of the Noise Management Plan should be advised in any site induction.
    - Site induction should also detail the site contact to be notified in the event of noise complaint.

8.1.1 Vibration Monitoring

During the demolition, excavation and piling stage, vibration monitoring is recommended to be conducted along the western and eastern boundary of the project site. AL also recommends that if any complaint relevant to vibration is made by any other surrounding receivers, vibration monitoring be undertaken to monitor vibration levels at sensitive receivers.

Monitor locations are recommended to be regularly discussed and reviewed together by both the builder and the relevant stakeholders to ensure monitors follow the path of construction activities.

Vibration monitoring (attended or unattended) can also be conducted at other surrounding residential/commercial receivers if complaints arise.

8.1.1.1 Equipment

Vibration monitoring at receivers or site boundaries are to be conducted using Texcel ETM type monitors with externally mounted tri-axial geophones.

Vibration monitoring inside sensitive rooms are to be conducted using Bruel & Kjaer 3680 terminals using Bruel & Kjaer 8380 tri-axial geophones.

The monitors are to be set to send an SMS message when alert levels have reached 75% of the vibration criteria at the location of the geophone.

8.1.1.2 Results

The ETM vibration monitors can be downloaded remotely to actively review all monitoring data recorded at the monitoring location, including any vibration events found to exceed the trigger levels nominated in Section 6.2.1.

In the event multiple events exceeding the nominated trigger levels are recorded, all data recorded by the monitor is to be reviewed and forwarded to a nominated representative of the building contractor. It is proposed that reports are to be provided at regular intervals (e.g. fortnightly or monthly), with any exceedance in the nominated vibration criteria documented. These reports will be uploaded to the project website each month.

8.1.1.3 Presentation of Vibration Monitor Results

A fortnightly report will be submitted to the client via email summarising the vibration events. The vibration exceedance of criteria is recorded, and the report shall be submitted within 24 hours. Complete results of the continuous vibration logging will be presented in fortnight reports including graphs of the collected data.

8.1.1.4 Vibration Monitoring Alerts

The following personnel will receive alarms in the event that the nominated vibration trigger level of 75% are exceeded at the site:

1. Acoustic consultant/advisor.
2. Project site foreman.
3. Project Manager.

8.2 GENERAL RECOMMENDATIONS

Other noise management practices which may be adopted are discussed below. In addition, notification, reporting and complaints handling procedures should be adopted as recommended in section in this report.

8.2.1 Acoustic Barrier

An acoustic barrier is to be erected along the project site boundary particularly along the eastern boundary constructed from solid plywood hoarding to be installed in order to provide additional attenuation to the resident at 39 Bancroft, Any other proposed material is to have a surface density of at least 12kg/m^2.The barrier on the boundary should extend 3m either side of the house and to the height of the top floor windows, breaking line of sight with the ground based static equipment.

Barriers or screens can be an effective means of reducing noise. Barriers can be located either at the source or receiver. The placement of barriers at the source is generally only effective for static plant (tower cranes). Equipment which is on the move or working in rough or undulating terrain cannot be effectively attenuated by placing barriers at the source. Barriers can also be placed between the source and the receiver.

The degree of noise reduction provided by barriers is dependent on the amount by which line of sight can be blocked by the barrier. If the receiver is totally shielded from the noise source reductions of up to 15 dB(A) can be affected. Where only partial obstruction of line of sight occurs, noise reductions of 5 to 8 dB(A) may be achieved. Where no line of sight is obstructed by the barrier, generally no noise reduction will occur.

As barriers are used to provide shielding and do not act as an enclosure, the material they are constructed from should have a noise reduction performance which is approximately 10dB(A) greater than the maximum reduction provided by the barrier. In this case the use of a material such as 10 or 15mm plywood would be acceptable for the barriers.

8.2.2 Silencing Devices

Where construction process or appliances are noisy, the use of silencing devices may be possible. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts.

8.2.3 Material Handling

The installation of rubber matting over material handling areas can reduce the sound of impacts due to material being dropped by up to 20dB(A).

8.2.4 Treatment of Specific Equipment

In certain cases, it may be possible to specially treat a piece of equipment to reduce the sound levels emitted. These may take the form of engine shrouding, or special industrial silencers fitted to exhausts.

8.2.5 Establishment of Site Practices

This involves the formulation of work practices to reduce noise generation. This includes locating fixed plant items as far as possible from residents as well as rotating plant and equipment to provide respite to receivers.

Construction vehicles accessing the site should not queue in residential streets and should only use the designated construction vehicle routes. Loading of these vehicles should occur as far as possible from any sensitive receiver.

9 ASSESSMENT METHODOLOGY AND MITIGATION METHODS

The flow chart that follows illustrates the process to be followed to minimise the impact associated with these activities.

Noise sources with the potential to exceed the criteria set out in section 6 have been identified and discussed in section 8.

10 COMMUNITY INTERACTION AND COMPLAINTS HANDLING

10.1 ESTABLISHMENT OF DIRECT COMMUNICATION WITH AFFECTED PARTIES

In order for any construction noise management programme to work effectively, continuous communication is required between; all parties which may be potentially impacted upon, the builder and the regulatory authority. This establishes a dynamic response process which allows for the adjustment of control methods and criteria for the benefit of all parties.

The objective in undertaking a consultation process is to:

- Inform and educate the groups about the project and the noise controls being implemented.
- Increase understanding of all acoustic issues related to the project and options available.
- Identify group concerns generated by the project, so that they can be addressed.
- Ensure that concerned individuals or groups are aware of and have access to the Site Complaints Register which will be used to address any construction noise related problems should they arise.

To ensure that this process is effective, regular scheduled meetings may be required for a finite period, until all issues have been addressed and the evidence of successful implementation is embraced by all parties.

An additional step in this process is to produce a newsletter informing nearby residents of upcoming activities that are likely to generate higher noise/vibration levels.

10.2 DEALING WITH COMPLAINTS

Should ongoing complaints of excessive noise, vibration or dust occur, immediate measures will be undertaken to investigate the complaint, the cause of the exceedances and identify the required changes to work practices. In the case of exceedances of the vibration and dust limits, all work potentially producing vibration or dust is to cease until the exceedance is investigated. The effectiveness of any changes will be verified before continuing. Documentation and training of site staff will occur to ensure the practices that produced the exceedances are not repeated.

If a noise complaint is received the complaint will be recorded on a Noise Complaint Form. The complaint form is to list:

- The name and address of the complainant (if provided).
- The time and date the complaint was received.
- The nature of the complaint and the time and date the noise was heard.
- The name of the employee who received the complaint.
- Actions taken to investigate the complaint, and a summary of the results of the investigation.
- Required remedial action, if required.
- Validation of the remedial action.
- If necessary, setup vibration monitoring at the location representing the nearest affected vibration receiver, with alarm device which can inform the project manager on site if the vibration exceedance happened.
- Summary of feedback to the complainant.

A permanent register of complaints will be held.

All complaints received will be fully investigated and reported to management. The complainant must also be notified of the results and actions arising from the investigation.

The investigation of a complaint must involve where applicable.

- noise measurements at the affected receiver.
- an investigation of the activities occurring at the time of the incident.
- inspection of the activity to determine whether any undue noise is being emitted by equipment; and
- Whether work practices were being carried out either within established guidelines or outside these guidelines.

Where an item of plant is found to be emitting excessive noise, the cause is to be rectified as soon as possible. Where work practices within established guidelines are found to result in excessive noise being generated then the guidelines are to be modified so as to reduce noise emissions to acceptable levels. Where guidelines are not being followed, the additional training and counselling of employees is to be carried out.

Measurement or other methods shall validate the results of any corrective actions arising from a complaint where applicable.

10.3 NOISE MONITORING TECHNIQUES

Where noise monitoring is undertaken (either by attended short term measurements or long term unattended noise monitoring), it should be conducted at a practical location representative of the impact to nearby noise sensitive receivers. Where this is not possible, noise measurements of construction processes should be taken such that noise levels can be accurately predicted to receivers. Any reporting of noise measurement results may include the following information:

- The date and time that the measurements were undertaken;
- The location of measurements, noise receivers and construction processes. A site map should be included for clarity (see Figure 4 below for the noise monitoring locations)
- A description of the construction processes being undertaken during the measurement period.
- The measured noise construction noise levels, and the noise level at the façade of nearby receivers (if noise levels are predicted).
- A comparison to the NSW EPA Interim Construction Noise Guideline noise management levels.

10.4 NOISE AND VIBRATION MONITORING LOCATIONS

The noise and vibration monitoring locations are presented in the Figure 4 below.

Figure 4: Noise and Vibration Monitoring Locations

11 CONTINGENCY PLANS

Where non-compliances or noise complaints are raised the following methodology will be implemented.

1. Determine the offending plant/equipment/process
2. Locate the plant/equipment/process further away from the affected receiver(s) if possible.
3. Implement additional acoustic treatment in the form of localised barriers, silencers etc where practical.
4. Selecting alternative equipment/processes where practical
5. If necessary, setup noise and vibration monitoring devices at locations representing the nearest noise/vibration and dust affected receivers and provide data for each complain time period. Analysis is required to determine suitable mitigation measures.

Complaints associated with noise and vibration generated by site activities shall be recorded on a Complaint Form. The person(s) responsible for complaint handling and contact details for receiving of complaints shall be established on site prior to construction works commencing. A sign shall be displayed at the site indicating the Site Manager to the general public and their contact telephone number.

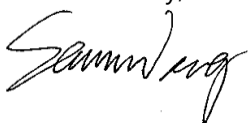
12 CONCLUSION

A noise and vibration assessment has been undertaken of the proposed construction works at Roseville College Wellbeing Centre Plans to address the consent conditions B15, C4 and C7 (SSD 9912).

Potential noise and vibration impacts at the nearby sensitive receivers have been assessed. Mitigation techniques have been recommended in Sections 8, 9 and 10 of this report are to be adopted, noise and vibration impacts on the adjacent and nearby receivers are expected to be implemented.

We trust this information is satisfactory. Please contact us should you have any further queries.

Yours faithfully,



Acoustic Logic Pty Ltd
Samantha Wong

APPENDIX 1: ACOUCSTIC CONSULTATION LETTER BOX

TAYLOR

02 8736 9000
taylorau.com.au

Sydney Level 13, 157 Walker St, North Sydney, NSW 2060

Newcastle 3/91 Frederick St, Merewether, NSW 2291

Dear Neighbour,

RE: Roseville College Sport and Wellbeing Centre, Construction Noise and Vibration Management

We have been engaged by Roseville College to construct the Sport and Wellbeing Centre located at 29-37 Bancroft Avenue, Roseville NSW 2069, which is the subject of Stage Significant Development Consent No. SSD-9912.

Construction
Refurbishment & Live Environments
Industrial
Regional
Property

We have prepared a Construction Noise and Vibration Management Plan which sets out the various measures and strategies we intend to implement to monitor and manage construction noise and vibration and the potential impacts on the community. The report can be found on the Roseville College project information website here:

https://www.roseville.nsw.edu.au/wellbeing/swell-centre/sport-and-wellbeing-centre-development/

You are invited to review and provide feedback about the strategies and measures proposed in the plan. Please direct this feedback to construction@roseville.nsw.edu.au by next Thursday, 27 October 2022. Please indicate in your feedback if you would like to be contacted to discuss it in more detail.

Yours faithfully,

Dean Fondas
Project Director

Appendix 10 – Construction Waste Management Sub-Plan

SITE WASTE MANAGEMENT PLAN (SWMP)

Roseville College Sport & Wellbeing Centre

[27 – 29, 37 Bancroft Avenue, Roseville]

E-PLAN-01 (Rev. July 2021) | Amended by: JT

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Contents

1. INTRODUCTION

1.1 PROJECT INFORMATION TABLE

PROJECT INFORMATION TABLE		
Project name	Roseville College – Sport & Wellbeing Centre	
Location	27 – 29, 37 Bancroft Avenue Roseville	
Client	EPM	
Duration of contract	21 months	
Taylor Contact Information		
Company name	Taylor Construction Group Pty Ltd	
ABN	25 067 428 344	
Address	Level 13, 157 Walker Street, North Sydney 2060	
Telephone and fax	Ph.: 02 8736 9000 Fax: 02 8736 9090	
POSITION	**CONTACT NAME**	**PHONE NUMBERS**
Chief Executive Officer	George Bardas	02 8736 9000
General manager	Ben Folkard	02 8736 9000
Operations manager	-	
Senior project manager	Dean Fondas	02 8736 9000
Project manager	Fred Sedighi	0431 070 846
Site manager	TBA	
Foreman	TBA	
HSE manager	Andrew Andreou	02 8736 9000
Safety advisor	TBA	
Quality manager	Stephen Player	02 8736 9000
Contract manager	-	
Contract administrator	TBA	
Project coordinator	-	
Site engineer	TBA	
Cadet	TBA	

DOCUMENT CONTROL	NAME & POSITION	SIGNATURE & DATE
Prepared by : Jason Tulich	Project Manager	
Reviewed by : Dean Fondas	Senior Project Manager	

REVISED BY	REV. No.	DATE	CHANGES MADE

1.2 PROJECT OVERVIEW AND SITE DESCRIPTION

The Roseville College SWELL Centre project generally involves:

- Demolition of outdoor sports courts at 27-29 Bancroft Avenue;
- Demolition of a dwelling, ancillary structures and hardstand areas at 37 Bancroft Avenue;
- Tree removal and excavation works;
- Construction of a three-storey building, comprising:
    - 48 basement car parking spaces;
    - eight-lane swimming pool, associated concourse and grandstand;
    - gymnasium;
    - food technology space;
    - general learning areas;
    - change facilities, amenities and storage;
    - mechanical plant, on-site detention, filtration plant and chemical store; and
    - rooftop multi-purpose sports courts.
- landscaping; and
- signage.

The site is located on 29 and 37 Bancroft Avenue, Roseville:

1.3 PURPOSE OF THE SITE WASTE MANAGEMENT PLAN

Taylor Construction Group is committed to improving sustainability on all of its projects: we aim to reduce the environmental impact of our operations and enable the integration of sustainability principles and practices to all activities carried out on site. Our goal on this project is to maximise the re-use of waste products, therefore minimizing the amount of waste going to landfill. The Site Waste Management Plan (SWMP) incorporates the processes that will assist the project team in achieving this goal, whilst providing the necessary means to ensure waste management is efficient, cost-effective and compliant to NSW waste regulations.

The plan addresses Condition B16 of SSD-9912 and includes information/requirements pertaining (but not limited) to the following elements:

(a) the recording of quantities, classification (for materials to be removed) and validation (for materials to remain) of each type of waste generated during construction and proposed use;

(b) information regarding the recycling and disposal locations; and

(c) confirmation of the contamination status of the development areas of the site based on the validation results.

2. WASTE MANAGEMENT RESPONSIBILITIES

The site manager is the SWMP coordinator of the project and, as such, is responsible for ensuring the instruction of workers and for implementing and overseeing the SWMP.

The site manager will monitor the effectiveness and accuracy of the SWMP during the routine site visits. Independent audits will also be completed by the HSE manger via site inspections. Copies of these reports will be forwarded to the HSE manager for monitoring.

3. DISTRIBUTION

This SWMP will be communicated to the whole project team by the project manager, who shall also distribute copies to the relevant authorities, client, project/ site manager and each subcontractor where relevant/ applicable. This will be undertaken every time the plan is updated.

4. INSTRUCTION AND TRAINING

The site manager shall provide on-site briefing via induction of appropriate separation, handling, recycling, re-use and return methods to be adopted by all parties and at appropriate stages of the project. Toolbox talks will be carried out regularly on waste issues and all subcontractors will be expected to attend. These toolbox talks are aimed at providing employees and subcontractors with the necessary information and instruction regarding waste management so that they understand the importance of the role they play and feel motivated to work together toward the same goals.

5. WASTE MANAGEMENT ON SITE

5.1 CATEGORIES

Waste materials fall into four categories for management. These are:

1. **Reuse**. If surplus materials can be used in future operations, they are classified as materials that can be reused.
2. **Recycling**. If surplus materials cannot be reused in their present form, they will be sent to recycling.
3. **Residual waste**. Residual waste can come in several forms, including waste that cannot be disposed of due to their nature (i.e. metals, contaminated waste), unused machinery, spare parts or discarded parts.
4. **Landfill**. If the above options cannot be satisfied, materials will be sent to landfill. The project team must make all the necessary efforts to reuse and recycle materials generated on site. L**andfill must be avoided and will only be used as a last resort.**

5.2 WASTE REGULATIONS IN NSW

Acts and regulations govern waste management in NSW. According to EPA, those who handle, store, transport, process, recycle and dispose of waste must follow these rules to minimize harm to human health and to the environment. The waste legislation in NSW is as follows:

Protection of the Environment Operations Act 1997. It is the principal environmental protection legislation for NSW. The act:

- Defines 'waste' for regulatory purposes;
- Establishes management and licensing requirements for waste;
- Defines offences relating to waste and sets penalties;
- Establishes the ability to set various waste management requirements via the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation).

Protection of the Environment Operations (Waste) Regulation 2014. The Waste Regulation allows the EPA to protect human health and the environment and provides a platform for a modern and fair waste industry. It includes strict thresholds for environment protection licenses and outlines the waste levy system.

Waste Avoidance and Resource Recovery Act 2001. The Waste Avoidance and Resource Recovery Act 2001 (WARR Act) promotes waste reduction and better use of our resources in NSW. It includes provisions for waste strategies and programs and for industry actions to reduce waste.

5.3 WAYS OF MINIMISING WASTE

Daily activities on this project will generate a wide range of residues such as general waste, obsolete infrastructure and/ or contaminated/ hazardous materials. With a view to maximizing waste management, the following waste hierarchy principles must be followed:

1. **Reduce**

Minimise waste production and over-consumption of materials by:

- Incorporating design and building practices that minimise waste production;
- Not over-ordering products or materials;
- Specifying project requirements and planning ahead to avoid over-consumption of products and materials;
- Minimising rework from errors and poor workmanship;
- Ensuring storage areas are safe and secure;
- Arranging deliveries to match work stages to avoid materials being stored on site longer than necessary.

2. **Reuse**

Wherever possible, reuse surplus or salvaged materials on site, off-site or on other projects:

- Establish a system whereby all products that can be reused (for the same purpose or for a new one) are identified and stored;
- Repair items so they can be reused or returned to the supplier.

3. **Recycle**

All materials that can be recycled must be separated and sent to a recycling facility.

5.3.1 ACTIONS TABLE

Actions for minimising waste will be updated into the following table:

Current actions table		
Action	**Responsibility**	**Notified on**
Have rubbish bins around site to dispose waste etc	Bingo / Taylor	

5.4 DISPOSAL OF HAZARDOUS WASTES

Safe Work & Environments have prepared an Asbestos Register for 37 Bancroft Avenue, Roseville dated 3rd February'22, which confirms the presence of asbestos within the existing dwelling and ancillary shed that is to be demolished. The ACM has been described as fibre cement sheeting that is located to the Shed and the mounting board of the Dwelling Electrical Fuse Box. All hazardous or dangerous materials found or to be used during the demolition and construction phases must be handled and disposed of by competent persons only, in accordance with the EPA NSW guidelines. These materials can include:

- Dangerous or hazardous liquids;
- Asbestos waste;
- Waste lead acid batteries;
- Contaminated soil;
- Fluorescent tubes and HID lamps, etc.

5.5 SITE WASTE MANAGEMENT PLAN CHECKLIST

Item description	Yes	No
Have the recycling and waste contractors been identified?	☒	☐
Have terms and commercial rates been agreed with contractors?	☒	☐
Has each material to be used on site been identified?	☒	☐
Have all hazardous and toxic materials (e.g. asbestos) been identified and do they comply with SafeWork NSW requirements?	☒	☐
For off-site or disposal, have all the waste destination details been verified?	☒	☐
Has a waste segregation/ collection area been prepared?	☒	☐
Has the waste area been adequately signposted?	☒	☐
Has the quantity of general waste to be produced on site been estimated? Is this estimation realistic?	☒	☐
Has the person responsible ensured not to over order on materials?	☒	☐
Has the SWMP been approved by the project manager?	☒	☐
Is returning waste to the supplier an option (e.g. plasterboard)?	☒	☐
Has the SWMP document control/ filing system been set up (site safety pack)?	☒	☐
Has the SWMP been communicated to the whole team and to the contractors?	☒	☐
Have all the SWMP training/ induction procedures for staff been met?	☒	☐
Have all the SWMP training/ induction procedures for contractors been met?	☒	☐
Comments/ further actions		
Note: some items are required to be completed once established on site.		

5.6 WASTE CLASSIFICATION, QUANTITIES AND MANAGEMENT PRACTICES

A specific area shall be laid out and labelled to facilitate the separation of materials for potential recycling, salvage, reuse and return. Recycling and waste bins are to be kept clean and clearly marked in order to avoid contamination of materials.

Monitoring must take place to ensure contamination of segregated skips does not occur. The type of surplus materials being produced must be continually reviewed and site set-up modified where possible to maximise reuse and recycling. The use of landfill will be the last resort.

Waste classification, quantities and management practices					
Waste type	**Classification**	**Waste stream**	**Quantity (approx.)**	**Waste destination**	**Contractor**
Asbestos	Hazardous waste (special waste)	Dispose	12m2	Removed prior to the demolition works by a Class A or Class B licenced asbestos removal contractor and taken to a Licensed landfill	Facilities TBA upon appointment of sub-contractor.
Batteries (lead-acid/ nickel-cadmium)	Hazardous waste			N/A	
Bricks/ blocks	General waste (non-putrescible)	Re-use	40m3	Bricks to be stockpiled & re-used where possible. If taken off-site, acceptable quality bricks to be collected by a contractor and sold for reuse. Unusable bricks to be collected and recycled at an appropriate facility.	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.
Cardboard	General waste (non-putrescible)	Recycle		N/A	
Concrete – Demolition Concrete - Construction	General waste (non-putrescible)	Re-use	40m3 15m3	Separated on site and crushed for use in pavement and/or temporary access road construction where possible. If taken off-site, collected by contractor & disposed at concrete recycling facility	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.
Containers of dangerous goods	Hazardous waste			N/A	
General waste, including food – Demolition General Waste - Construction	General waste (putrescible)	Recycle/ Disposal	24m3 110m3	Separated onsite into dedicated receptacles. Collected by subcontractor for recycling. Collected and disposed to landfill.	Facilities TBA upon appointment of sub-contractor.
Metals – Demolition Metals - Construction	General waste (non-putrescible)	Re-use, recycle Recycle	15m3 20m3	Collected by specialist metal subcontractor for recycling Can't be reused. Collected by specialist metal subcontractor for recycling.	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.

Mortar	General waste (non-putrescible)			Waste bins provided by BINGO	Bingo
Pallets	General waste (non-putrescible)			Contractors dispose own pallets	All contractors
Paper	General waste (non-putrescible)	Recycle		Shrex Bin (recycled)	Shdrex Bin
Plasterboard – Demolition Plasterboard - Construct	General waste (non-putrescible)	Recycle Reuse	20m3 5m3	Collected by the waste subcontractor as required for recycling. Unused material taken back by supplier for reuse where possible. Material to be separated & stockpiled.	Facilities TBA upon appointment of sub-contractor.
Plastics - Demolition Plastics - Construction	General waste (non-putrescible)	Recycle	6m3 30m3	Collected by the waste subcontractor as required for recycling.	Facilities TBA upon appointment of sub-contractor.
Sanitary products	General waste (putrescible)			Waste bins provided by BINGO	Bingo
Excavated Material		Re-use	100m3	Will either be stockpiled for use during construction if required and if not disposed off-site. If disposed off-site, collected, and used as clean fill by the appointed contractor and/or forwarded to various facilities such as garden landscapers, or roadworks.	Facilities TBA upon appointment of sub-contractor.
Subsoil (clean)				N/A	
Subsoil (hazardous)				N/A	
Timber – Demolition Timber - Construction		Recycle Reuse/ Recycle	35m3 35m3	Recyclable timber (untreated) will be collected and recycled at appropriate timber yard. Unrecyclable timber will be disposed at landfill. Separated & where feasible, reused for further formwork. Unused material to be collected by specialist timber subcontractor for recycling.	Facilities TBA upon appointment of sub-contractor.
Trees/ plants				N/A	
Tiles		Recycle	25m3	Can't be reused on-site. Collected by contractor & dispose at recycling facility	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.
Glazing – Demolition Glazing - Construction		Recycle	5m3 1m3	Can't be reused on-site. Recyclers consulted as to potential for recycling & if suitable separated for recycling.	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.

Green Waste		Reuse	65m3	Where possible green waste material will remain on-site & be reused in landscape areas	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.
Mixed Recyclables – Demolition Mixed Recyclables - Construction		Recycle	9m3 55m3	Separated onsite into dedicated receptacles. Collected by subcontractor for recycling	Facilities TBA upon appointment of sub-contractor. No disposal to landfill.
Carpet		Reuse/ recycle /dispose	5m3	Provided as spares to the Client or if not required on-site, collected for recycling if of the required quality or disposal to landfill	College Storage Or Facilities TBA upon appointment of sub-contractor.
Soil/Sand/ Gravel		Reuse	10m3	Stockpile for reuse by Contractor	

6. RELEVANT SIGNATURES

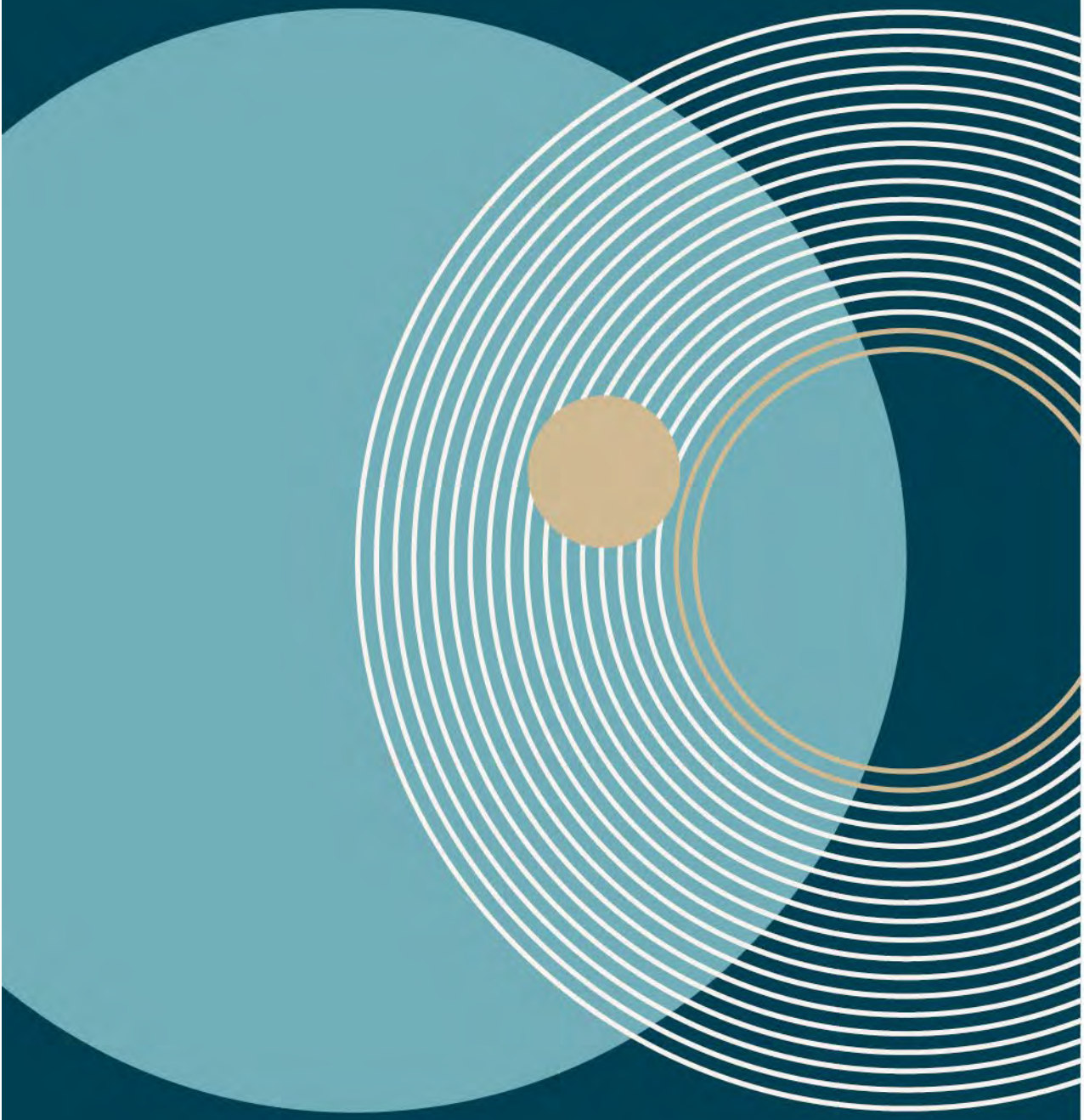
Project Manager – Jason Tulich		**Date**	**22/07/2022**
Senior Project Manager - Dean Fondas		**Date**	**27/07/2022**

Appendix 11 – Community Consultation Strategy

australianpublicaffairs

Roseville College:

Community Communications Strategy, March 2022



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Contents

Introduction

This document is the Community Communications Strategy required to be developed by Roseville College under the consent conditions – it governs engagement with the local community throughout the construction phase.

It has been prepared to meet consultation requirements set out in the consent conditions for State Significant Development (SSD) 9912 for the Sport and Wellbeing Centre at Roseville College. The development site is located at 27-29 and 37 Bancroft Avenue, Roseville.

Consent Condition B8: Community Communications Strategy

This document has been prepared in response to the requirements set out in the SSD consent conditions for the project. Specifically, consent condition B8 requires the preparation of a Community Communications Strategy. An excerpt is provided below.

> *"No later than two weeks before the commencement of construction, a Community Communication Strategy must be submitted to the Planning Secretary for approval, prior to the commencement of construction or within another timeframe agreed with the Planning Secretary.*
>
> *The Community Communication Strategy must provide mechanisms to facilitate communication between the Applicant, the relevant Council and the community (including adjoining affected landowners and businesses, and others directly impacted by the development), during the design and construction of the development and for a minimum of 12 months following the completion of construction."*

Scope of Strategy

"The Community Communication Strategy must:

- *Identify people to be consulted during the design and construction phases.*
- *Set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development.*
- *Provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development.*
- *Set out procedures and mechanisms:*
    - + *Through which the community can discuss or provide feedback to the Applicant.*
    - + *Through which the Applicant will respond to enquiries or feedback from the community.*
    - + *To resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.*
- *Include any specific requirements around traffic, noise and vibration, visual impacts, amenity, flora and fauna, soil and water, contamination, heritage."*

Project Overview

The construction and operation of the Sport and Wellbeing Centre includes:

- Demolition of outdoor sports courts at 27-29 Bancroft Avenue.
- Demolition of a dwelling, ancillary structures and hardstand areas at 37 Bancroft Avenue.
- Tree removal and excavation works.
- Construction of a three-storey building, comprising:
    + 48 basement car parking spaces.
    + Eight-lane swimming pool, associated concourse and grandstand.
    + Gymnasium.
    + Food technology space.
    + General learning areas.
    + Change facilities, amenities and storage.
    + Mechanical plant, on-site detention, filtration plant and chemical store.
    + Rooftop multi-purpose sports courts.
- Landscaping.
- Signage.

Communication and Consultation Objectives

The communication and consultation objectives are listed below.

- Provide access to information about the consent conditions, including the documents and reports that are required to be published on the College's website.
- Identify stakeholders who need to be consulted during the design and construction phases of the development.
- Identify, target and inform stakeholders of the project to provide useful, relevant and timely information.
- Develop procedures and mechanisms to distribute information and receive feedback and complaints about the project.
- Provide information to stakeholders through multiple channels and at appropriate stages of the project to satisfy statutory and regulatory community consultation and communication requirements.
- Develop procedures to resolve issues and mediate disputes should they arise, in relation to construction and operation, including disputes regarding rectification or compensation.
- Specify requirements around traffic, noise and vibration, visual impacts, amenity, flora and fauna, soil and water, contamination, heritage in this strategy.
- Build positive relationships with stakeholders to leave a legacy of goodwill.

Stakeholders

The community stakeholders of the development, including their anticipated interests have been identified in **Table 1** below, with the adjoining landowner, nearby residents and businesses, and the local community groups shown on the map at **Appendix A**. There will be additional communication and consultation actions about technical matters for the development with stakeholders such as Ku-ring-gai Council and other utility and service providers, as set out in the consent conditions and/or as per other statutory requirements.

The College will also undertake internal communication and engagement activities for students, parents and carers, and the wider College community to communicate the project and manage potential impacts on the College grounds.

Table 1: Community stakeholders

STAKEHOLDER	ANTICIPATED INTERESTS
Adjoining landowner: 39 Bancroft Avenue	Consultation on design and construction of the SWELL Centre Notification of disruptions General project updates Contact information for enquiries and complaints
Nearby residents and businesses: Bancroft Avenue Victoria Street Spearman Street Hill Street Wandella Avenue Clermiston Avenue Glencroft Avenue Lord Street	Consultation on design and construction of the SWELL Centre Notification of disruptions General project updates Contact information for enquiries and complaints
Local community groups: Ku-ring-gai Arts Centre Roseville Lawn Tennis Club	Consultation on design and construction of the SWELL Centre Notification of disruptions General project updates Contact information for enquiries and complaints
Registered Aboriginal Parties: Six Registered Aboriginal Parties	Consultation on design and construction of the SWELL Centre General project updates Contact information for enquiries and complaints
Roseville community	General project updates Contact information for enquiries and complaints
Ku-ring-gai Council	Consultation on design and construction of the SWELL Centre General project updates Contact information for enquiries and complaints
Roseville College – staff and students as sensitive receivers through construction	Consultation on design and construction of the SWELL Centre Notification of disruptions General project updates Contact information for enquiries and complaints

Engagement Approach

The College will engage with stakeholders and the local community throughout construction to meet the project's communication objectives, to keep them up to date about the project's status and achievements, and to inform them ahead of noise and other potential disturbances.

The consent conditions and their corresponding communication procedures and mechanisms in sections 6 and 7 of this strategy provide detailed information about what and when communication is required about the project. **Table 2** below provides a summary of communications mechanisms, which form the approach to how and when the College will communicate with stakeholders.

Table 2: Summary of communication mechanisms

COMMUNICATION MECHANISM	SUMMARY	ANTICIPATED FREQUENCY
Project telephone number	The community contact line for enquiries and complaints	Available during business hours
After hours telephone number	An after-hours contact number will be available onsite signage and notifications about after-hours work	Available after hours
Project email address	A project email address will be made available to stakeholders and the community for enquiries and complaints	Available at all times, with responses made during business hours
Project contact card	A contact card will be distributed (and continue to be made available) to stakeholders, containing the project contact details	Distributed at the start of construction and as required throughout the project
Project webpage	The College website will have a project webpage established to include the documents and reports required to be publicly available, as well as general project information	Available before the start of construction and for 12 months after completion, as required in consent conditions. The webpage will be updated as required by the consent conditions, as well as to provide project status updates and to add notifications that have been distributed to the community
Quarterly project news	A project news document will be distributed (print and/or digital) to stakeholders to provide an update on the progress of construction and any milestone achievements	Distributed quarterly (or more frequently if determined necessary by the College)
Quarterly community drop-in	An informal community information drop-in for stakeholders to find information, ask questions, face-to-face and in-person	Held at the College each quarter
Regular construction work notifications	Construction work notifications will be prepared (print and/or digital) to provide advance notification of the upcoming work schedule.	Distributed monthly (or more frequently if determined necessary by the College)
Ad hoc construction work notifications	Construction work notifications will be needed on an ad hoc basis for specific stakeholders to provide advance notification of works that may expectedly or unexpectedly occur	As required
Door knocking, calling and emailing stakeholders	It may be necessary to directly contact individual stakeholders throughout the work, to provide advance notification and/or to manage matters relating to construction impacts	As required

Consent Conditions for Communications

Table 3 below lists the consent conditions that require communication procedures and mechanisms, including a brief summary of the procedures and mechanisms. This strategy provides additional information about each communication procedure and mechanism.

Table 3: Consent conditions and communication procedures/mechanisms

CONSENT CONDITION	SUMMARY	PROCEDURE / MECHANISM
A28 Access to information	Publish key planning and consent documents on College's project webpage, including monthly complaints register.	1. Project team will ensure communication channels for the project remain available to community during construction, operation and for 12 months after construction. 2. Project team will provide all required documents for loading onto webpage, prior to construction starting, prior to operation of centre, and for 12 months after construction. 3. Monthly complaints register will be updated and published on the College's project webpage in the first week of each month to reflect the previous month's complaints.
B8	Prepare and publish a Community Communications Strategy The Community Communication Strategy must: B8(a): Identify people to be consulted during the design and construction phases B8(b): Set out procedures and mechanisms for the regular distribution of accessible information about or relevant to the development B8(c): Provide for the formation of community-based forums, if required, that focus on key environmental management issues for the development B8(d): Set out procedures and mechanisms: (i) through which the community can discuss or provide feedback to the Applicant; (ii) through which the Applicant will respond to enquiries or feedback from the community; and (iii) to resolve any issues and mediate any disputes that may arise in relation to construction and operation of the development, including disputes regarding rectification or compensation.	4. Project team will ensure this strategy meets the requirements of the condition to prepare and publish a Community Communications Strategy and make it publicly available throughout the works and for 12 months after the works have been completed.

CONSENT CONDITION	SUMMARY	PROCEDURE / MECHANISM
	B8(e): Include any specific requirements around traffic, noise and vibration, visual impacts, amenity, flora and fauna, soil and water, contamination, heritage.	
B13 Construction Environmental Management Plan	In addition to making key documents available publicly per condition A28 above, the following requirements relate to community communication. B13(a)(viii): Conduct community consultation and complaints handling, per condition B8 above. B13(b): Prepare and share the works methodology outlining protective measures for 31 Bancroft Avenue (Rose Cottage) and 39 Bancroft Avenue during the excavation and construction B13(c): Prepare and share an unexpected finds protocol for contamination and associated communications procedure to ensure that potentially contaminated material is appropriately managed. B13(d): Prepare and share an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure.	Refer procedures 1-4 above. 5. Prepare and publish the Construction and Environmental Management Plan to provide information to stakeholders about: a. methodology and protective measures to be in place for 31 and 39 Bancroft Avenue during excavation and construction b. unexpected finds protocol for contamination and communications procedure c. unexpected finds protocol for Aboriginal and non-Aboriginal heritage and communications procedure
B14 Construction Traffic and Pedestrian Management Sub-Plan	Make available information about ensuring safety and efficiency of the road network and address specific matters as they relate to construction.	Refer procedures 1, 2 and 4 above.
B15 Construction Noise and Vibration Management Sub-Plan	Make available information about construction noise and vibration management, including B15(c): Describe the measures to be implemented to manage high noise generating works such as piling, in close proximity to sensitive receivers B15(d): Include strategies that have been developed with the community for managing high noise generating works; B15(e): Describe the community consultation undertaken to develop the strategies in condition B15(d) B15(f): Include a complaints management system that would be implemented for the duration of the construction.	Refer procedures 1-4 above. 6. Prepare and publish information to stakeholders about: a. Measures to manage high noise generating works b. Consultation that occurred to manage high noise generating works 7. Consult the community about proposed measures to manage high noise generating works 8. Prepare and publish complaints management system to be implemented during construction.
B16 Construction Waste Management Sub-Plan	Make available information about the Construction Waste Management Sub-Plan	Refer procedures 1-4 above.
B17 Construction Soil and Water Management Sub-Plan	Make available information about the Construction Soil and Water Management Sub-Plan	Refer procedures 1-4 above.

CONSENT CONDITION	SUMMARY	PROCEDURE / MECHANISM
B18 Construction Environmental Management Plan	Make available information about the Construction Environmental Management Plan	Refer procedures 1-4 above.
B19 Construction Worker Transportation Strategy	Make available information about the Construction Worker Transportation Strategy	Refer procedures 1-4 above.
B20 Operational Noise – Design of Mechanical Plant and Equipment	Make available information about the Operational Noise – Design of Mechanical Plant and Equipment	Refer procedures 1-4 above.
B24 Archival photographic record	Make available information about the archival photographic record	Refer procedures 1-4 above.
B26 Landscape	Prior to the commencement of construction, the Applicant must consult with the owners of the residential property at 39 Bancroft Avenue regarding tree planting at the eastern boundary of the site, including species selection	9. Before the start of construction, consult the owners of 39 Bancroft Avenue about tree planting at the eastern site boundary (including tree species selection)
B27 Landscape	Make available information about landscaping, particularly around: B27(c): the provision of trees at the eastern boundary of the site that include a mix of native and deciduous trees set out informally, selected in consultation with the owners of the residential property at 39 Bancroft Avenue, as required by condition. B27(d): the provision of a 1.8 metre tall vegetated trellis at the eastern side of the roof-top sports courts to provide visual privacy to the residential property at 39 Bancroft Avenue B27(e): the provision of planting at the northern boundary of the site that is in keeping with the garden setting of the surrounding heritage conservation areas B27(f): the preparation of a protection and maintenance strategy for the mature Himalayan Cedar tree (Tree 7) on Bancroft Avenue in consultation with an Arborist.	Refer procedures 1-4 Refer procedure 9 above.
B28 Landscape	In the event of a dispute between the Applicant and the owners of the adjoining residential property at 39 Bancroft Avenue in relation to appropriate landscape screening, either party may refer the matter to the Planning Secretary for resolution. The Planning Secretary's resolution of the matter must be binding on the parties.	Include information about this condition to the landowner of 39 Bancroft Avenue when consulting per procedure 9 above.
C1 Site notice	A site notice must include: C1(d): the approved hours of work, the name of the site/ project manager, the responsible managing company (if any), its address and 24-hour contact phone number for any inquiries,	Ensure procedure 8 above considers the requirement to provide 24 hour contact for inquiries and construction/noise complaints

CONSENT CONDITION	SUMMARY	PROCEDURE / MECHANISM
	including construction/noise complaint must be displayed on the site notice	
C4 Construction hours	Make information available about construction hours	Ensure procedures 1,2,5,6,8 consider this condition
C5 Construction hours	Make information available about construction activities that may be undertaken outside of the hours in condition C4 if required.	Ensure procedures 1,2,5,6,8 consider this condition
C6 Construction hours	Notify affected residents of construction activities as referenced in condition C5 before undertaking the activities or as soon as is practical afterwards	Ensure procedures 1,2,5,6,8 consider this condition
C7 Construction hours	Make information available about the permitted times for rock breaking, rock hammering, sheet piling, pile driving and similar activities	Ensure procedures 1,2,5,6,8 consider this condition
C9 Construction traffic	Make information available about construction vehicle location/s	Ensure procedures 1,2,5,6,8 consider this condition
C12 Construction Noise Limits	Make information available about construction noise limits	Ensure procedures 1,2,5,6,8 consider this condition
C13 Construction Noise Limits	Make information available about construction vehicles (including concrete agitator trucks) permitted hours	Ensure procedures 1,2,5,6,8 consider this condition
C14 Construction Noise Limits	Make information available about the use of 'quackers' where permitting, to reduce noise impacts	Ensure procedures 1,2,5,6,8 consider this condition
C15 Vibration criteria	Make information available about construction vibration criteria	Ensure procedures 1,2,5,6,8 consider this condition
C16 Vibration criteria	Make information available about permitted locations of vibratory compactors	Ensure procedures 1,2,5,6,8 consider this condition
C17 Vibration criteria	Make information available about vibration limits	Ensure procedures 1,2,5,6,8 consider this condition
C18 Site contamination	Make information available about site contamination if uncovered as a result of the demolition of 37 Bancroft Avenue	Ensure procedures 1,2,5,6,8 consider this condition
C19 Tree protection	Make information available about tree protection measures in place	Ensure procedures 1,2,5,6,8 consider this condition
D6 Outdoor lighting	Make information available about evidence that proves outdoor lighting does not create a nuisance to surrounding properties or the public road network.	Ensure procedures 1 and 2 consider this condition
D8 Operational Noise – Design of Mechanical Plant and Equipment	Make information available about how the design of mechanical plant and equipment complies with noise mitigation measures listed in the consent condition	Ensure procedures 1 and 2 consider this condition
D9/D10 Operational Noise – Outdoor Rooftop Sports Courts	Make information available about the operational noise mitigation measures required/permitted for outdoor rooftop sports courts	Ensure procedures 1 and 2 consider this condition
D11 Site contamination	Make information available about the outcomes of the activities required in this condition.	Ensure procedures 1 and 2 consider this condition
D22 Operational Transport and Access Management Plan	Before operation of the centre, make information available about the Operational Transport and Access Management Plan	Ensure procedures 1 and 2 consider this condition
E4 Community Communication Strategy	This strategy must be implemented for 12 months after construction is completed.	Ensure procedures 1 and 2 consider this condition

CONSENT CONDITION	SUMMARY	PROCEDURE / MECHANISM
E6 Operational noise limits	Make information available about operation of mechanical plant and equipment compliance with condition	Ensure procedures 1 and 2 consider this condition
E7 Operational noise limits	Make information available about the short-term noise monitoring that is required to be undertaken at each stage of the development	Ensure procedures 1 and 2 consider this condition
E12 Outdoor lighting	Should outdoor lighting result in any residual impacts on the amenity of surrounding sensitive receivers, the Applicant must provide mitigation measures in consultation with affected landowners to reduce the impacts to an acceptable level	Ensure procedures 1 and 2 consider this condition 10. Consult affected residents should outdoor lighting result in impacts about proposed mitigation measures to reduce impacts to an acceptable level
Appendix 1 Advisory notes – Road occupancy licence	Make information available about the requirement of this condition	Ensure procedures 1 and 2 consider this condition

Communication Procedures and Mechanisms

Table 4 below describes the communication procedures and mechanisms in place to meet the consent condition for this Community Communication Strategy.

Table 4: Communication procedures and mechanisms

PROCEDURE/MECHANISM	DESCRIPTION
1. Project team will ensure communication channels for the project remain available to community during construction, operation and for 12 months after construction.	The following communication channels have been made available to all stakeholders over the course of the project and will continue to be available through construction and operation of the SWELL Centre: • Roseville College's news webpage and project webpage • Roseville College's telephone number 9884 1100 and email address enquiries@roseville.nsw.edu.au
2. Project team will provide all required documents for loading onto webpage, prior to construction starting, prior to operation of centre, and for 12 months after construction.	The project team will load all required documents, plans, strategies, procedures, notices, reports, notices and other information onto the project webpage before construction, where they will be updated where necessary and remain available for 12 months after construction.
3. Monthly complaints register will be updated and published on the College's project webpage in the first week of each month to reflect the previous month's complaints.	A complaints register will be published on the College's project webpage at the beginning of each month to include new complaints received the previous month. The register will include the date and time of the complaint, the channel through which the complaint was received, the key matter/s raised in the complaint, the date of the College's response, a summary of the College's response, if the matter was closed, and if the matter related to an emergency.
4. Project team will ensure this strategy meets the requirements of the condition to prepare and publish a Community Communications Strategy and make it publicly available throughout the works and for 12 months after the works have been completed.	This Community Communication Strategy includes a stakeholder section to identify people to be consulted during the design and construction phases. A monthly construction notification will be available to stakeholders on the project webpage and distributed in letterboxes of nearby residents to provide information about or relevant to the development. Should they be required, community drop-ins at the school grounds (or virtually if COVID health orders are in place) can be arranged to focus on key environmental management issues for the development. A community feedback and complaints process has been established to include: • phone, email and in person contact with the College • a record of the enquiry or complaint, including the individual's contact details, the nature of the contact, the date and time of their contact and the College's response • a main contact point between the College and the project manager to ensure enquiries and complaints can be managed quickly and efficiently • an acknowledgement of the receipt of the enquiry or complaint and a proposed timeline for its resolution. The College has established a procedure to resolve issues and mediate disputes that may arise in relation to construction and

PROCEDURE/MECHANISM	DESCRIPTION
	operation of the development, including disputes regarding rectification or compensation. The procedure involves making attempts to mediate directly between a College executive representative and the complainant. This community communication strategy includes specific communication and consultation requirements around traffic, noise and vibration, visual impacts, amenity, flora and fauna, soil and water, contamination, heritage.
5. Prepare and publish information to stakeholders about: a. methodology and protective measures to be in place for 31 and 39 Bancroft Avenue during excavation and construction b. unexpected finds protocol for contamination and communications procedure c. unexpected finds protocol for Aboriginal and non-Aboriginal heritage and communications procedure	The College will include information on its project webpage about the methodology and protective measures in place during excavation and construction for 31 and 39 Bancroft Avenue. The College has prepared an unexpected finds protocol for contamination, which is documented within the Construction and Environmental Management Plan. Unexpected finds of contamination on site during construction will be communicated to stakeholders as legislated and via a works notification letter to nearby residents and the school community, which would include information about the nature of contamination and the methods to contain it and/or remediate it. The College has prepared an unexpected finds protocol for Aboriginal and non-Aboriginal heritage, which is documented within the Construction and Environmental Management Plan. Unexpected finds on site during construction will be communicated to stakeholders as legislated and via a works notification letter to nearby residents, Registered Aboriginal Parties, local non-Aboriginal heritage groups, and the school community, which would include information about the find and safeguarding methods.
6. Prepare and publish information to stakeholders about: a. Measures to manage high noise generating works b. Consultation that occurred to manage high noise generating works	The College will include information on its project webpage and in relevant works notification to nearby residents about the measures to manage high noise generating works and the consultation that occurred to manage those works.
7. Consult the community about proposed measures to manage high noise generating works	Before the start of construction, the College will distribute a works notification to nearby residents about the anticipated high noise generating works and the proposed control methods. Nearby residents will be invited to comment on those measures over a one-week period, prior to the start of construction.
8. Prepare and publish complaints management system to be implemented during construction.	The following community feedback and complaints process will be published on the College's project webpage: Roseville College has established a community feedback and complaint management system that includes: • the capability to receive phone, email and in person contact from the community with the College • a record of the enquiry or complaint, including the individual's contact details, the nature of the contact, the date and time of their contact and the College's response • an acknowledgement of the receipt of the enquiry or complaint and a proposed timeline for its resolution

PROCEDURE/MECHANISM	DESCRIPTION
	• an internal forum to discuss and implement the proposed resolution to meet the proposed timeline • a main contact point between the College and the project manager to ensure enquiries and complaints can be managed quickly and efficiently • 24-hour contact between the College, the project manager and the construction contractor and sub-contractors for active works to ensure that enquiries and complaints can be managed 24 hours a day where required.
9. Before the start of construction, consult the owners of 39 Bancroft Avenue about tree planting at the eastern site boundary (including tree species selection)	This consultation has been completed and the consent condition satisfied.
10. Consult affected residents should outdoor lighting result in impacts about proposed mitigation measures to reduce impacts to an acceptable level	Should complaints be made by adjoining landowners and nearby residents about outdoor lighting during operation of the centre, the College will write to the individual to offer a meeting to discuss and agree proposed mitigation measures to reduce impacts to an acceptable level.

Appendix A: Map of Nearby Properties

Properties highlighted in pink would receive construction notifications

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Appendix 12 – Preliminary Site Investigation

Douglas Partners
Geotechnics / Environment / Groundwater

Integrated Practical Solutions

Report on
Preliminary Site Investigation

Proposed Roseville SWELL Centre
29 & 37 Bancroft Avenue, Roseville

Prepared for
Anglican Schools Corporation

Project 85310.02
September 2020

Douglas Partners
Geotechnics / Environment / Groundwater

Document History

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The undersigned, on behalf of Douglas Partners Pty Ltd, confirm that this document and all attached drawings, logs and test results have been checked and reviewed for errors, omissions and inaccuracies.

	Signature	Date
Author	wen-fei yuan	15 September 2020
Reviewer	P. Gorman	15 September 2020

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Report on Preliminary Site Investigation
Proposed Roseville SWELL Centre
29 & 37 Bancroft Avenue, Roseville

1. Introduction

Douglas Partners Pty Ltd (DP) was commissioned by EPM Projects Pty Ltd (EPM) on behalf of Anglican Schools Corporation to undertake a Preliminary Site Investigation with limited sampling (PSI) for contamination for the proposed SWELL Centre at 29 & 37 Bancroft Avenue, Roseville within Roseville College (the site as shown on Drawing 1, Appendix A). The College accommodates Kindergarten to Year 12 students. The investigation was carried out with reference to DP's Proposal SYD190049.P.001.Rev1 dated 22 February 2019.

It is understood that the proposed development will involve demolition of existing facilities and construction of a two-storey carpark, four-storey building, a driveway and retaining wall, and reconstruction of Recreation Avenue. The investigation is required as part of the State Significant Development (SSD) application for the new educational establishment.

DP received the revised SSD design from EPM on 3 September 2020 which includes some minor amendments to the eastern and northern facades of the SWELL Centre. The proposed changes to the development design do not affect the final recommendations of this report.

No known contamination investigations have been previously undertaken at the site. The current investigation comprised a review of site history information, a site walkover, intrusive sampling (including soil and groundwater), laboratory analysis for contaminants of concern and interpretation of results with reference to current NSW EPA guidelines.

The PSI was conducted with reference to *National Environment Protection (Assessment of Site Contamination) Measure* 1999, as amended 2013 (NEPC, 2013) and *the State Environmental and Planning Policy (SEPP) 55*. This report also incorporates a provisional waste classification assessment to help inform the off-site disposal of fill/soil material.

The PSI was conducted concurrently with a geotechnical investigation as reported in DP *Report on Geotechnical Investigation, Proposed Roseville College SWELL Centre, 29 & 37 Bancroft Avenue, Roseville* (DP, 2019).

2. Scope of Works

DP carried out the following scope of works:

- Review of published soil landscape, geological, topographic and acid sulfate soil maps;

- Obtain and review Lotsearch Enviro Professional Report LS005497 EP for the site, including:
  - Department of Primary Industry groundwater bore records for registered groundwater bores in the vicinity of the site;
  - Available historical aerial photographs to assess likely past land uses of the site;
  - Historical business listings to identify potential sources of contamination at or near the site; and
  - NSW EPA public registers for notices and licences issued under the *Contaminated Land Management Act 1997* (CLM Act) *and the Protection of the Environment Operations Act 1997* (POEO Act).
- Review of other pertinent site history information comprising:
  - Recent aerial imagery obtained through Nearmap;
  - Current and historical land titles;
  - Council's Section 10.7 Planning Certificate; and
  - Search of the SafeWork NSW register to identify hazardous chemicals on premises.
- Conduct a site walkover to observe current and recent land use and assess the potential for contaminating activities;
- Drilling of six boreholes (BH401 to BH408) as part of the DP (2019) geotechnical investigation to a maximum depth of 10 m below ground level (bgl);
- Collection of soil samples from the boreholes at regular depth intervals, typically at the surface (0 - 0.2 m), and changes in the soil strata, where observed;
- Screening of soil samples with a photo-ionisation detector (PID) to assess the likely presence or absence of volatile organic compounds (VOC);
- Conversion of two boreholes into groundwater monitoring wells; and
- Well development, followed by groundwater sampling using low-flow sampling techniques.
- Laboratory analysis of selected soil and groundwater samples by a National Association of Testing Authorities (NATA) accredited laboratory for contaminants of potential concern (COPC) and parameters including:
  - Eight priority metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc);
  - Total recoverable hydrocarbons (TRH);
  - Monocyclic aromatic hydrocarbons (benzene, toluene, ethylbenzene and xylenes - BTEX);
  - Polycyclic aromatic hydrocarbons (PAH);
  - Organochlorine pesticides (OCP)
  - Organophosphorus pesticides (OPP);
  - Polychlorinated biphenyls (PCB);
  - Total phenols;
  - Asbestos (presence / absence);
  - Toxicity characteristic leachate procedure (TCLP) for preliminary waste classification purposes;
  - pH and cation exchange capacity (CEC) for determination of ecological investigation levels (EIL);

- Field sampling and laboratory analysis with reference to standard environmental protocols, including a Data Quality Assurance and Quality Control (QA / QC) plan consisting of 10% replicate sampling, trip spikes, trip blanks, appropriate chain of custody procedures and in - house laboratory QA / QC testing for soil; and

- Preparation of this report detailing the findings of the investigation, as well as recommendations for further works, if deemed necessary. A preliminary waste classification has also been included to provide an indication of offsite disposal options.

3. Site Description

3.1 Site Identification

The site is located at 29 & 37 Bancroft Avenue, Roseville within the local government area of Ku-ring-gai Council and is identified as follows:

- Lot 18, Section C, Deposited Plan (D.P) 5035;
- Part Lot 2003, D.P 1084428;
- Part Lot 1, D.P 133073;
- Part Lot A, D.P 319571; and
- Part of Recreational Avenue.

The site is irregular in shape and has an approximate area of 0.4 ha. Based on the Ku-ring-gai Local Environmental Plan 2012 and 2015 referenced in the Lotsearch report, the site is zoned as SP2 - Infrastructure (Educational establishment), and R2 - Low Density Residential respectively.

3.2 Site Walkover

A site walkover was conducted by a DP environmental geologist on 16 July 2019.

At the time of the investigation, the northern portion of Lot 18 was occupied by a residential house with a lawn and paved areas (Photograph 1). The walkover did not include an inspection of the residential house. There was a carport along the eastern site boundary. The southern portion of the lot consisted of a tennis court with a swimming pool to the east (Photograph 2). There were some mature trees, mainly along the northern and western boundary. Beyond the southern boundary of Lot 18 (Part Lot 1, D.P 133073), there was an asphaltic concrete pathway (Photograph 3).

Part Lot 2003 consisted of a tennis court with a grassed area to the south and some outdoor seating areas (Photograph 4). There was an asphaltic concrete driveway along the western site boundary.

The portion of Recreation Avenue within the site comprised an asphaltic concrete pavement. There was a grassed batter approximately 1 m high extending along the eastern side of the road (Photograph 5), sloping down towards the Tennis Club (Lot A, D.P 319571). A similar height, timber sleeper retaining wall was located at the northern and southern end of the eastern boundary, with backfilled material behind the wall (Photograph 6).

The surrounding land use is summarised below:

- North: Bancroft Avenue and residential land use beyond;
- East: Residential properties;
- South: Roseville Lawn Tennis Club, buildings associated with Roseville College and Recreation Avenue; and
- West: Residential properties and buildings associated with Roseville College.

It is noted that small-scale chemical storage rooms were located within the buildings of Roseville College.

4. Soil Landscapes, Geology, Topography, Hydrology, Hydrogeology and Acid Sulfate Soil Potential

4.1 Soil Landscapes

Reference to the Sydney 1:100 000 Soils Landscape Sheet indicates the following:

- A minor region within the northern portion of the site is underlain by the Lucas Heights (residual) soil landscape (mapping unit lh) characterised by gently undulating crests and ridges on plateau surfaces of the Mittagong Formation (alternating bands of shale and fine-grained sandstone), with local relief to 30 m and slopes typically < 10%. These soils typically have low soil fertility and low available water capacity; and
- The southern portion of the site is underlain by the Glenorie (erosional) soil landscape (mapping unit gn) characterised by undulating to rolling low hills on Wianamatta Group shales, with local relief of 50 - 80 m, slopes typically 5 - 20%, narrow ridges, hillcrests and valleys. The soils vary from red podzolic soils on crests; red and brown podzolic soils on upper slopes; yellow podzolic soils on lower slopes; and humic gleys, yellow and gleyed podzolic soils along drainage lines. These soils typically have high soil erosion hazard, localised impermeable highly plastic subsoil and are moderately reactive.

4.2 Geology

Reference to the Sydney 1:100,000 Geology Sheet indicates the site is underlain by Ashfield Shale (mapping unit Rwa) of the Wianamatta Group of the Triassic age. This formation typically comprises laminite and dark grey siltstone.

4.3 Topography, Hydrology and Hydrogeology

The site has an overall topographic difference of approximately 4.5 m from the highest part (approximately 86.5 m, relative to the Australian height datum (AHD)) within the western portion of the site to the lowest part (approximately 82 m AHD) within the south eastern portion of the site as shown on 2 m elevation contours obtained through published topographic maps. The regional topography slopes from the south west towards Moores Creek, located approximately 550 m to the north east.

Surface water is anticipated to drain to the local stormwater system and follow the general regional topography, ultimately draining into Moores Creek. Likewise, groundwater is also anticipated to flow towards Moores Creek.

A search of the groundwater bore database maintained by the Department of Primary Industry was included in the Lotsearch report provided in Appendix C. Review of the records indicates that there are twelve registered groundwater bores located to the south west, within approximately 500 m of the site. Review of records indicates the authorised and intended purpose of the bores are for monitoring purposes. The standing water level of bore GW114836 and GW114837 was measured at 8.8 m and 2.6 m respectively.

4.4 Acid Sulfate Soils

Reference to the *Atlas of Australian Acid Sulfate Soils* included in the Lotsearch report indicates that the site lies in a "Class B" area, where there is a low probability of occurrence (6 - 70% chance of occurrence) of acid sulfate soils.

Furthermore, given that the site lies predominately on an erosional soil profile, at an elevation of approximately 82 m AHD, the probability of ASS being present on site is considered extremely unlikely.

The Ku-ring-gai Local Environmental Plan 2015 included in the Lotsearch report maps the eastern portion of the site as "Class 5" and notes that "*Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 meters AHD and by which the watertable is likely to be lowered below 1 m AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk*."

Based on the mapped site conditions, no further investigation of acid sulfate soil conditions is warranted.

5. Proposed Development

The proposed development is considered to be within the State Significant development and will involve the following:

- Demolition of two existing sports courts and construction of a two-storey carpark consisting of a one to two level basement, with two hardcourts constructed on the rooftop; and
- Demolition of a residential building at 37 Bancroft Avenue and construction of a four-storey building including a swimming pool, gym, general learning areas and other student / staff facilities with basement parking. Excavations of up to 6 m are anticipated for the basement levels.
- Widening and reconstruction of Recreation Avenue, together with the construction of a new driveway connecting to the new basement carpark, as well as construction of a new retaining wall along the common boundary with Roseville Lawn Tennis Club.

In addition, an updated version of the SSD design received on 3 September 2020 indicated that there will be some minor amendments to the eastern and northern facades of the SWELL Centre.

6. Site History Information

It should be noted that the site boundary was revised (to include a portion of Recreation Avenue) after the Lotsearch report, title deeds and SafeWork documentation was ordered. However, based on review of the Lotsearch Report (see Sections 6.1 to 6.3 below) which covers the entire site (as shown on Drawing 1, Appendix A), DP considers that the site history obtained is adequate for the current investigation.

6.1 Historical Aerial Photographs

Historical aerial photographs from 1943 to 2009 were included in the Lotsearch report (Appendix C).

These were reviewed to identify past land uses and hence the potential for contaminating activities to have impacted the site. A summary of the aerial photograph review is given below.

1943 - The north western portion of the site appears to be occupied by two residential properties with backyards and some tree cover. Recreation Avenue can be seen within the southern portion of the site, and Roseville Lawn Tennis Club can be seen immediately east of this road. There appears to be a small structure / likely shed immediately north of Recreational Avenue, and another shed can be seen along the western site boundary, south of the residential property (western-most property). There appears to be a residential property within the north eastern corner of the site and the present-day tennis court can be seen within the southern portion of the lot.

Bancroft Avenue can be seen north of the site, beyond the site boundary. The surrounding land use appears to be predominately residential to the north, and a mix of residential and recreational land to the east. What appears to be Roseville College can be seen to the west of Recreation Avenue, beyond the residential houses.

1951 & 1956 - The resolution of the 1951 aerial photograph is of poor quality. The site and surrounds appear much the same as in 1943.

1961 - The site appears much the same as in 1956. Beyond the eastern site boundary, a new sports ground / possible tennis court has been constructed.

1965 - The trees within the southern portion of the site (i.e., backyards of the two residential properties) have been cleared and a new structure(s) have been constructed within this area. The shed-like structure, north of Recreation Avenue appears to be demolished. It appears that a shed / new structure has been constructed south of the eastern-most residential property.

1970 - Little change has taken place at the site and surrounds since 1965.

1982 - The site appears much the same as in 1970. Further east of the site, the tennis court / sports field has been amalgamated into an open space / park.

1991 - The site appears much the same as in 1982. Roseville College has undergone development with the demolition of some of the houses west of Recreation Avenue and construction of a building.

2005 - Significant change has taken place at the site. The two residential properties located within the north western portion of the site have been demolished and have been replaced with a tennis court. South west of the site, Roseville College has expanded with the construction of new buildings.

2009 - The residential property and structures within the southern portion of the site (north of Recreation Avenue) have been demolished, and the area appears to be landscaped / grass covered. Construction of Roseville College has extended north. A portion of Recreation Avenue within the site appears to be concrete pavement.

Current - Based on review of Near map aerial imagery, the site and surrounds appear much the same as in 2009. The portion of Recreation Avenue that was concrete pavement in 2009, now appears to be asphaltic concrete.

6.2 Historical Business Listings

A review of historical business records from 1943 to 1993 provided in the Lotsearch report (Appendix C) was undertaken to identify potentially contaminating business activities that could impact the site. 'High risk' business activities (including, but not limited to dry cleaners, motor garages and service stations) are typically identified as potential sources of contamination to the site if they are located upgradient of the site, and within approximately 150 m from the site.

Based on the review, there were no 'high risk' business activities upgradient and within 150 m from the site.

6.3 NSW EPA Public Registers Search

The EPA maintains a public database of contaminated sites under Section 58 of the CLM Act. The notices relate to investigation and / or remediation of site contamination considered to be significantly contaminated under the definition in the CLM Act.

A site will appear on the Contaminated Land: Record of Notices if the site has been issued a regulatory notice by the EPA. Sites appearing in the List of NSW Contaminated Sites Notified to the EPA indicate that they are considered to be contaminated by the notifier and warrant reporting to the EPA. However, the contamination may or may not be significant enough to warrant regulation and is subject to further review by the EPA. The NSW EPA also issues environmental protection licenses under Section 308 of the POEO Act.

Based on the Lotsearch report, the following is indicated:

- No notices or orders made under the CLM Act have been issued for the site or adjacent properties;
- The site and adjacent properties have not been included in the list of NSW contaminated sites notified to EPA, however, it is noted that Mobil Service Station, located approximately 430 m south west of the site is included on the list;
- No licences under Schedule 1 of the POEO Act have been issued for the site or adjacent properties; and

- No records were found relating to former gasworks, waste management facilities, or sites that are part of the EPA PFAS investigation, within 1 km of the site.

6.4 Title Deeds

A historical Title Deeds search was conducted on the site by Infotrack Pty Ltd to obtain information regarding previous land ownership and occupancy details. This information provides an indication of previous land uses and also gives an insight into potential sources of contamination at the site. However, title deeds alone are not conclusive of land use and need to be used in conjunction with other site history information (e.g., aerial photographs) to gain a better understanding of the likely land use.

Title deeds dating back to 1911 and 1908 were obtained for Lot 18, Section C, D.P 5035 and part Lot 2003, D.P 1084428, respectively. A full copy of the title deeds, along with a summarised version is provided in Appendix C.

Based on review of the title deeds, it is inferred that Lot 18 was residential land use from the period 1911 to the present day. It is noted that Anglican Schools Corporation were the registered owners of the land since 2016. Review of the title deeds for Part Lot 2003 indicates that this portion of the site was previously divided into four parts (in relation to the current site boundary as shown on Drawing 1, Appendix A). The past land use of this Lot was likely to be residential, prior to being used as a school / college from 1983 onwards. It is noted that Anglican Schools Corporation were the registered owners of the land since 1999.

6.5 Safe Work

The results of the SafeWork NSW Site Search for Schedule 11 Hazardous Chemicals on Premises undertaken in June 2019 did not identify any records pertaining to the site (excluding Recreation Avenue). The SafeWork records are included in Appendix C.

6.6 Section 10.7 Certificate

A review of the planning certificates for the site dated 3 December 2018 indicated that there were no listed site contamination matters relating to Section 59 (2) of the Contaminated Land Management Act 1997.

It is noted that 37 Bancroft Avenue is within a Heritage Conservation Area under the provisions of Ku-ring-gai Local Environmental Plan 2015.

The certificates also note that prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities, which are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination.

7. Conceptual Site Model

A Conceptual Site Model (CSM) is a representation of site-related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM provides the framework for identifying how the site became contaminated and how potential receptors may be exposed to contamination either in the present or in the future i.e., it enables an assessment of the potential source - pathway - receptor linkages (complete pathways).

Based on the review of site history information and the site walkover, the following potential sources of contamination and associated contaminants of potential concern (COPC) have been identified and are summarised in Table 1 below.

Table 1: Potential Contaminant Sources and Contaminants of Potential Concern

Potential Source	Description of Potential Contaminating Activity	Contaminants of Potential Concern
Fill and surficial soil (S1)	It is likely that fill was placed at the site to achieve the design levels. As the source of fill is unknown, there is potential for contaminants to be present in the fill. Furthermore, the earliest available aerial photograph (1943) showed that there were formerly residential properties and associated structures within the western portion of the site (part Lot 2003). The demolition / deterioration of the structures (likely to contain hazardous building material) over time may have impacted the fill / soil.	Heavy metals, TPH, BTEX, PAH, PCB, OCP, OPP, phenols and asbestos.
Hazardous building materials in existing structures (S2)	The existing residential house within Lot 18 appears to have been built in the 1940s. Considering the age of the structure, it is considered likely that hazardous building materials, including ACM were used in the construction materials.	Asbestos, lead and PCB.

Notes : TPH - total petroleum hydrocarbon
BTEX - benzene, toluene, ethylbenzene, xylene
PAH - polycyclic aromatic hydrocarbons
PCB - polychlorinated biphenyls
OCP - organochlorine pesticides
OPP - organophosphorus pesticides

It should be noted that based on review of the aerial photographs, the site was used for residential land use since at least 1943, therefore, contamination associated with agricultural / horticultural activities (see Section 6.6) have not been included in the CSM.

7.1 Potential Receptors

The following potential receptors (R) have been identified:

Human Health Receptors:

R1 - Construction workers (during site redevelopment);

R2 - Future site users; and

R3 - Land users in adjacent areas.

Environmental Receptors:

R4 - Local groundwater;

R5 - Nearby surface water bodies (i.e., Moores Creek, located approximately 550 north-east of the site); and

R6 - Terrestrial ecosystems.

DP notes that a large portion of the proposed development footprint will be excavated for construction of the basement, or will be covered in hardstand. However, it is understood that landscaped areas with accessible soils will also be incorporated into the design, therefore, terrestrial ecosystems have been included as potential environmental receptors.

7.2 Potential Pathways

The following potential exposure pathways are primarily relevant to human receptors:

- P1 - Ingestion and dermal contact; and
- P2 - Inhalation of fibres/dust and/or vapours.

The following potential exposure pathways are primarily relevant to environmental receptors:

- P3 - Leaching of contaminants and vertical migration into groundwater;
- P4 - Surface water run-off;
- P5 - Lateral migration of groundwater; and
- P6 - Contact with terrestrial ecology.

7.3 Summary of CSM

A ‘source - pathway - receptor’ approach has been used to assess the potential risks of harm being caused to the identified receptors from contamination sources on or in the vicinity of the site, via exposure pathways (complete pathways). The possible pathways between the above sources (S1 and S2) and receptors are provided in Table 2 below.

Table 2: Conceptual Site Model

Source	Transport Pathway	Receptor	Risk Management Action Recommended
S1: Fill and surficial soil.	P1 - Ingestion and dermal contact.	R1 - Construction workers. R2 - Future site users.	An intrusive investigation of site soils is recommended to assess possible contamination issues as detailed in this report. Given that two groundwater wells are to be installed as part of the DP (2019) investigation, groundwater sampling will also be conducted, as detailed in this report.
	P2 - Inhalation of fibres / dust and / or vapours.	R1 - Construction workers. R2 - Future site users. R3 - Land users in adjacent areas.	
	P3 - Leaching of contaminants and vertical migration into groundwater.	R4 - Local groundwater.	
	P4 - Surface water run-off. P5 - Lateral migration of groundwater.	R5 - Surface water bodies.	
	P6 - Contact with terrestrial ecology.	R6 - Terrestrial ecosystems.	
S2: Hazardous building materials in existing structures	P1 - Ingestion and dermal contact.	R1 - Construction workers. R2 - Future site users.	A hazardous materials survey should be conducted prior to demolition. Areas beneath the building should be assessed post-demolition.
	P2 - Inhalation of fibres / dust and / or vapours.	R1 - Construction workers. R2 - Future site users. R3 - Land users in adjacent areas.	

8. Fieldwork

8.1 Fieldwork Methods and Rationale

Field investigations for drilling works were undertaken from 26 to 28 June 2019 by a DP geotechnical engineer. The field investigation was designed in accordance with the seven step data quality objectives (DQO) process provided in Appendix B, Schedule B2 of the National Environment Protection (Assessment of Site Contamination) Measure 1999 as amended 2013 (NEPC, 2013). The DQO adopted for this investigation are provided in Appendix F.

The field work comprised the drilling of eight boreholes, which were positioned on the basis of the geotechnical requirements (DP, 2019). The borehole locations are shown on Drawing 1, Appendix A. It is noted that the NSW EPA Sampling Design Guidelines (1995) recommends eleven sampling points for a 0.4 ha site, however, given the preliminary nature of this investigation, the adopted sampling density was considered adequate.

Boreholes were drilled using a Geoprobe fitted with a push tube, with the exception of BH403, BH407 and BH408 which were drilled using a hand-auger to a maximum depth of 2 m, or prior refusal. Boreholes BH401, BH405 and BH406 were drilled using a combination of push tube and NMLC-sized (50 mm diameter) diamond core drilling techniques to a depth of approximately 10 m bgl. Borehole BH401 was first hand augered to a depth of 1.5 m prior to use of the push tube. Boreholes BH402 and BH404 were drilled to the top of weathered rock. Groundwater monitoring wells were installed in boreholes BH401 and BH406.

Soil samples were collected from all boreholes at regular depth intervals, targeting fill layers and any change in the soil profile. Borehole logs were completed for all boreholes indicating the geological profile observed (refer to Appendix E). Logs included, where relevant, sample identification, coordinates, date of collection, a description of the substrate conditions encountered, visual or olfactory evidence of contamination, the depth of samples and QA/QC samples collected, the sampler and equipment used.

8.2 Soil Sampling Procedure

Sampling data was recorded to comply with routine chain-of-custody requirements and DP's standard operating procedures outlined in the DP Field Procedures Manual. The general sampling, handling, transport and tracking procedures are detailed below:

- Soils were sampled from the tip of the auger (hand augered locations) or from the push tube. Disposable nitrile gloves were used to collect all samples. Gloves were replaced prior to the collection of each sample in order to prevent cross-contamination;
- Samples collected for laboratory analysis were transferred into a new laboratory prepared glass jar, with minimal headspace, and sealed with a Teflon lined lid. Each jar was individually sealed to reduce the potential for cross contamination during transportation to the laboratory;
- Field screening of replicate soil samples, collected in sealed plastic bags, for Total Photoionisable Compounds (TOPIC) using a calibrated photoionisation detector (PID);
- Sample containers were labelled with individual and unique identification including project number, sample ID, depth and date of sampling;

- Placement of sample containers and bags into a cooled, insulated and sealed container for transport to the laboratory; and
- Use of chain-of-custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of completed chain-of-custody forms are included in Appendix G.

8.3 Well Construction

The groundwater monitoring wells were constructed of 50 mm diameter acid-washed class 18 PVC casing and machine slotted well screen intervals. Joints were screw threaded, thereby avoiding the use of glues and solvents which may contaminate the wells. The groundwater wells were capped and a Gatic cover placed flush with the ground surface.

The specific construction details for the monitoring wells are presented in Table 3 below.

Table 3: Well Construction Details

Construction Details	MW401	MW406
Well installation depth (m bgl)	10	9.9
Screen (m bgl)	4 to 10	4 to 9.9
Gravel pack (m bgl)	3.5 to 10	3.4 to 9.9
Bentonite (m bgl)	0.3 to 3.5	0.3 to 3.4
Backfill (m bgl)	0 to 0.3	0 to 0.3
Gatic cover	Flush with ground level	Flush with ground level

8.4 Groundwater Development and Sampling Procedure

Following installation of groundwater wells MW401 and MW406, the wells were developed on 29 June 2019 by purging the wells dry. The purpose of well development was to remove as far as practicable fluid and sediment introduced via drilling and to facilitate connection of the well to the local groundwater regime.

Groundwater sampling was undertaken on 16 July 2019. An interface probe was first used to measure the standing water level (SWL) of the bores and also to detect light non-aqueous phase liquids (LNAPL), if present.

Sampling was undertaken using low-flow sampling techniques utilising a peristaltic pump. The pump was set to the lowest possible flow rate that could produce laminar flow. Prior to sampling, field parameters (pH, temperature, dissolved oxygen (DO), conductivity, turbidity (NTU) and redox), which were measured using a calibrated water quality meter, were first allowed to stabilise.

Samples were transferred directly into appropriately preserved bottles, with minimum aeriation. For analysis of metals, the relevant sample fraction was filtered using an in-line disposable 0.45 µm filter that was changed between wells to minimise the risk of cross-contamination.

The sample handling and management comprised the following:

- Sample bottles were labelled with individual and unique identification including project number, Well ID and date of sampling;
- The sample was placed in an insulated cooler and maintained at a cool temperature using ice until transported to the analytical laboratory, and
- Use of chain-of-custody documentation so that sample tracking and custody could be cross-checked at any point in the transfer of samples from the field to the laboratory. Copies of completed chain-of-custody forms are included in Appendix G.

8.5 Analytical Rationale (Soil)

Based on site observations (e.g., odour, staining, etc.) and the location of soil samples within the subsoil strata, selected samples were analysed for the primary contaminants of concern as identified in Section 7. The potential for VOC was measured using PID screening. The analytical scheme was designed to obtain an indication of the potential presence and possible distribution of identified contaminants of concern, as outlined below:

- Fill samples from varying depth (0.2 m to 1.0 m);
- Two samples from natural soil were analysed for a reduced contaminant suite; and
- Three samples from natural (from the top 2 m of the soil profile) were analysed for pH and CEC for derivation of the EIL.

8.6 Analytical Laboratory

All primary soil and groundwater samples collected were submitted to Envirolab Services Pty Ltd (Envirolab). Envirolab is NATA accredited and are required to conduct in-house QA / QC procedures. These are incorporated into every analytical run and include assessment of reagent blanks, spike recovery, surrogate recovery and laboratory duplicates. The analytical methods and the in-house QA / QC procedures used are summarised in the laboratory certificates of analysis, included in Appendix G. The inter-laboratory duplicate for soil was submitted to Eurofins, a NATA accredited laboratory.

9. Site Assessment Criteria

9.1 Soil

The Site Assessment Criteria (SAC) applied in the current investigation are informed by the CSM, which identified human and environmental receptors to potential contamination on the site (refer to Section 7), as well as consideration of the proposed development.

The laboratory analytical results have been assessed against the investigation and screening levels in Schedule B1 of NEPC (2013). These guidelines are endorsed by the NSW EPA under the CLM Act 1997.

Schedule B1, NEPC (2013) provides investigation and screening levels for commonly encountered contaminants which are applicable to generic land uses, and where relevant, also include consideration of soil type and the depth of contamination. It should be highlighted that the investigation and screening levels are not intended to be used as clean up levels, and any contaminants which have concentrations that exceed the investigation/screening levels should be further assessed using a Tier 2 risk assessment.

9.1.1 Health Investigation and Screening Levels

The HIL are scientifically-based, generic assessment criteria designed to be used in the first stage (Tier 1) of an assessment of potential human health risk from chronic exposure to contaminants. HIL are intentionally conservative, based on a reasonable worst-case scenario for four generic land use settings.

HIL are applicable to assessing health risk arising via all relevant pathways of exposure for a range of soil contaminants. The HIL are generic to all soil types and apply generally to a depth of 3 m below the surface. Site-specific conditions may determine the depth to which HIL apply for other land uses.

Health Screening Levels (HSL) are applicable to selected petroleum compounds and fractions (BTEX, naphthalene, F1 and F2) to assess the risk to human health via inhalation and direct contact pathways. HSL apply to the same land use settings as the HIL, however, also take into consideration soil types and depths to contamination.

Given the proposed development is part of Roseville College, the most conservative land use criteria has been applied. In summary, the SAC is as follows:

- HIL A (primary schools);
- HSL A & B (Low to high density residential) - NEPC 2013 states that school buildings should be assessed using HSL A, therefore the HSL A&B has been applied; and
- HSL A (Low - high density residential - for direct contact).

It is noted that HSL for intrusive maintenance workers (direct contact) are listed in CRC CARE (2011) Technical report 10, Health screening levels for petroleum hydrocarbons in soil and groundwater, Part 1: Technical development document (CRC CARE, 2011), however, these have not been used as SAC for the current investigation as the screening levels are higher than HSL-A and therefore are considered unlikely to be risk drivers for further assessment.

The selected HSL inputs are summarised in Table 4, and the adopted HIL / HSL are given in Table 5.

Table 4: Inputs to the Derivation of the HSL

Variable	Input	Rationale
Potential exposure pathway	Inhalation of vapours / direct contact	Potential exposure pathways identified in the CSM
Soil Type	Silt	Based on dominant soil type encountered (see logs) which comprised of silty clay / clay. Values for silt have been adopted given that silt is more conservative for HSL application.
Depth to Contamination	0 m to <1 m	Potential contamination sources likely to impact surface soils. This depth range is also the most conservative.

Table 5: Health Investigation and Screening Levels

Contaminants		HIL - A / HSL A (Direct Contact)	HSL A&B Silt
			0 m to <1 m
Metals	Arsenic	100	-
	Cadmium	20	-
	Chromium (VI)	100	-
	Copper	6000	-
	Lead	300	-
	Mercury (inorganic)	40	-
	Nickel	400	-
	Zinc	7400	-
PAH	Benzo(a)pyrene TEQ[1]	3	-
	Total PAH	300	-
	Naphthalene	*1400	4
Phenols	Phenol (Pentachlorophenol as initial screen)	3000	-
TRH	C6-C10	*4400	-
	>C10-C16	*3300	-
	>C16-C34	*4500	-
	>C34-C40	*6300	-
	C6 – C10 (less BTEX) [F1]	-	40
	>C10-C16 (less Naphthalene) [F2]	-	230

Contaminants		HIL - A / HSL A (Direct Contact)	HSL A&B Silt
			0 m to <1 m
BTEX	Benzene	*100	0.6
	Toluene	*14 000	390
	Ethylbenzene	*4500	NL[3]
	Xylenes	*12 000	95
OCP	DDT+DDE+DDD	240	-
	Aldrin and dieldrin	6	-
	Chlordane	50	-
	Endosulfan	270	-
	Endrin	10	-
	Heptachlor	6	-
	HCB	10	-
	Methoxychlor	300	-
OPP	Chlorpyrifos	160	-
PCB	PCBs[2]	1	-

Notes

1 sum of carcinogenic PAH

2 non dioxin-like PCB only

3 The soil saturation concentration (Csat) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds Csat, a soil vapour source concentration for a petroleum mixture could not exceed a level that would results in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

* Direct contact HSL.

9.1.2 Ecological Investigation and Screening Levels

The EIL are applicable for assessing risk to terrestrial ecosystems and have been derived for As, Cr III, Cu, Pb, Ni, Zn, naphthalene and DDT for three generic land use scenarios. EIL generally apply to the top 2 m of soil, which corresponds to the root zone and habitation zone of many species. The EIL is determined for a contaminant based on the sum of the ambient background concentration (ABC) and an added contaminant limit (ACL) as follows:

EIL = ABC + ACL

The ABC of a contaminant is the soil concentration in a specific locality that is the sum of naturally occurring background levels and the contaminants levels that have been introduced from diffuse or non-point sources (e.g., motor vehicle emissions). The ACL is the added concentration (above the ABC) of

a contaminant above which further appropriate investigation and evaluation of the impact on ecological values is required. ACL are based on soil characteristics including pH, CEC and clay content.

There are different methods for determining the ABC, the preferred method being through direct measurement at an appropriate reference site. In situations where an appropriate reference point cannot be determined, the methods detailed in Olszowy et al. (1995) or Hamon et al. (2004) may be used.

The EIL (and ACL where appropriate) for As, Pb, naphthalene and DDT are generic in that they are not dependent on soil properties, whereas the EIL for Cr III, Cu, Ni and Zn are site specific. To derive these site specific EIL, an *Interactive (Excel) Calculation Spreadsheet* was used. (SCEW (Standing Council on Environment and Water) website (http://www.scew.gov.au/node/941)).

The site-specific data and assumptions used to determine the EIL is summarised in Table 6 below, and the adopted EILs are shown in Table 7. A conservative clay content of 10% has been adopted, in the absence of site-specific data.

Table 6: Inputs to the Derivation of EIL

Variable	Input	Rationale
Depth of EIL application	Top 2 m of the soil profile	The top 2 m depth below ground level corresponds to the root zone and habitation zone of many species.
Contamination type	Aged	Given the likely source of soil contaminants (i.e., historical site use/fill), the contamination is considered as “aged” (>2 years).
Input Parameters	state = NSW traffic volume = high	The site is in NSW, and is located within a developed area.
Land Use	Urban residential and Public Open Space	This land use is broadly equivalent to the HIL-A land use scenario. A protection level of 80% for urban residential areas and public open space has been adopted.

Table 7: Ecological Investigation Levels (EIL) in mg/kg

Analyte		EIL Residential Open Space	Comments
Metals	Arsenic	100	Generic value
	Chromium III	410[a]	Adopted values: pH = 5.2 (average of three samples) CEC = 3.6 $cmol_c/kg$ (average of three samples and replicate) Clay content:10%
	Copper	95[b]	
	Lead	1100	Generic value
	Nickel	20[c]	Adopted values: pH = 5.2 (average of three samples) CEC = 3.6 $cmol_c/kg$ (average of three samples and replicate) Clay content:10%
	Zinc	240[b]	
OCP	DDT	180	Generic value
PAH	Naphthalene	170	Generic value

Notes: [a] – EIL value based on clay content
[b] – EIL value based on pH and CEC
[c] – EIL value based on CEC

The ESL have also been developed for assessing risk to terrestrial ecosystems. ESL broadly apply to coarse and fine-grained soils and have been derived for the same three land use settings as the EIL.

The ESL have been derived for petroleum fractions F1 to F4 as well as BTEX and benzo(a)pyrene. The inputs to the derivation of the ESL is shown in Table 8, and the adopted ESL, extracted from Table 1B (6), Schedule B1 of NEPC (2013) are shown in Table 9.

Table 8: Inputs to the Derivation of ESL

Variable	Input	Rationale
Depth of ESL application	Top 2 m of the soil profile	The top 2 m depth below ground level corresponds to the root zone and habitation zone of many species.
Soil Texture	Fine	Based on dominant soil type (see Logs) which identified predominately silty clay / clay soils
Land use	Urban residential and Public Open Space	This land use is broadly equivalent to the HIL-A land use scenario.

Table 9: Ecological Screening Levels in mg/kg

Analyte		ESL (fine)	Comments
TRH	C6 - C10 (less BTEX) [F1]	180*	ESLs are of low reliability except where indicated by an asterisk (*) which are of moderate reliability
	>C10-C16 (less Naphthalene) [F2]	120*	
	>C16-C34 [F3]	1300	
	>C34-C40 [F4]	5600	
BTEX	Benzene	65	
	Toluene	105	
	Ethylbenzene	125	
	Xylenes	45	
PAH	Benzo(a)pyrene	0.7	

9.1.3 Management Limits

In addition to the application of HSL and ESL, a further screening measure is applicable to petroleum hydrocarbons, which takes into account policy considerations and reflect the nature and properties of petroleum hydrocarbons, including:

- Formation of observable light non-aqueous phase liquid (LNAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g., penetration of, or damage to, in-ground services.

'Management limits' have been adopted in NEPC (2013) as interim Tier 1 guidance to avoid or minimise these potential effects. The criteria have been developed for petroleum fractions F1 to F4. The inputs to the derivation of the 'management limits' are presented in Table 10, and the values adopted, extracted from Table 1B (7), Schedule B1 of NEPC (2013) are shown in Table 11.

Table 10: Inputs into the Derivation of Management Limits

Variable	Input	Rationale
Depth of Management Limit application	Any depth within the soil profile	'Management limits' apply to any depth within the soil profile
Soil Texture	Fine	Based on dominant soil type (see Logs) which identified predominately silty clay / clay soils
Land use	Residential, parkland and public open space	This land use is broadly equivalent to the HIL-A land use scenario.

Table 11: Management Limits

Analyte		Management Limit (fine)
TRH	$C_6 – C_{10}$ (F1)	800
	$>C_{10}$-C_{16} (F2)	1000
	$>C_{16}$-C_{34} (F3)	3500
	$>C_{34}$-C_{40} (F4)	10 000

9.1.4 Asbestos in Soil

Bonded Asbestos-Containing Material (ACM) is the most common form of asbestos contamination across Australia, generally arising from:

- Inadequate removal and disposal practices during demolition of buildings containing asbestos products;
- Widespread dumping of asbestos products and asbestos containing fill on vacant land and development sites; and
- Commonly occurring in historical fill containing unsorted demolition materials.

Asbestos only poses a risk to human health when asbestos fibres are made airborne and inhaled. If asbestos is bound in a matrix such as cement or resin, it is not readily made airborne except through substantial physical damage. Bonded ACM in sound condition represents a low human health risk, whilst both fibrous asbestos (FA) and asbestos fines (AF) materials have the potential to generate, or be associated with, free asbestos fibres. Consequently, FA and AF must be carefully managed to prevent the release of asbestos fibres into the air.

A detailed asbestos assessment was not undertaken as part of these works therefore the presence or absence of asbestos at a limit of reporting of 0.1 g/kg has been adopted for this assessment as an initial screen.

9.2 Groundwater

The groundwater investigation levels (GIL) adopted in NEPC (2013) are based on:

- Australian Water Quality Guidelines 2000 (AWQG);
- Australian Drinking Water Guidelines 2011 (ADWG); and
- National water quality management strategy. Australian and New Zealand guidelines for fresh and marine water quality 2000 (ANZECC & ARMCANZ).

The ANZECC & ARMCANZ (2000) guidelines were revised and replaced in 2018 with the Australian and New Zealand Governments (ANZG), Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2018 (ANZG, 2018). However, given that these guidelines are currently under review, the ANZECC & ARMCANZ (2000) guidelines have been adopted for this investigation.

The GIL used for interpretation of the groundwater data are based on the risks posed by contaminated groundwater, at or down-gradient of the site, as well as the potential uses of groundwater, as follows:

- Risk to aquatic ecosystems - based on general site topography, groundwater that flows beneath the site is anticipated to discharge to Moores Creek, located north east of the site. The 'freshwater' guidelines have therefore been applied for the protection of aquatic ecosystems, consistent with the freshwater discharge point.
- Risk to human health - exposure to VOC (including TRH and BTEXN) via the vapour intrusion pathway is considered a risk to human health, therefore the groundwater HSLs for vapour intrusion have been applied for protection of human health; and
- Potential groundwater use - Based on review of the groundwater bore database (see Section 4.3), there were no bores used for irrigation or potable use within 500 m of the site. Therefore, the drinking water criteria has not been adopted. Furthermore, given that the nearest surface water body is located approximately 500 m from the site, the recreational guidelines are not considered to be relevant.

A summary of the groundwater criteria applied in the investigation is given in Table 12 below.

Table 12: Summary of Groundwater Criteria

Risk Assessment	Criteria	Source	Comments / Rationale
Aquatic Ecosystems	Trigger values for freshwater (Groundwater Investigation Levels) 95% level of species protection (or 99% for certain analytes - see comments column)	ANZECC & ARMCANZ (2000)	The GIL for freshwater has been applied as it is consistent with the expected discharge point of Moores Creek. The 95% level of species protection has been applied, consistent with a slightly-moderately disturbed system. ANZECC & ARMCANZ (2000) note that for certain contaminants (i.e., mercury, chlordane, DDT, endosulfan, endrin, and heptachlor), a 99% level of species protection should be applied.
Human Health	HSL A & B (applying silt and depth range of 2 m to <4 m)	NEPC (2013) and CRC CARE (2011)	HSL for silt has been selected, as this is the dominant soil type at the site, and also more conservative than clay. A depth range of 2 m to <4 m has been used as an initial conservative screen. Should any hydrocarbon contamination in groundwater be <2.0 m from or in contact with a future proposed basement, a site-specific human health risk assessment may be warranted.

10. Fieldwork Results

10.1 Soil

Details of the subsurface conditions encountered are given in the borehole logs in Appendix E, together with notes defining classification methods and descriptive terms. A summary of the ground profile encountered is provided below:

ASPHALTIC CONCRETE / CONCRETE: Asphaltic concrete was encountered in BH406, underlain by a 150 mm thick concrete slab. Concrete kerb was encountered to depths of 0.15 m in BH407.

FILL: Fill was encountered in all boreholes, with the exception of BH406, to depths of up to 1.2 m. Relatively shallow fill, up to depths of 0.3 m was encountered in BH405 and BH407.

The fill varied from sand, silt, clay and gravel, but typically comprised clay fill. Roadbase gravel was encountered in BH407 from depths of 0.15 m to 0.3 m. Anthropogenic inclusions including ceramic fragments, plastic and concrete gravel were observed in the fill in BH401, BH403 and BH404.

CLAY: Varying from orange, red, brown, grey clay was encountered in all boreholes to depths of up to 2.5 m (but typically up to depths of approximately 2.0 m). Sandy clay was observed in BH401 from depths of 1.2 m to 2.0 m. Boreholes BH403, BH407 and BH408 terminated in clay due to hand auger refusal on an ironstone band at depths of 1.1 m, 1.4 m and 1.6 m respectively.

SANDSTONE: varying from extremely low strength to high strength sandstone was encountered in BH401, BH402, BH404, BH405, BH406 underlying clay to borehole termination. Push tube refusal on extremely low strength sandstone was encountered in BH402 and BH404 at depths of 3.15 m and 2.35 m respectively.

Results of PID sample screening are shown on borehole logs. The PID readings were all <5 ppm, suggesting the general absence of gross VOC / hydrocarbon contamination at the locations sampled and screened.

No free groundwater was observed in any of the boreholes during push tubing or augering.

10.2 Groundwater Levels

Groundwater wells were surveyed using a dGPS to obtain ground level in m AHD. The results of the groundwater level measurements recorded prior to sampling are presented in Table 13. It should be noted that groundwater levels are potentially transient.

Table 13: Summary of Groundwater Level Measurements

Well Sampling				
Well ID	**Location of Monitoring Well**	**Ground Level* (m AHD)**	**SWL (m bgl)**	**SWL (m AHD)**
MW401	Down-gradient	82.1	3.8	78.3
MW406	Up-gradient	86.4	3.3	83.1

Notes: *surveyed using a dGPS
AHD – Australian Height Datum
SWL – standing water level
bgl – below ground level

No LNAPL was observed or detected by the bailer or interface meter during well sampling.

11. Laboratory Analytical Results

11.1 Soil

The analytical results for the soil samples are summarised in Tables D1 to D2, Appendix D together with the adopted SAC. Laboratory certificates of analysis are provided in Appendix G.

- The recorded concentrations of BTEX, phenols, OCP, OPP, PCB and asbestos were below the laboratory limit of reporting (LOR) and SAC for all soil samples;
- The recorded concentrations of metals and PAH were below the LOR and / or SAC for all soil samples with the exception of the following:
  - Concentrations of copper in sample BH405/0.2 (200 mg/kg) which exceeded the EIL of 95 mg/kg; and
  - Concentrations of benzo(a)pyrene in samples BH408/0.2 (1.2 mg/kg) and BH408/0.5 (0.85 mg/kg) which exceeded the ESL of 0.7 mg/kg.
- The recorded concentrations of TRH were below the LOR and / or SAC in all samples.

The above results are discussed in detail below.

Given that the concentration of copper in sample BH405/0.2 was less than 250% of the SAC, the 95% UCL was calculated for the dataset, noting that the sample size of the dataset consisted of nine distinct data values, as opposed to the recommended ten. The calculated 95% UCL for copper was 124.1 mg/kg (see Appendix D), which is above the SAC (refer to Section 12 for further details).

DP notes that the NEPM ESL of 0.7 mg/kg is based on a single invertebrate species referenced in the 1999 Canadian Soil Quality Guidelines (since updated) and is considered conservative in the Australian context. These guidelines were updated in 2010 and now suggest a B(a)P concentration of 20 mg/kg for the protection of environmental health based on the soil contact exposure pathway. In addition, given the low reliability of B(a)P ESL, NEPC (2013) makes reference to Table 11 of the CRC (2017). CRC (2017) indicates a high reliability ecological guideline for fresh B(a)P of 33 mg/kg (and a range of

21 mg/kg to 135 mg/kg). As the concentrations of B(a)P recorded are well below 20 mg/kg, no further investigation or remediation is considered to be warranted at location BH408.

11.2 Groundwater

The analytical results for the groundwater samples are summarised in Table D3, Appendix D together with the adopted SAC. Laboratory certificates of analysis are provided in Appendix G.

Concentrations of all contaminants were either below the LOR or the SAC, with the exception of zinc in in all samples (concentrations ranging from 10 to 16 µg/L) which exceeded the GIL of 8 µg/L. These results are however considered to be typical of groundwater conditions in urban settings. DP notes that the detection limit for some analytes were higher than the SAC.

11.3 Preliminary Waste Classification

EPA (2014) contains a six-step procedure for determining the type of waste and the waste classification. Part of the procedure, for materials not classified as special waste or pre-classified waste, is a comparison of analytical data initially against contaminant threshold (CT) values specific to a waste category. Alternatively, the data can be assessed against specific contaminant concentration (SCC) thresholds when used in conjunction with toxicity characteristic leaching procedure (TCLP) thresholds.

The following Table 14 presents the results of the six-step procedure outlined in EPA (2014) for determining the type of waste and the waste classification. This process applies to the fill (including surface soils) at the site, which do not meet the definition of virgin excavated natural material (VENM).

Table 14: Waste Classification

Step	Comments	Rationale
1. Is the waste special waste?	No	No ACM was observed during the field investigation and asbestos was not detected in laboratory analysed samples.
2. Is the waste liquid waste?	No	The filling comprised a soil matrix.
3. Is the waste “pre-classified”?	No	The filling material is not pre-classified with reference to EPA (2014).
4. Does the waste possess hazardous waste characteristics?	No	The waste was not observed to contain or considered at risk to contain explosives, gases, flammable solids, oxidising agents, organic peroxides, toxic substances, corrosive substances, coal tar, batteries, lead paint or dangerous goods containers.
5. Determining a wastes classification using chemical assessment	Conducted	Refer to Table D4, Appendix D.
6. Is the waste putrescible or non-putrescible?	Non-Putrescible	The filling does not contain materials considered to be putrescible [a].

Note: a wastes that are generally not classified as putrescible include soils, timber, garden trimmings, agricultural, forest and crop materials, and natural fibrous organic and vegetative materials (EPA, 2014).

The results of the preliminary waste classification have been tabulated against the relevant waste classification criteria from NSW EPA (2014) Waste Classification Guidelines in Table D4, Appendix D. A summary of the waste classification results exceeding the general solid waste (GSW) criteria without TCLP (CT1) thresholds is outlined below:

- Lead (140 mg/kg) and benzo(a)pyrene (1.2 mg/kg) in sample BH408/0.2 exceeded the CT1 criterion of 100 mg/kg and 0.8 mg/kg, respectively; and
- Benzo(a)pyrene (0.85 mg/kg) in sample BH408/0.5 exceeded the CT1 criterion of 0.8 mg/kg.

TCLP testing was undertaken on sample BH408/0.2 for lead and benzo(a)pyrene. Based on the TCLP results, filling material at the site has a general preliminarily classification of general solid waste (GSW).

The laboratory analytical results have also been assessed against published background ranges for VENM classification. As shown on Table D4, contaminant concentrations of the natural soils were within the typical background concentrations. Therefore, natural soils at the site are preliminarily classified as VENM.

12. Discussion

The site history review identified that there were residential houses on the site since at least 1943 and over time, most of the structures were demolished. Part Lot 18 appears to have remained as residential land use to the present day, however Part Lot 2003 appears to have been operating as a school / college from 1983 onwards. Based on the site history, the site is considered to have a low potential for contamination.

The current investigation comprised the drilling of eight boreholes and installation of two groundwater monitoring wells. Fill was encountered in all boreholes, with the exception of BH406, to depths of up to 1.2 m. Relatively shallow fill, up to depths of 0.3 m was encountered in BH405 and BH407. Anthropogenic inclusions including ceramic fragments, plastic and concrete gravel were observed in the fill in BH401, BH403 and BH404.

The soil laboratory analytical results indicated that concentrations of the fill and natural samples were below the SAC, with the exception of copper in sample BH405/0.2 and benzo(a)pyrene in sample BH408/0.2 and BH408/0.5 which exceeded the ecological-based SAC. With reference to Table 11 of the CRC (2017), the benzo(a)pyrene exceedances at BH408 was not considered to warrant further investigation.

With regards to the copper exceedance, the significance and applicability of this exceedance would be dependent on the proposed development and also site-specific soil physiochemical properties. On the basis that ecological receptors are likely to have adapted to the current environment (i.e., vegetation in the locality of BH405 appeared to be in good condition), no further investigation is warranted at this stage. If site soils in the vicinity of BH405 are to be reused in landscaped areas as part of the proposed development, then further assessment of their physiochemical properties is recommended.

Concentrations of contaminants in the groundwater samples were either below the LOR or the SAC, with the exception of zinc in all samples (concentrations ranging from 10 to 16 µg/L) which exceeded the GIL of 8 µg/L. These results however are considered to be typical of groundwater conditions in urban settings.

On the basis of the site history and the soil and groundwater results, DP does not consider a more detailed site investigation is warranted, subject to implementation of the recommendations outlined in Section 13 below.

13. Conclusion and Recommendations

DP considers that the site is suitable for the proposed development in accordance with SEPP 55 subject to the following conditions:

- Two options to manage soils in or in the vicinity of BH405:
  - **Option 1:** Given that the bulk of fill / soil material will be removed as part of the proposed development, the copper EIL exceedances found in BH405 will therefore be removed as part of the bulk excavation; or
  - **Option 2:** If fill / soil material in BH405 is to be retained on site, we recommend 'capping' the material with validated clean material/topsoil in the proposed landscaped area or cap the material under a hardstand.
- Data Gaps Assessment - Following demolition of the existing house, a data gaps assessment should be undertaken within the building footprint;
- Unexpected Finds - DP recommends the incorporation of an UFP to establish a strategy / management procedure to be followed during construction works, should unexpected finds of contamination be uncovered;
- Waste Classification - A detailed waste classification assessment should be undertaken during construction works to classify surplus soils for off-site disposal or potential off-site re-use, if required; and
- Considering the floor of the pool concourse level is proposed between RL 76.40 and 76.90 m AHD and the measured standing water level during the PSI is between RL 78.3 and 83.1 m AHD, passive dewatering (i.e., sump-and-pump system) is likely to be required. Groundwater can be discharged into stormwater or sewer subject to dewatering testing/monitoring of groundwater quality prior to / during dewatering and approval from the relevant authorities.

14. Exclusion

SSD Application is assessed by the Department of Planning, Industry and Environment. The development application for a SSD must be accompanied by an Environmental Impact Statement (EIS). It should be noted that this report is not an EIS and does not fully comply with the Secretary's Environmental Assessment Requirements (SEARs). Some of the SEARs are addressed or overlapped in this report but excludes the following:

- **Rivers, streams, wetlands, estuaries (as described in s4.2 of the Biodiversity Assessment Method)** - The map will not address the s. 4.2 of the Biodiversity Assessment Method as this is beyond the scope of a contamination investigation;
- **Wetlands as described in s4.2 of the Biodiversity Assessment Method** - The map will not address the s. 4.2 of the Biodiversity Assessment Method as this is beyond the scope of a contamination investigation;
- **Groundwater dependent ecosystems** - Please note that for the baseline groundwater quality reported in the PSI, the groundwater criteria that have been adopted are based on the protection of freshwater species and are therefore considered to be generally protective of groundwater dependent ecosystems;
- **Intake and discharge locations** - The map will not show intake and discharge locations as this is beyond the scope of a contamination investigation;
- **Identify an adequate and secure water supply for the life of the project. This includes confirmation that water can be sourced from an appropriately authorised and reliable supply. This is also to include an assessment of the current market depth where water entitlement is required to be purchased.** This requirement does not apply to our current PSI scope and typically applicable to other disciplines;
- **Provide a detailed and consolidated site water balance** - This requirement does not apply to our current PSI scope and is typically applicable to an Environmental Impact Statement (EIS) or similar;
- **Provide an Assessment of impacts on surface and ground water sources (both quality and quantity), related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian lands, and groundwater dependent ecosystems, and measures to proposed to reduce and mitigate these impacts** - We cannot comment on impacts relevant to: related infrastructure, adjacent licensed water users, basic landholder rights, watercourses, riparian lands and measures to proposed to reduce and mitigate these impacts as such information is usually an outcome of an EIS or similar; and
- **Provide proposed surface and groundwater monitoring activities and methodologies.** Considering that there was no natural surface water observed on site, surface water monitoring would not be required. We have carried out groundwater investigation which consisted of one round of groundwater sampling event. We would not normally recommend long-term monitoring unless there is significant finding of groundwater contamination. Groundwater monitoring activities and methodologies required for dewatering should addressed in a dewatering management plan.

15. Limitations

Douglas Partners (DP) has prepared this report for this project at 29 & 37 Bancroft Avenue, Roseville in accordance with DP's proposal SYD190049.P.001.Rev1 dated 22 February 2019 and acceptance received from EPM Projects Pty Ltd, dated 6 March 2019, on behalf of the client, Anglican Schools Corporation. The work was carried out under a contract provided by Anglican Schools Corporation. This report is provided for the exclusive use of Anglican Schools Corporation for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Asbestos has not been detected by observation or by laboratory analysis, either on the surface of the site, or in fill materials at the test locations sampled and analysed. Building demolition materials, such as concrete and ceramic fragments were, however, located in previous below-ground fill and these are considered as indicative of the possible presence of hazardous building materials (HBM), including asbestos.

Although the sampling plan adopted for this investigation is considered appropriate to achieve the stated project objectives, there are necessarily parts of the site that have not been sampled and analysed. This is either due to undetected variations in ground conditions or to budget constraints (as discussed above), or to parts of the site being inaccessible and not available for inspection/sampling, or to vegetation preventing visual inspection and reasonable access. It is therefore considered possible that HBM, including asbestos, may be present in unobserved or untested parts of the site, between and beyond sampling locations, and hence no warranty can be given that asbestos is not present.

The contents of this report do not constitute formal design components such as are required, by the Health and Safety Legislation and Regulations, to be included in a Safety Report specifying the hazards likely to be encountered during construction and the controls required to mitigate risk. This design process requires risk assessment to be undertaken, with such assessment being dependent upon factors relating to likelihood of occurrence and consequences of damage to property and to life. This, in turn, requires project data and analysis presently beyond the knowledge and project role respectively of DP. DP may be able, however, to assist the client in carrying out a risk assessment of potential hazards contained in the Comments section of this report, as an extension to the current scope of works, if so requested, and provided that suitable additional information is made available to DP. Any such risk assessment would, however, be necessarily restricted to the environmental / groundwater components set out in this report and to their application by the project designers to project design, construction, maintenance and demolition.

Douglas Partners Pty Ltd

Appendix A

About This Report

Drawing

About this Report

Douglas Partners

Introduction

These notes have been provided to amplify DP's report in regard to classification methods, field procedures and the comments section. Not all are necessarily relevant to all reports.

DP's reports are based on information gained from limited subsurface excavations and sampling, supplemented by knowledge of local geology and experience. For this reason, they must be regarded as interpretive rather than factual documents, limited to some extent by the scope of information on which they rely.

Copyright

This report is the property of Douglas Partners Pty Ltd. The report may only be used for the purpose for which it was commissioned and in accordance with the Conditions of Engagement for the commission supplied at the time of proposal. Unauthorised use of this report in any form whatsoever is prohibited.

Borehole and Test Pit Logs

The borehole and test pit logs presented in this report are an engineering and/or geological interpretation of the subsurface conditions, and their reliability will depend to some extent on frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will provide the most reliable assessment, but this is not always practicable or possible to justify on economic grounds. In any case the boreholes and test pits represent only a very small sample of the total subsurface profile.

Interpretation of the information and its application to design and construction should therefore take into account the spacing of boreholes or pits, the frequency of sampling, and the possibility of other than 'straight line' variations between the test locations.

Groundwater

Where groundwater levels are measured in boreholes there are several potential problems, namely:

- In low permeability soils groundwater may enter the hole very slowly or perhaps not at all during the time the hole is left open;
- A localised, perched water table may lead to an erroneous indication of the true water table;
- Water table levels will vary from time to time with seasons or recent weather changes. They may not be the same at the time of construction as are indicated in the report; and
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must first be washed out of the hole if water measurements are to be made.

More reliable measurements can be made by installing standpipes which are read at intervals over several days, or perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from a perched water table.

Reports

The report has been prepared by qualified personnel, is based on the information obtained from field and laboratory testing, and has been undertaken to current engineering standards of interpretation and analysis. Where the report has been prepared for a specific design proposal, the information and interpretation may not be relevant if the design proposal is changed. If this happens, DP will be pleased to review the report and the sufficiency of the investigation work.

Every care is taken with the report as it relates to interpretation of subsurface conditions, discussion of geotechnical and environmental aspects, and recommendations or suggestions for design and construction. However, DP cannot always anticipate or assume responsibility for:

- Unexpected variations in ground conditions. The potential for this will depend partly on borehole or pit spacing and sampling frequency;
- Changes in policy or interpretations of policy by statutory authorities; or
- The actions of contractors responding to commercial pressures.

If these occur, DP will be pleased to assist with investigations or advice to resolve the matter.

About this Report

Site Anomalies

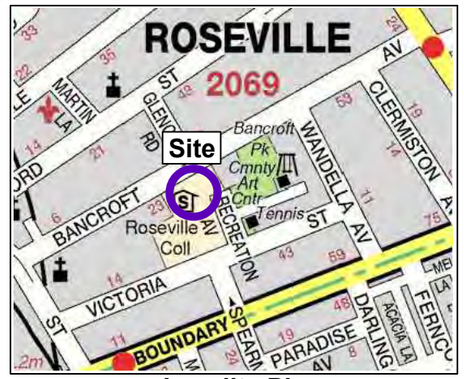
In the event that conditions encountered on site during construction appear to vary from those which were expected from the information contained in the report, DP requests that it be immediately notified. Most problems are much more readily resolved when conditions are exposed rather than at some later stage, well after the event.

Information for Contractual Purposes

Where information obtained from this report is provided for tendering purposes, it is recommended that all information, including the written report and discussion, be made available. In circumstances where the discussion or comments section is not relevant to the contractual situation, it may be appropriate to prepare a specially edited document. DP would be pleased to assist in this regard and/or to make additional report copies available for contract purposes at a nominal charge.

Site Inspection

The company will always be pleased to provide engineering inspection services for geotechnical and environmental aspects of work to which this report is related. This could range from a site visit to confirm that conditions exposed are as expected, to full time engineering presence on site.



Locality Plan

NOTE:
2: Base image from Nearmap.com (Date 1.7.2019)
2: Test locations are approximate only and are shown with reference to existing features.

LEGEND

- Borehole location
- DCP test location
- Previous borehole location
- W Groundwater monitoring well
- Proposed development boundary
- Approximate site boundary

Douglas Partners
Geotechnics / Environment / Groundwater

CLIENT: Anglican Schools Corporation		TITLE: **Site Boundary and Borehole Locations** **Proposed Roseville College SWELL Centre** **29 & 37 Bancroft Avenue, ROSEVILLE**
OFFICE: Sydney	DRAWN BY: PSCH	
SCALE: 1:1000 @ A3	DATE: 30.7.2019	

N

PROJECT No:	85310.02
DRAWING No:	1
REVISION:	0

Appendix B

Site Photographs

Photo 1 – Residential house (northern portion of Lot 18)

Photo 2 – Swimming pool and tennis court (southern portion of Lot 18)

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs**	PROJECT:	85310.02
	Proposed Roseville SWELL Centre	PLATE No:	1
	29 & 37 Bancroft Avenue, Roseville	REV:	A
	CLIENT: Anglican Schools Corporation	DATE:	16 July 2019

Photo 3 – Asphaltic concrete pathway

Photo 4 – Part Lot 2003.

Douglas Partners Geotechnics | Environment | Groundwater	**Site Photographs** **Proposed Roseville SWELL Centre** **29 & 37 Bancroft Avenue, Roseville**	PROJECT: PLATE No: REV:	85310.02 2 A
	CLIENT: Anglican Schools Corporation	DATE:	16 July 2019

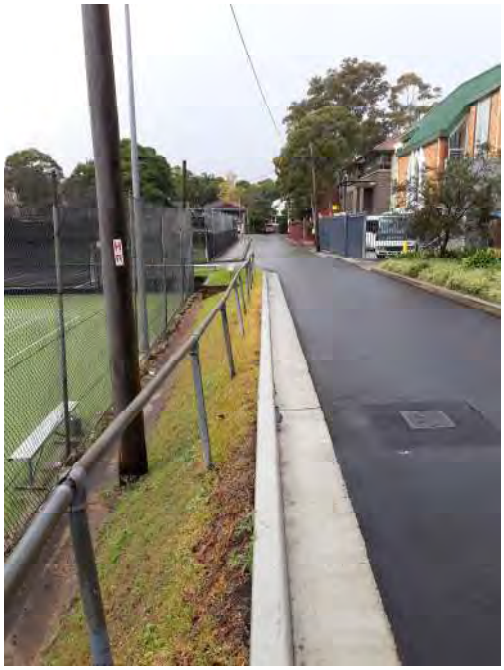


Photo 5 – Grassed batter along Recreation Avenue

Photo 6 – Timber sleeper retaining wall

Douglas Partners Geotechnics / Environment / Groundwater	**Site Photographs** **Proposed Roseville SWELL Centre** **29 & 37 Bancroft Avenue, Roseville**	PROJECT: PLATE No: REV:	85310.02 3 A
	CLIENT: Anglican Schools Corporation	DATE:	16 July 2019

Appendix C

Site History Documentation

LOTSEARCH

LOTSEARCH ENVIRO PROFESSIONAL

Date: 21 Mar 2019 14:49:44

Reference: LS005497 EP

Address: 29 & 37 Bancroft Avenue, Roseville, NSW 2069

Disclaimer:
The purpose of this report is to provide an overview of some of the site history, environmental risk and planning information available, affecting an individual address or geographical area in which the property is located. It is not a substitute for an on-site inspection or review of other available reports and records. It is not intended to be, and should not be taken to be, a rating or assessment of the desirability or market value of the property or its features.
You should obtain independent advice before you make any decision based on the information within the report.
The detailed terms applicable to use of this report are set out at the end of this report.

Table of Contents

Location Confidences

Where Lotsearch has had to georeference features from supplied addresses, a location confidence has been assigned to the data record. This indicates a confidence to the positional accuracy of the feature. Where applicable, a code is given under the field heading “LC” or “LocConf”. These codes lookup to the following location confidences:

LC Code	Location Confidence
Premise match	Georeferenced to the site location / premise or part of site
General area or suburb match	Georeferenced with the confidence of the general/approximate area
Road match	Georeferenced to the road or rail
Road intersection	Georeferenced to the road intersection
Feature is a buffered point	Feature is a buffered point
Land adjacent to geocoded site	Land adjacent to Georeferenced Site
Network of features	Georeferenced to a network of features

Dataset Listing

Datasets contained within this report, detailing their source and data currency:

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	NSW Department of Finance, Services & Innovation	21/03/2019	21/03/2019	Daily	-	-	-	-
Topographic Data	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	As required	-	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	14/03/2019	20/02/2019	Monthly	1000	0	0	2
Contaminated Land Records of Notice	Environment Protection Authority	11/03/2019	11/03/2019	Monthly	1000	0	0	0
Former Gasworks	Environment Protection Authority	04/03/2019	11/10/2017	Monthly	1000	0	0	0
National Waste Management Facilities Database	Geoscience Australia	05/02/2019	07/03/2017	Quarterly	1000	0	0	0
EPA PFAS Investigation Program	Environment Protection Authority	04/03/2019	04/03/2019	Monthly	2000	0	0	0
Defence PFAS Investigation & Management Program	Department of Defence	14/03/2019	14/03/2019	Monthly	2000	0	0	0
Airservices Australia National PFAS Management Program	Airservices Australia	11/03/2019	16/11/2018	Monthly	2000	0	0	0
EPA Other Sites with Contamination Issues	Environment Protection Authority	13/12/2018	13/12/2018	Annually	1000	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	28/02/2019	28/02/2019	Monthly	1000	0	0	1
Delicensed POEO Activities still regulated by the EPA	Environment Protection Authority	28/02/2019	28/02/2019	Monthly	1000	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	28/02/2019	28/02/2019	Monthly	1000	0	0	4
UPSS Environmentally Sensitive Zones	Environment Protection Authority	14/04/2015	12/01/2010	As required	1000	0	0	0
UBD Business to Business Directory 1991 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business to Business Directory 1991 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	0
UBD Business to Business Directory 1986 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	1	1
UBD Business to Business Directory 1986 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1982 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1982 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1978 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1978 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1975 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	0
UBD Business Directory 1975 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1970 (Premise & Intersection Matches)	Hardie Grant			Not required	150	0	0	1
UBD Business Directory 1970 (Road & Area Matches)	Hardie Grant			Not required	150	-	2	2
UBD Business Directory 1965 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	1	3
UBD Business Directory 1965 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1
UBD Business Directory 1961 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	2	3
UBD Business Directory 1961 (Road & Area Matches)	Hardie Grant			Not required	150	-	1	1

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
UBD Business Directory 1950 (Premise & Intersection Matches)	Hardie Grant			Not required	150	1	3	5
UBD Business Directory 1950 (Road & Area Matches)	Hardie Grant			Not required	150	-	0	3
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Premise & Intersection Matches)	Hardie Grant			Not required	500	0	0	65
UBD Business Directory Drycleaners & Motor Garages/Service Stations (Road & Area Matches)	Hardie Grant			Not required	500	-	0	18
Points of Interest	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	5	47
Tanks (Areas)	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	0	0
Tanks (Points)	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	0	0
Major Easements	NSW Department of Finance, Services & Innovation	11/01/2019	11/01/2019	Quarterly	1000	0	1	6
State Forest	NSW Department of Finance, Services & Innovation	18/01/2018	18/01/2018	As required	1000	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment & Heritage	16/01/2019	14/11/2018	Annually	1000	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1000	1	1	1
Botany Groundwater Management Zones	NSW Department of Primary Industries	15/03/2018	01/10/2005	As required	1000	0	0	0
Groundwater Boreholes	NSW Dept. of Primary Industries - Water NSW; Commonwealth of Australia (Bureau of Meteorology)	24/07/2018	23/07/2018	Annually	2000	0	0	27
Geological Units 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	1	-	2
Geological Structures 1:100,000	NSW Dept. of Industry, Resources & Energy	20/08/2014		None planned	1000	0	-	0
Naturally Occurring Asbestos Potential	NSW Dept. of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	1000	0	0	0
Soil Landscapes	NSW Office of Environment & Heritage	12/08/2014		None planned	1000	2	-	4
Atlas of Australian Soils	CSIRO	19/05/2017	17/02/2011	As required	1000	1	1	1
Environmental Planning Instrument Acid Sulfate Soils	NSW Department of Planning and Environment	19/03/2019	09/11/2018	Weekly	500	1		
Atlas of Australian Acid Sulfate Soils	CSIRO	19/01/2017	21/02/2013	As required	1000	1	1	1
Dryland Salinity - National Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1000	0	0	0
Dryland Salinity Potential of Western Sydney	NSW Office of Environment & Heritage	12/05/2017	01/01/2002	None planned	1000	-	-	-
Mining Subsidence Districts	NSW Department of Finance, Services & Innovation	13/07/2017	01/07/2017	As required	1000	0	0	0
SEPP State Significant Precincts	NSW Department of Planning and Environment	19/03/2019	04/07/2104	Weekly	1000	0	0	0
Environmental Planning Instrument Land Zoning	NSW Department of Planning and Environment	19/03/2019	08/02/2019	Weekly	1000	2	5	61
Commonwealth Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	31/07/2018	Unknown	1000	0	0	0
National Heritage List	Australian Government Department of the Environment and Energy - Heritage Branch	16/01/2019	28/09/2018	Unknown	1000	0	0	0
State Heritage Register - Curtilages	NSW Office of Environment & Heritage	16/01/2019	09/11/2018	Quarterly	1000	0	0	0
Environmental Planning Instrument Heritage	NSW Department of Planning and Environment	19/03/2019	18/01/2019	Weekly	1000	1	6	117
Bush Fire Prone Land	NSW Rural Fire Service	26/02/2019	01/11/2018	Quarterly	1000	0	0	3
Native Vegetation of the Sydney Metropolitan Area	NSW Office of Environment & Heritage	01/03/2017	16/12/2016	As required	1000	1	2	6

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	Dataset Buffer (m)	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Ramsar Wetlands of Australia	Commonwealth of Australia Department of the Environment	08/10/2014	24/06/2011	As required	1000	0	0	0
Groundwater Dependent Ecosystems	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
Inflow Dependent Ecosystems Likelihood	Bureau of Meteorology	14/08/2017	15/05/2017	Unknown	1000	0	0	0
NSW BioNet Species Sightings	NSW Office of Environment & Heritage	21/03/2019	21/03/2019	Weekly	10000	-	-	-

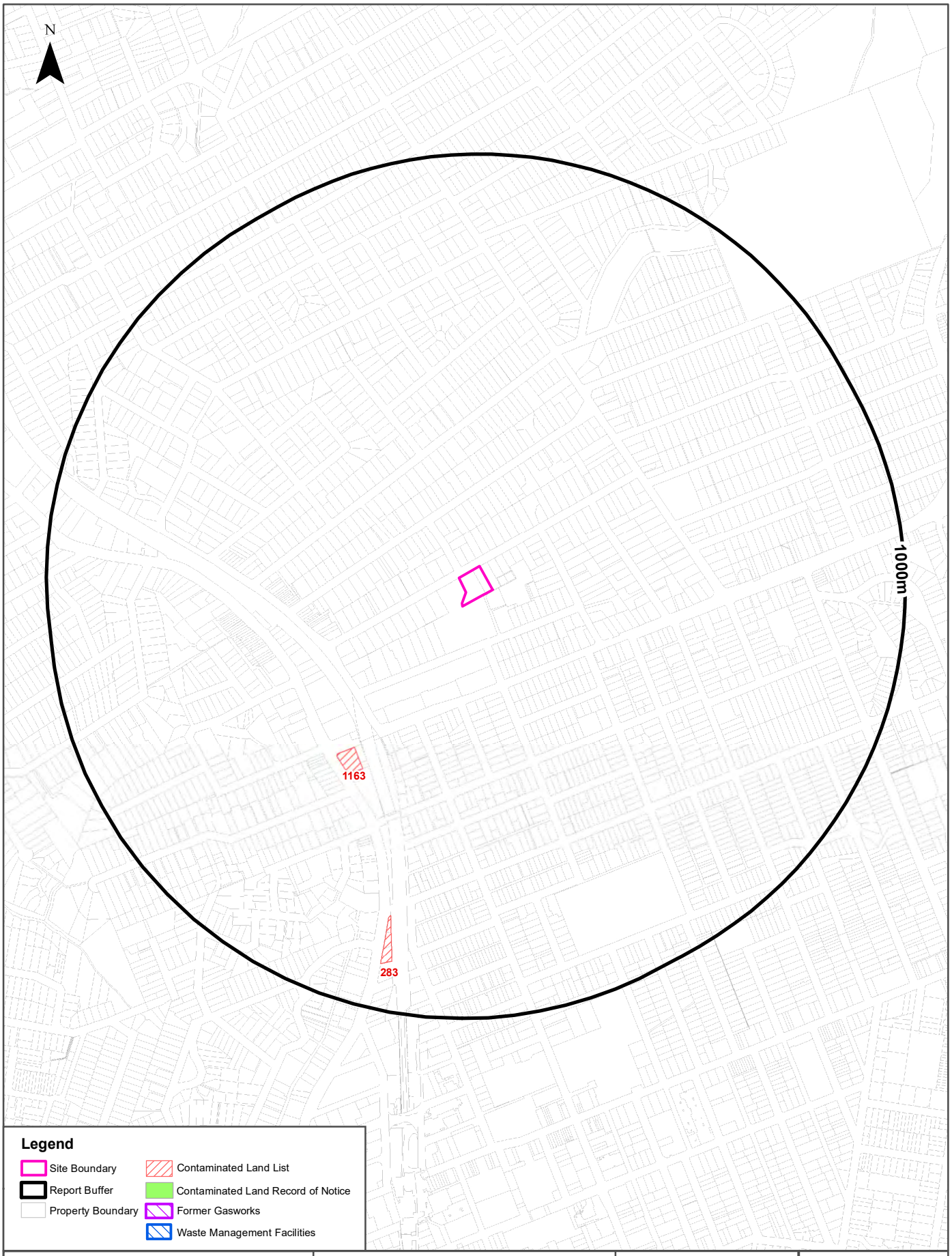
Aerial Imagery 2018

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Scale: 0 25 50 100 Metres	Data Sources: Aerial Imagery © Department Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 March 2019

Contaminated Land & Waste Management Facilities

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Contaminated Land & Waste Management Facilities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

List of NSW contaminated sites notified to EPA

Records from the NSW EPA Contaminated Land list within the dataset buffer:

Map Id	Site	Address	Suburb	Activity	Management Class	Status	Location Confidence	Dist (m)	Direction
1163	Mobil Service Station	2 Boundary Street	Roseville	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	431m	South West
283	Coles Express Service Station Chatswood	877-879 Pacific Highway	Chatswood	Service Station	Regulation under CLM Act not required	Current EPA List	Premise Match	769m	South

The values within the EPA site management class in the table above, are given more detailed explanations in the table below:

EPA site management class	Explanation
Contamination being managed via the planning process (EP&A Act)	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. The contamination of this site is managed by the consent authority under the Environmental Planning and Assessment Act 1979 (EP&A Act) planning approval process, with EPA involvement as necessary to ensure significant contamination is adequately addressed. The consent authority is typically a local council or the Department of Planning and Environment.
Contamination currently regulated under CLM Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). Management of the contamination is regulated by the EPA under the CLM Act. Regulatory notices are available on the EPA's Contaminated Land Public Record of Notices.
Contamination currently regulated under POEO Act	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation. Management of the contamination is regulated under the Protection of the Environment Operations Act 1997 (POEO Act). The EPA's regulatory actions under the POEO Act are available on the POEO public register.
Contamination formerly regulated under the CLM Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation under the Contaminated Land Management Act 1997 (CLM Act). The contamination was addressed under the CLM Act.
Contamination formerly regulated under the POEO Act	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed under the Protection of the Environment Operations Act 1997 (POEO Act).
Contamination was addressed via the planning process (EP&A Act)	The EPA has determined that the contamination is no longer significant enough to warrant regulation. The contamination was addressed by the appropriate consent authority via the planning process under the Environmental Planning and Assessment Act 1979 (EP&A Act).
Ongoing maintenance required to manage residual contamination (CLM Act)	The EPA has determined that ongoing maintenance, under the Contaminated Land Management Act 1997 (CLM Act), is required to manage the residual contamination. Regulatory notices under the CLM Act are available on the EPA's Contaminated Land Public Record of Notices.
Regulation being finalised	The EPA has completed an assessment of the contamination and decided that the contamination is significant enough to warrant regulation under the Contaminated Land Management Act 1997. A regulatory approach is being finalised.
Regulation under the CLM Act not required	The EPA has completed an assessment of the contamination and decided that regulation under the Contaminated Land Management Act 1997 is not required.
Under assessment	The contamination is being assessed by the EPA to determine whether regulation is required. The EPA may require further information to complete the assessment. For example, the completion of management actions regulated under the planning process or Protection of the Environment Operations Act 1997. Alternatively, the EPA may require information via a notice issued under s77 of the Contaminated Land Management Act 1997 or issue a Preliminary Investigation Order.

NSW EPA Contaminated Land List Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Contaminated Land & Waste Management Facilities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Contaminated Land: Records of Notice

Record of Notices within the dataset buffer:

Map Id	Name	Address	Suburb	Notices	Area No	Location Confidence	Distance	Direction
N/A	No records in buffer							

Contaminated Land Records of Notice Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority
Terms of use and disclaimer for Contaminated Land: Record of Notices, please visit
http://www.epa.nsw.gov.au/clm/clmdisclaimer.htm

Former Gasworks

Former Gasworks within the dataset buffer:

Map Id	Location	Council	Further Info	Location Confidence	Distance	Direction
N/A	No records in buffer					

Former Gasworks Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

National Waste Management Site Database

Sites on the National Waste Management Site Database within the dataset buffer:

Site Id	Owner	Name	Address	Suburb	Class	Landfill	Reprocess	Transfer	Comments	Loc Conf	Dist (m)	Direction
N/A	No records in buffer											

Waste Management Facilities Data Source: Geoscience Australia
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

PFAS Investigation Sites

29 & 37 Bancroft Avenue, Roseville, NSW 2069

EPA PFAS Investigation Program

Sites that are part of the EPA PFAS investigation program, within the dataset buffer:

Id	Site	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

EPA PFAS Investigation Program: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Defence PFAS Investigation & Management Program

Sites being investigated or managed by the Department of Defence for PFAS contamination within the dataset buffer:

Property ID	Base Name	Address	Loc Conf	Dist	Dir
N/A	No records in buffer				

Defence PFAS Investigation & Management Program Data Custodian: Department of Defence, Australian Government

Airservices Australia National PFAS Management Program

Sites being investigated or managed by Airservices Australia for PFAS contamination within the dataset buffer:

Map ID	Site Name	Impacts	Loc Conf	Dist	Dir
N/A	No records in buffer				

Airservices Australia National PFAS Management Program Data Custodian: Airservices Australia

EPA Other Sites with Contamination Issues

29 & 37 Bancroft Avenue, Roseville, NSW 2069

EPA Other Sites with Contamination Issues

This dataset contains other sites identified on the EPA website as having contamination issues. This dataset currently includes:

- James Hardie asbestos manufacturing and waste disposal sites
- Radiological investigation sites in Hunter's Hill
- Pasminco Lead Abatement Strategy Area

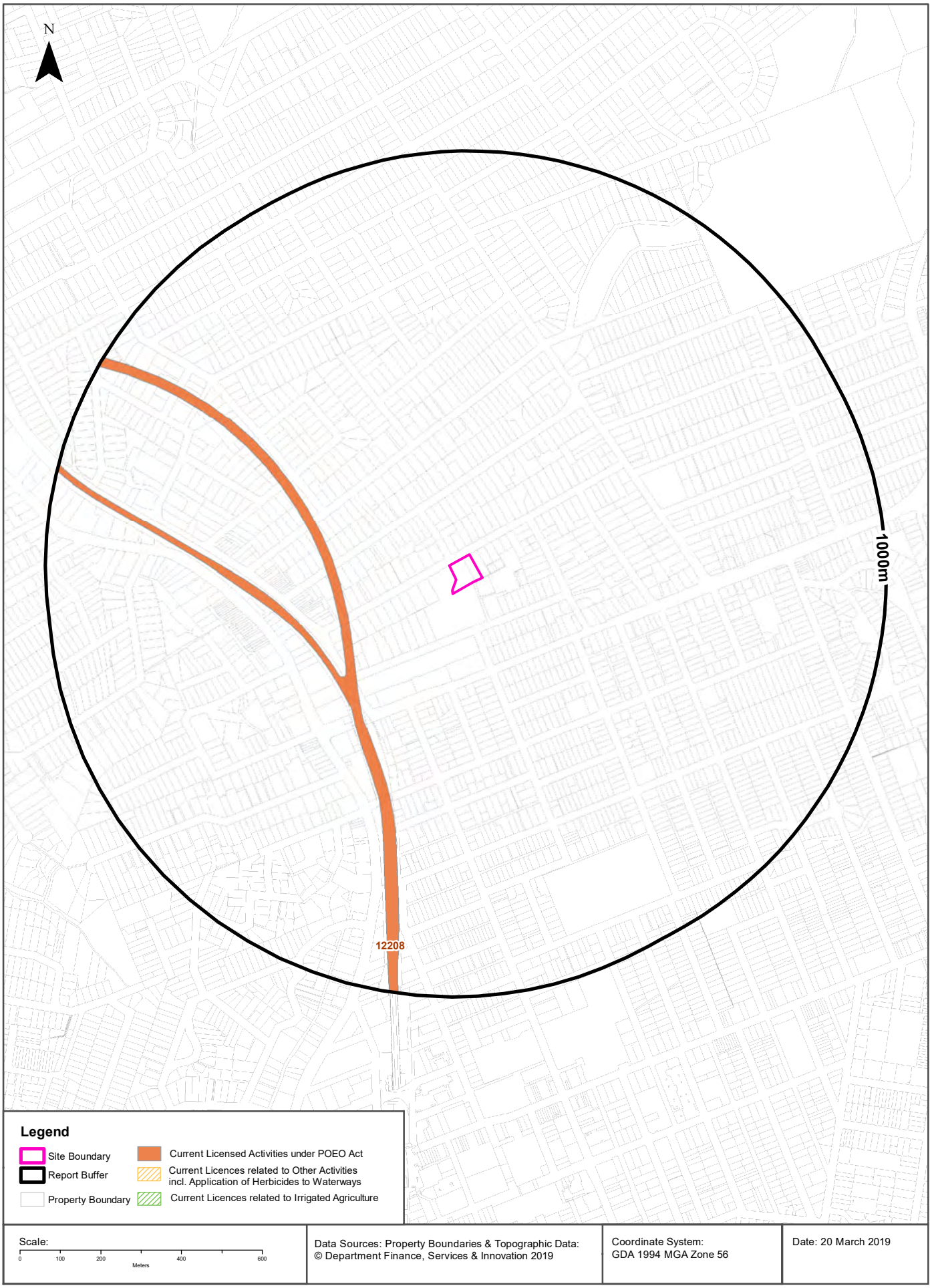
Sites within the dataset buffer:

Site Id	Site Name	Site Address	Dataset	Comments	Location Confidence	Distance	Direction
N/A	No records in buffer						

EPA Other Sites with Contamination Issues: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Current EPA Licensed Activities

29 & 37 Bancroft Avenue, Roseville, NSW 2069



EPA Activities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Licensed Activities under the POEO Act 1997

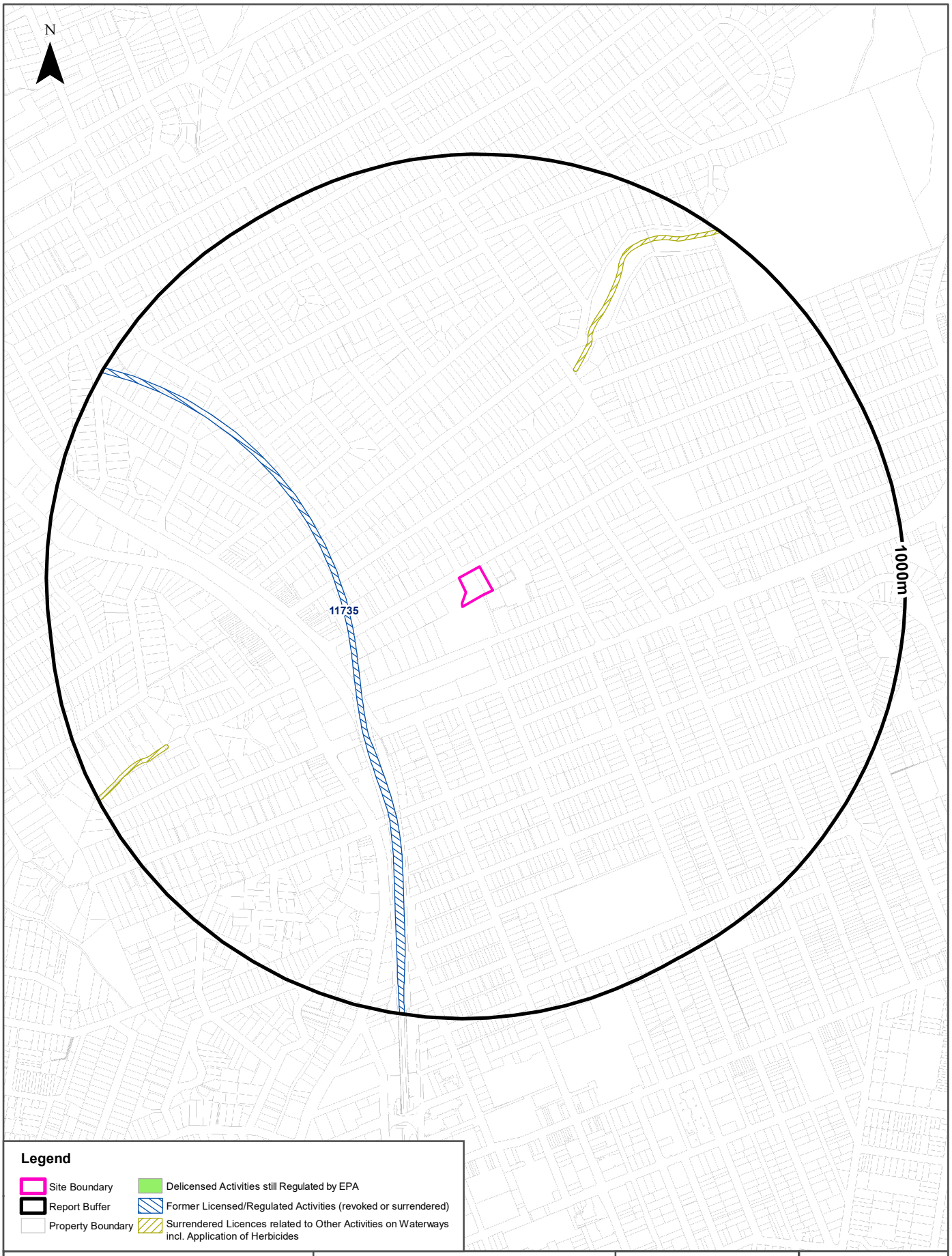
Licensed activities under the Protection of the Environment Operations Act 1997, within the dataset buffer:

EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
12208	SYDNEY TRAINS		PO BOX K349, HAYMARKET, NSW 1238		Railway systems activities	Network of Features	266m	West

POEO Licence Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

29 & 37 Bancroft Avenue, Roseville, NSW 2069



EPA Activities

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Delicensed Activities still regulated by the EPA

Delicensed activities still regulated by the EPA, within the dataset buffer:

Licence No	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
N/A	No records in buffer							

Delicensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

Former Licensed Activities under the POEO Act 1997, now revoked or surrendered

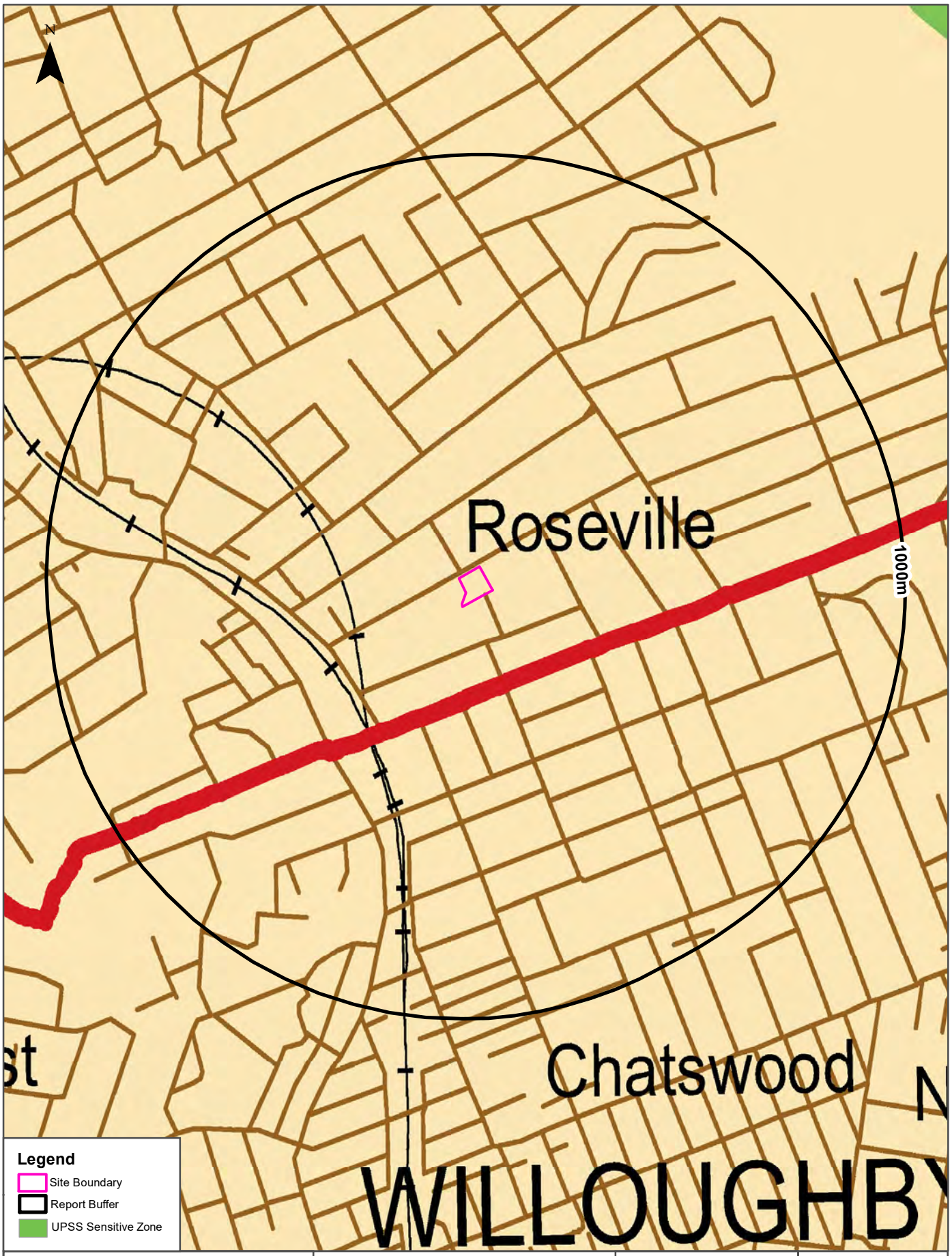
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the dataset buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
11735	HOCHTIEF AG	-, MACQUARIE PARK, NSW 2113	Surrendered	04/09/2002	Railway systems activities	Road Match	271m	South West
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	526m	-
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	526m	-
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	Network of Features	526m	-

Former Licensed Activities Data Source: Environment Protection Authority
© State of New South Wales through the Environment Protection Authority

UPSS Sensitive Zones

29 & 37 Bancroft Avenue, Roseville, NSW 2069

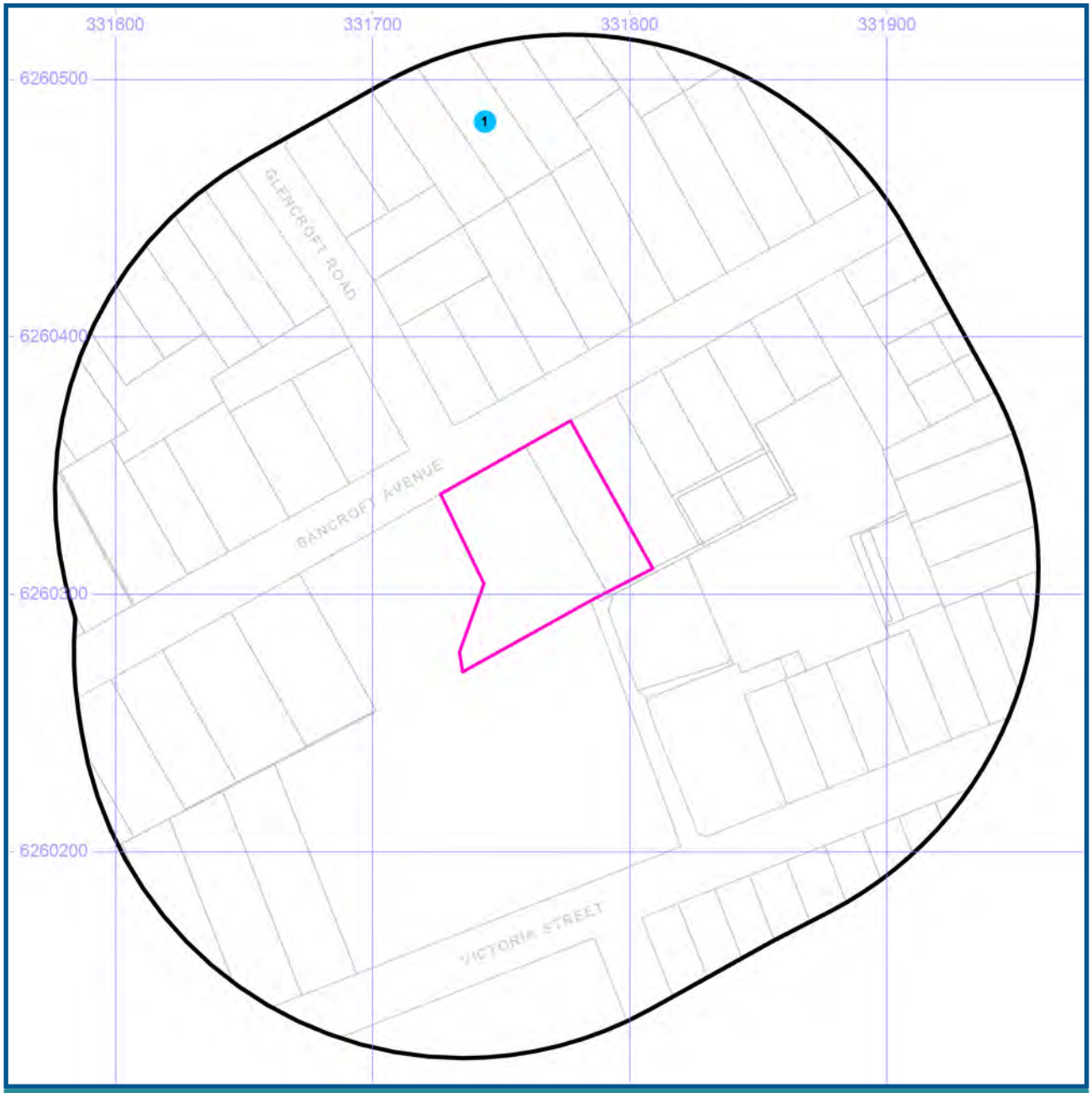


Scale: 0 100 200 400 600 Meters	UPSS Data Source: Environment Protection Authority © Dept of Environment, Climate Change & Water (NSW)	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 March 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1991 Business to Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1991 Business to Business Directory Records
Premise or Road Intersection Matches

Records from the 1991 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Instrument Industrial Mfrs &/or Imps &/or Dists	J.W. Industrial Instruments Pty Ltd, 45 Lord St., Roseville .2069	49210	Premise Match	89m	North

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1991 Business to Business Directory Records
Road or Area Matches

Records from the 1991 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

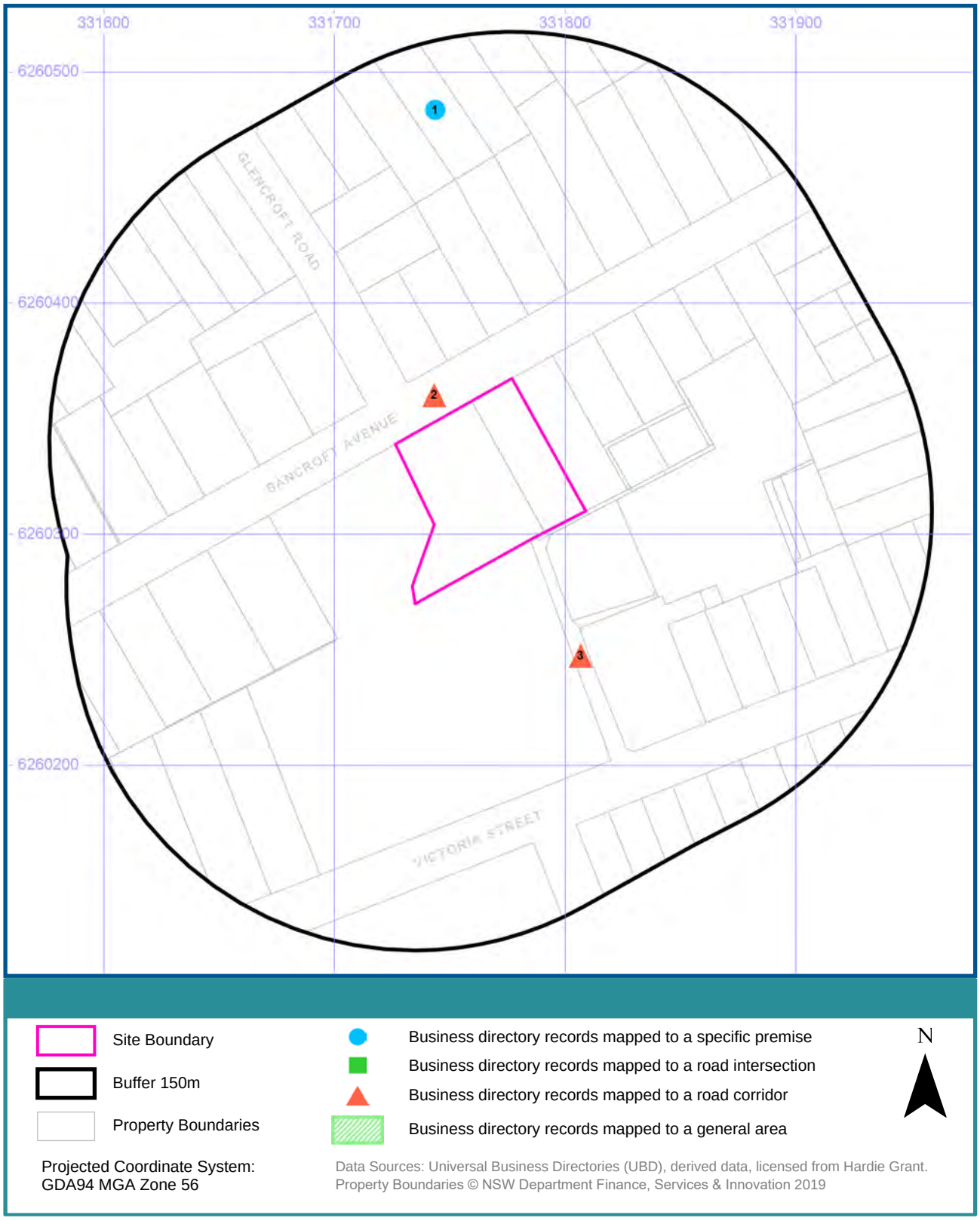
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
	No records in buffer				

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1986 Business to Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1986 Business to Business Directory Records Premise or Road Intersection Matches

Records from the 1986 UBD Business to Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	INSTRUMENT-INDUSTRIAL-MFRS. &/OR IMPS. &/OR DISTS.	J.W. Industrial Instruments Pty. Ltd., 45 Lord St., Roseville. 2069	48282	Premise Match	89m	North

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1986 Business to Business Directory Records Road or Area Matches

Records from the 1986 UBD Business to Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

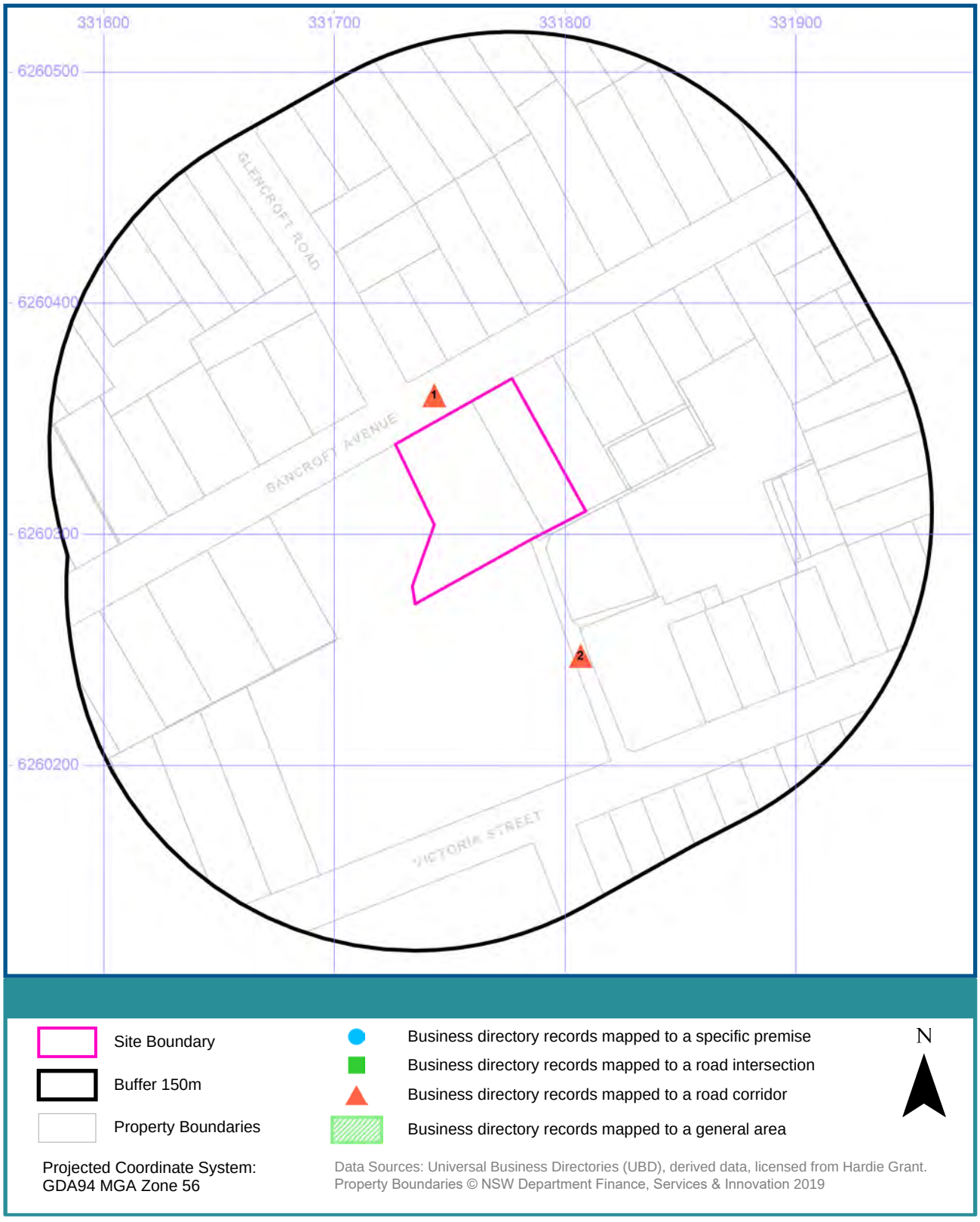
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	CLUBS &/OR SPORTING BODIES.	Roseville Bowling Club, Off Bancroft Ave., Roseville. 2069	18976	Road Match	0m
3	CLUBS &/OR SPORTING BODIES.	Roseville Tennis Club Ltd., Recreation Ave., Roseville. 2069	18978	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1982 Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1982 Business Directory Records
Premise or Road Intersection Matches

Records from the 1982 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1982 Business Directory Records
Road or Area Matches

Records from the 1982 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CLUBS &/OR SPORTING BODIES.(C5730)	Roseville Bowling Club, Off Bancroft Ave., Roseville. 2069.	17304	Road Match	0m
2	CLUBS &/OR SPORTING BODIES.(C5730)	Roseville Tennis Club Ltd., Recreation Ave., Roseville. 2069.	17306	Road Match	0m

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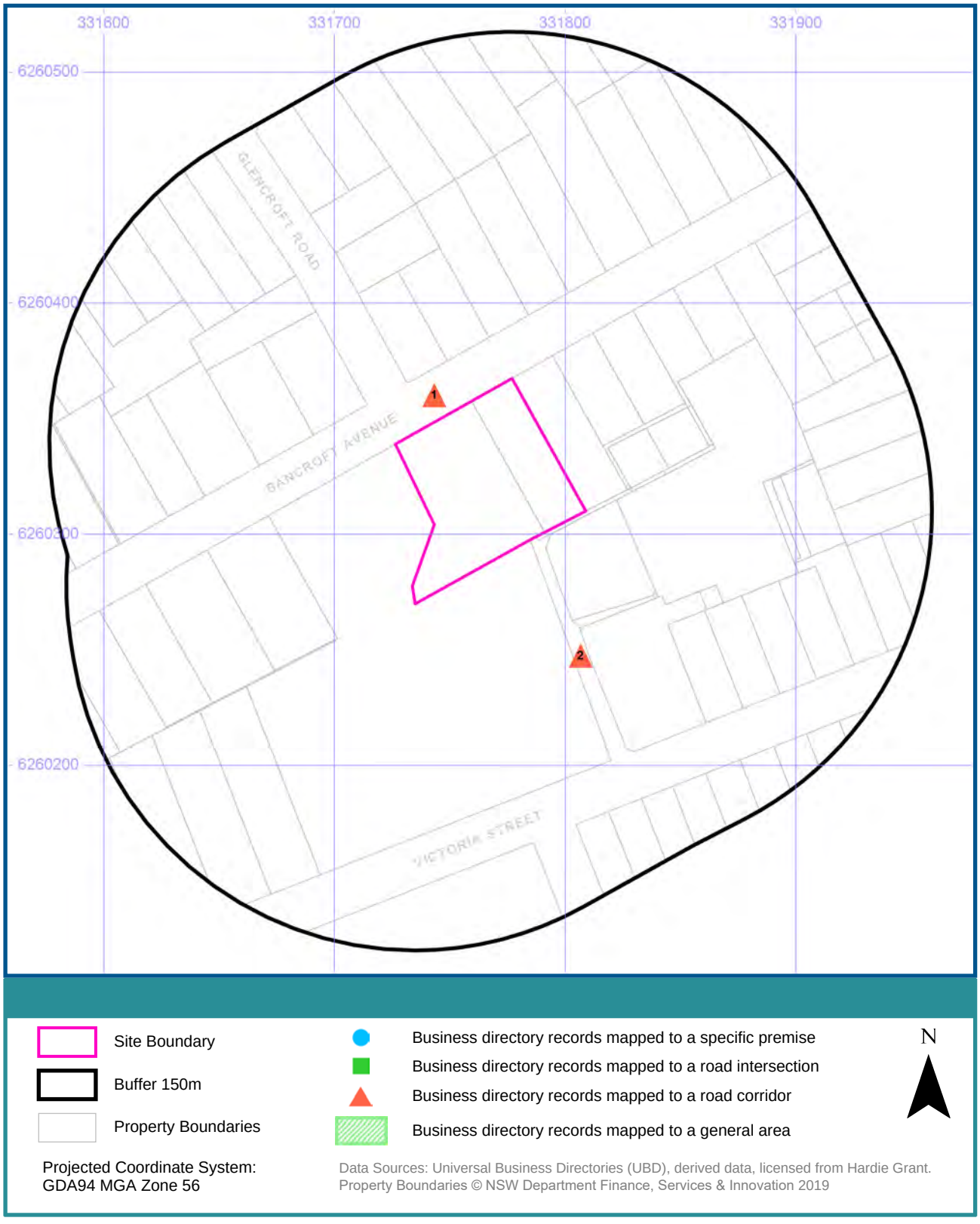
Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1978 Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1978 Business Directory Records
Premise or Road Intersection Matches

Records from the 1978 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1978 Business Directory Records
Road or Area Matches

Records from the 1978 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

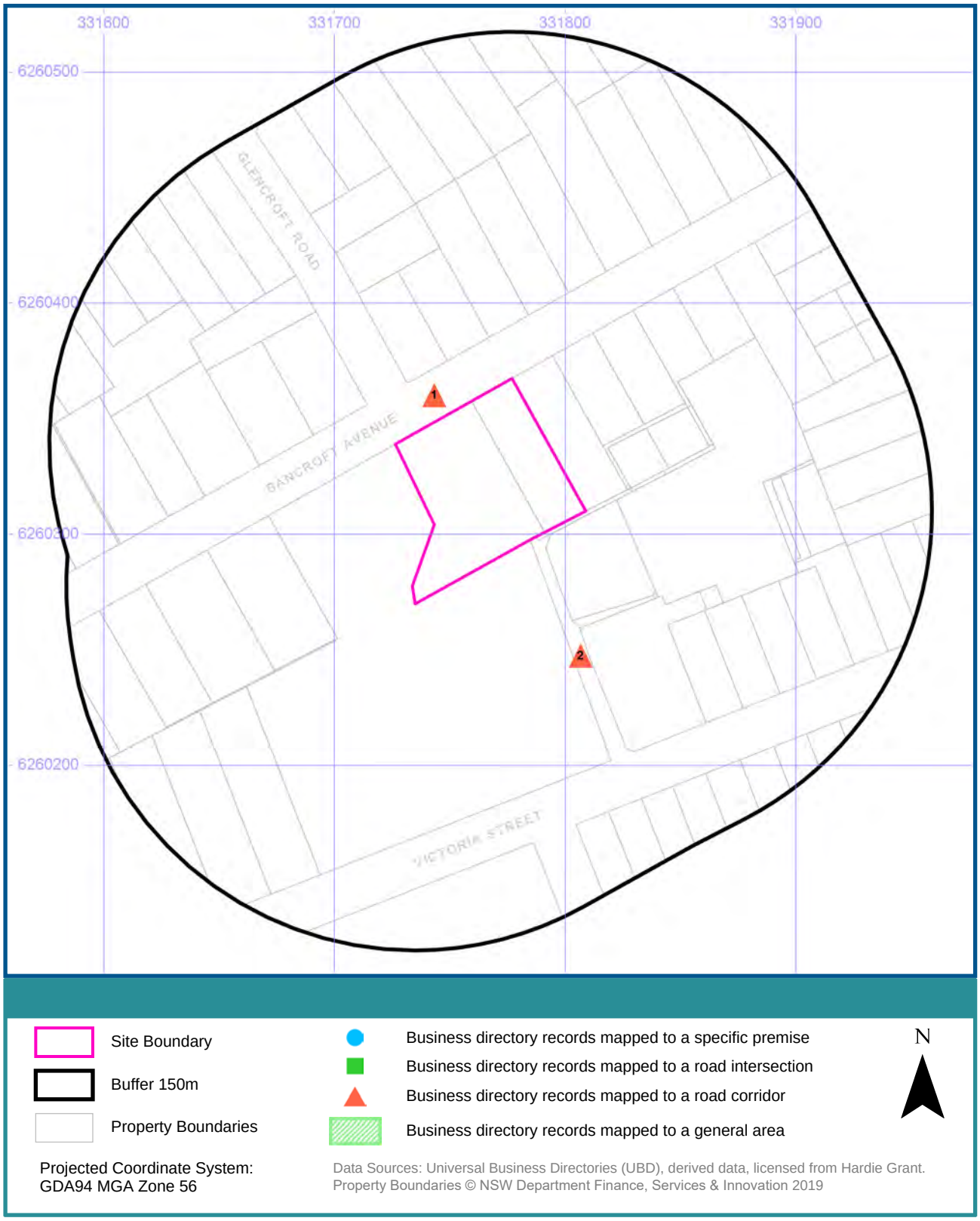
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CLUBS &,/OR SPORTING BODIES.	Roseville Bowling Club. Off Bancroft Ave., Roseville.	15642	Road Match	0m
2	CLUBS &,/OR SPORTING BODIES.	Roseville Tennis Club Ltd., Recreation Ave., Roseville.	15644	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1975 Business Directory Records



Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1975 Business Directory Records
Premise or Road Intersection Matches

Records from the 1975 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
	No records in buffer					

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1975 Business Directory Records
Road or Area Matches

Records from the 1975 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

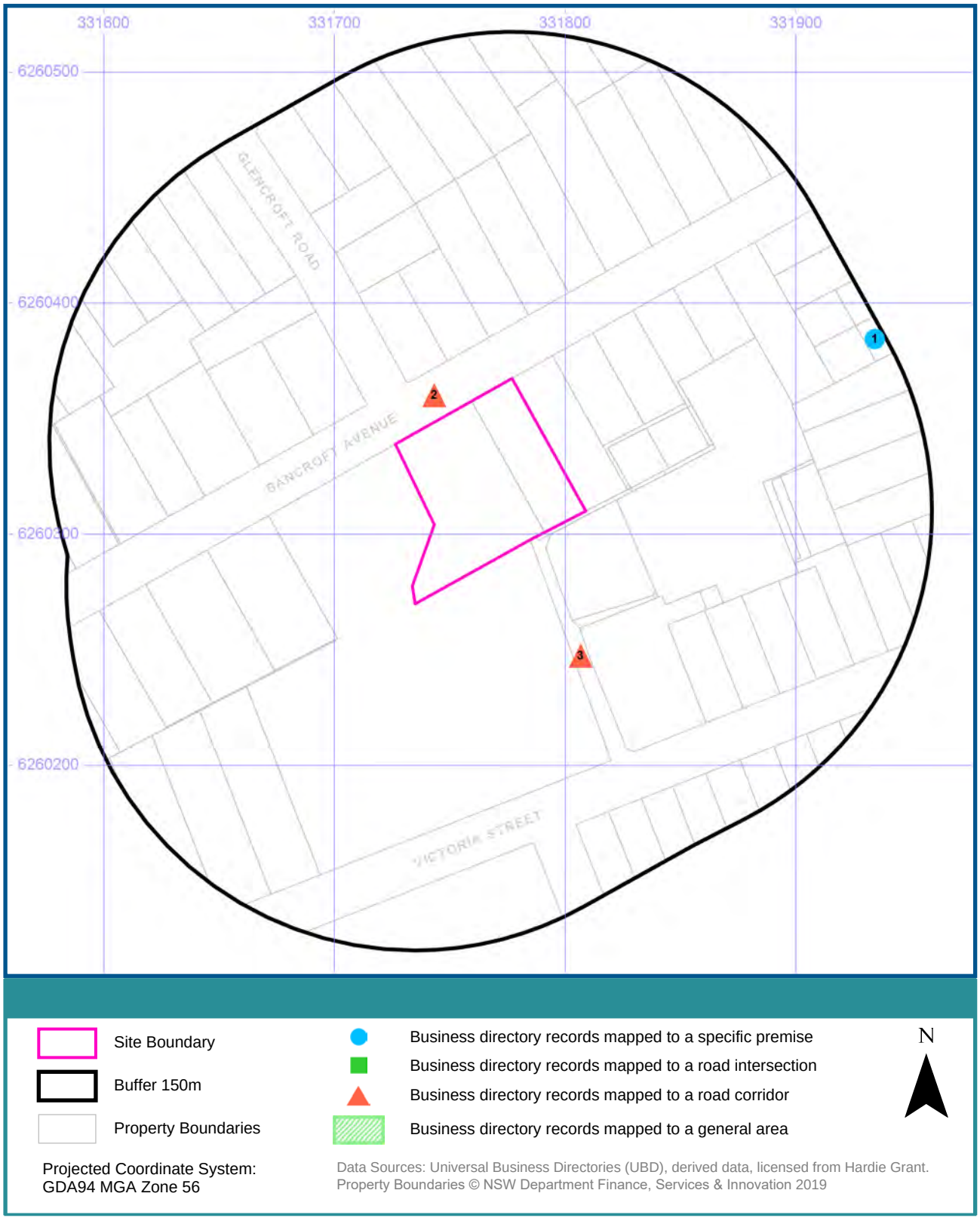
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
1	CLUBS & /OR SPORTING BODIES	Roseville Bowling Club, Off Bancroft Ave., Roseville.	18113	Road Match	0m
2	CLUBS & /OR SPORTING BODIES	Roseville Tennis Club Ltd., Recreation Ave., Roseville.	18115	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1970 Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1970 Business Directory Records
Premise or Road Intersection Matches

Records from the 1970 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	ARCHITECTS (A440)	Perry, AS., 10 Wandella Ave., Roseville	262114	Premise Match	141m	East

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1970 Business Directory Records
Road or Area Matches

Records from the 1970 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
2	CLUBS & SPORTING BODIES (C487)	Roseville Bowling Club Ltd., Bancroft Ave., Roseville	284618	Road Match	0m
3	CLUBS & SPORTING BODIES (C487)	Roseville Tennis Club Ltd., Recreation Ave., Roseville	284622	Road Match	0m

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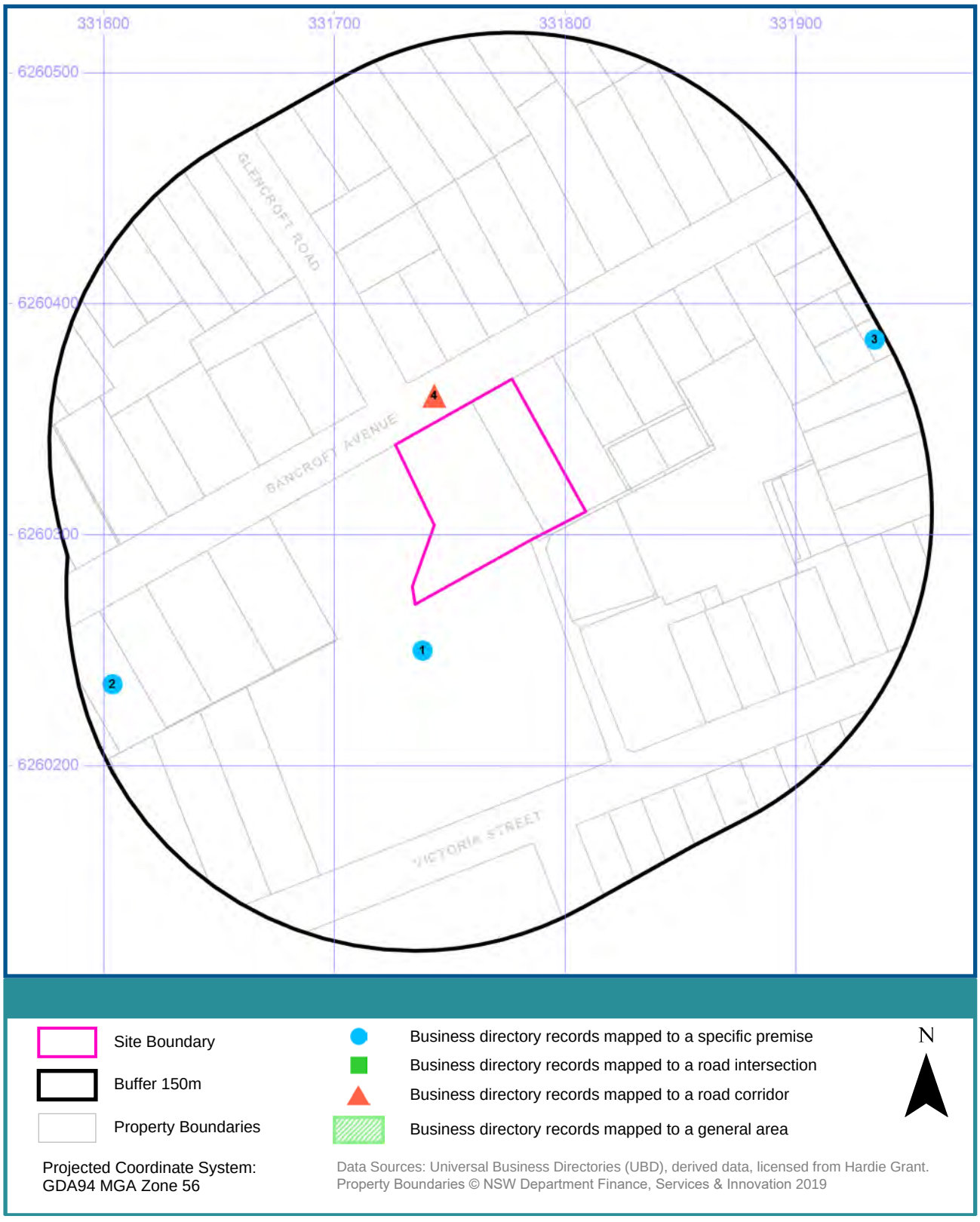
Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1965 Business Directory Records



Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1965 Business Directory Records
Premise or Road Intersection Matches

Records from the 1965 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	Schools/Colleges - Private/Public	Roseville Girls' College., 29 Bancroft Ave., Roseville	142884	Premise Match	0m	On-site
2	Herbalists	Raine, Henry B. (Botanic Therapeutist), 15 Bancroft Ave,. Roseville	100260	Premise Match	120m	South West
3	Architects	Perry, A. S. , 10 Wandella Ave., Roseville	46766	Premise Match	141m	East

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1965 Business Directory Records
Road or Area Matches

Records from the 1965 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

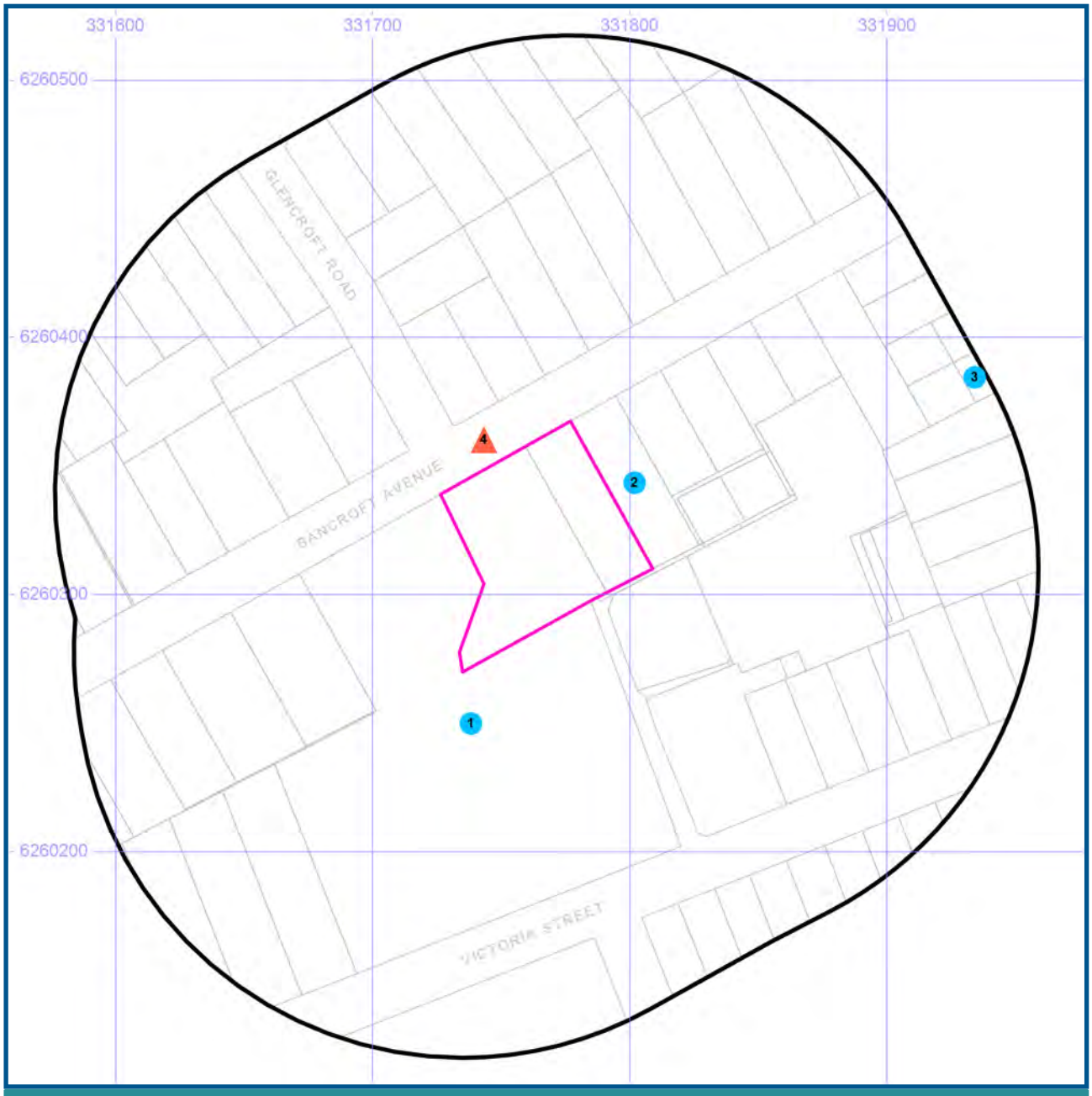
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	Clubs & Sporting Bodies	Roseville Bowling Club Ltd., Bancroft Ave., Roseville	69276	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1961 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

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Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1961 Business Directory Records
Premise or Road Intersection Matches

Records from the 1961 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	SCHOOLS/COLLEGES-PRIVATE/PUBLIC	Roseville Girls' College, 29 Bancroft Ave., Roseville	248365	Premise Match	0m	On-site
2	FLORISTS-RETAIL	Primrose, Misses D. M., 39 Bancroft Ave., Roseville	312018	Premise Match	0m	North East
3	ARCHITECTS	Perry, A. S., 10 Wandella Ave., Roseville	268449	Premise Match	141m	East

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1961 Business Directory Records
Road or Area Matches

Records from the 1961 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

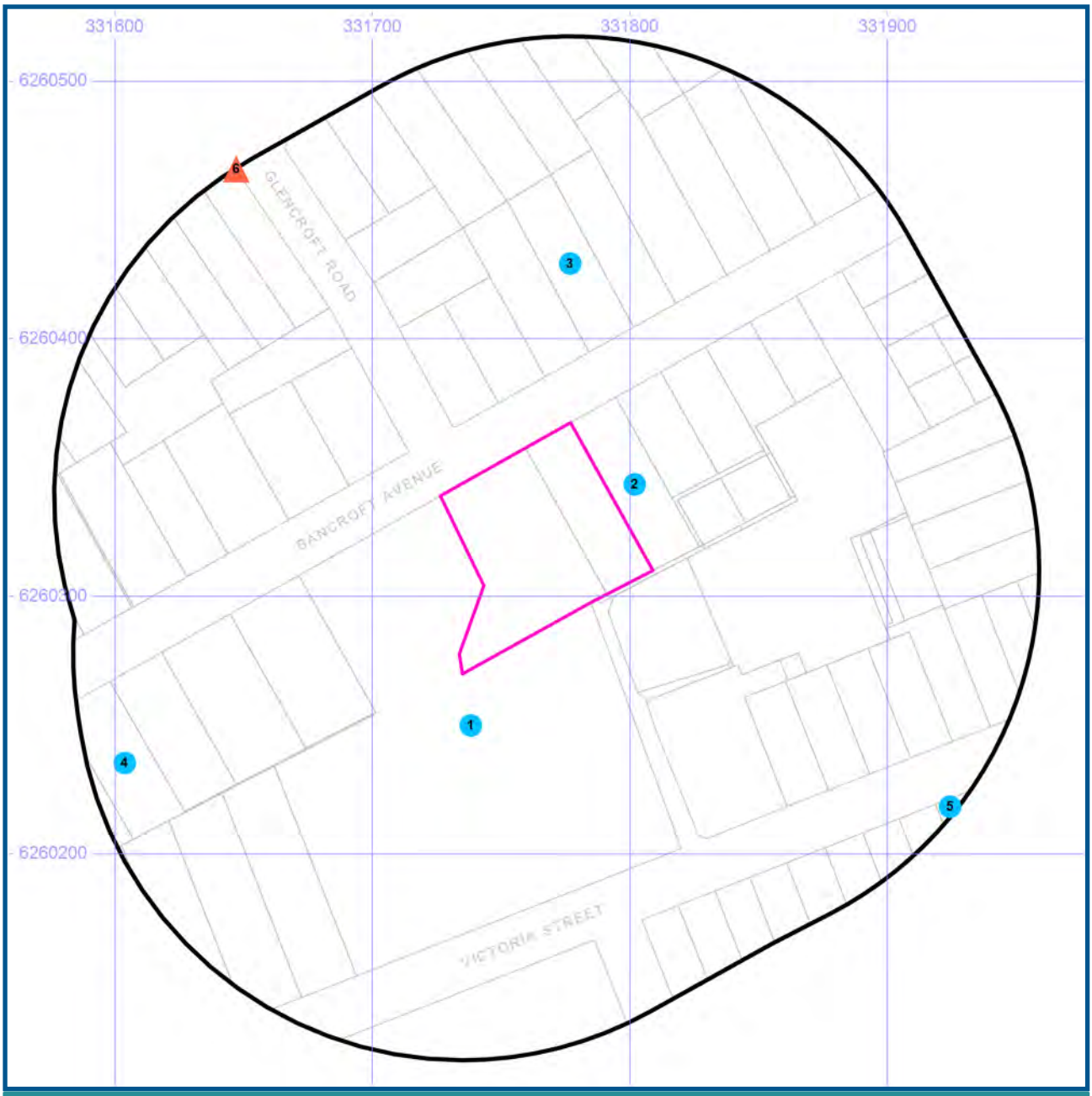
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
4	CLUBS & SPORTS BODIES	Roseville Bowling Club Ltd., Bancroft Ave., Roseville	291759	Road Match	0m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1950 Business Directory Records



Site Boundary

Buffer 150m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

1950 Business Directory Records
Premise or Road Intersection Matches

Records from the 1950 UBD Business Directory, mapped to a premise or road intersection, within the dataset buffer:

Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	MUSIC TEACHERS	Roberts, Miss.Dagmar, 35 Bancroft Ave., Roseville	87530	Premise Match	0m	On-site
2	FLORISTS-RETAIL	Primrose, Misses D. M., 39 Bancroft Ave., Roseville	46122	Premise Match	0m	North East
3	MEDICAL PRACTITIONERS	Laver, E. G., 36 Bancroft Ave., Roseville	73253	Premise Match	28m	North
4	HERBALISTS	Ralne and Groves, 15 Bancroft Ave., Roseville	62079	Premise Match	120m	South West
5	MEDICAL PRACTITIONERS	Chandler, R. P,, 49 Victoria St., Roseville	72610	Premise Match	142m	South East

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

1950 Business Directory Records
Road or Area Matches

Records from the 1950 UBD Business Directory, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published:

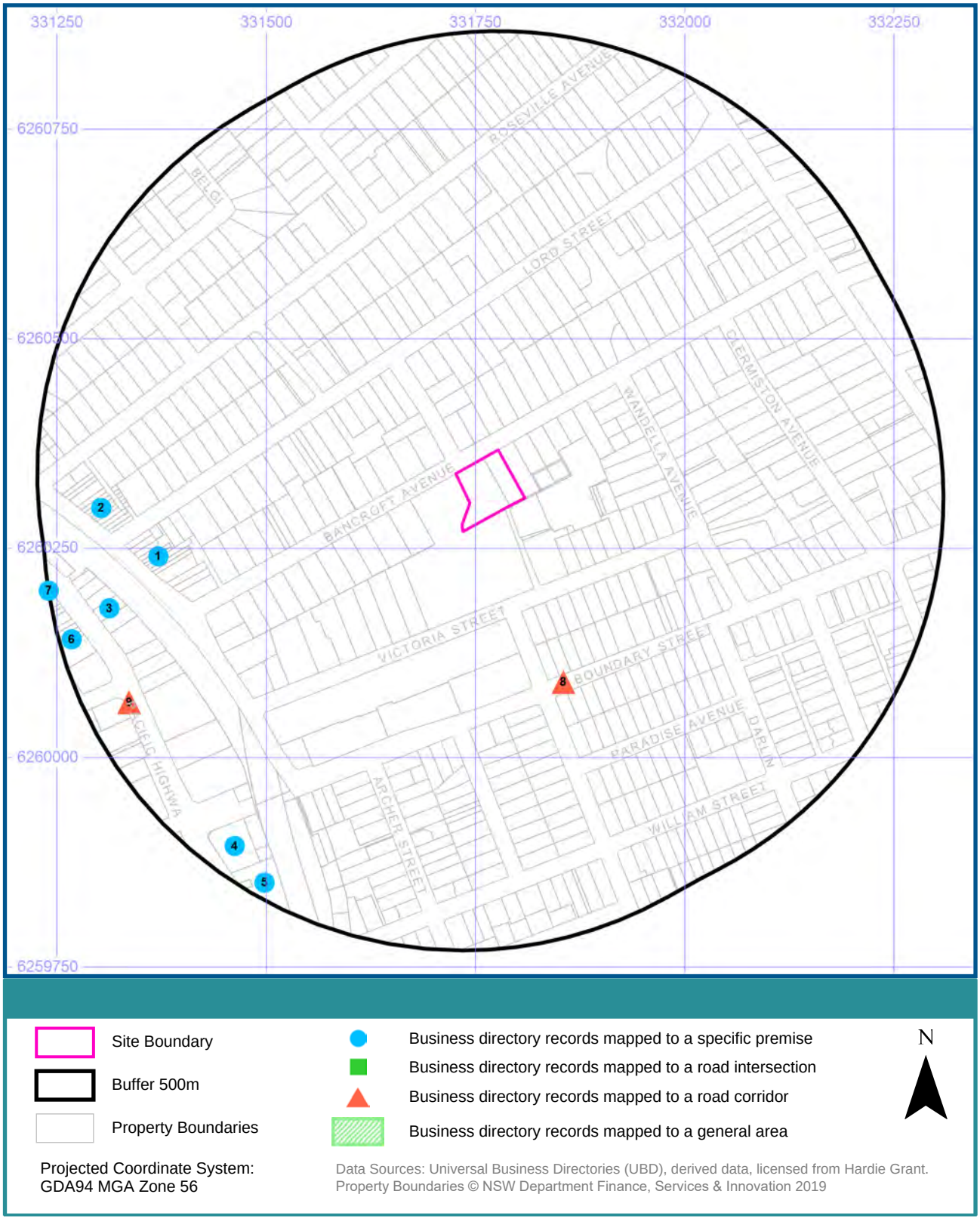
Map Id	Business Activity	Premise	Ref No.	Location Confidence	Distance to Road Corridor or Area
6	ELECTRICAL SUPPLIES & APPLIANCES RETAILERS	Farrell, H. J. and G. E., Lord St., Roseville	38515	Road Match	149m
	RADIO SALES &/OR SERVICEMEN	Farrell, H. J. and G. E., Lord St., Roseville	97189	Road Match	149m
	TAXIS	Roseville Taxi Service, Lord St., Roseville	107477	Road Match	149m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Dry Cleaners, Motor Garages & Service Stations (1948-1993)



Site Boundary

Buffer 500m

Property Boundaries

Business directory records mapped to a specific premise

Business directory records mapped to a road intersection

Business directory records mapped to a road corridor

Business directory records mapped to a general area

N

Projected Coordinate System:
GDA94 MGA Zone 56

Data Sources: Universal Business Directories (UBD), derived data, licensed from Hardie Grant.
Property Boundaries © NSW Department Finance, Services & Innovation 2019

Historical Business Directories

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Dry Cleaners, Motor Garages & Service Stations Premise or Road Intersection Matches (1948-1993)

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a premise or road intersection, within the dataset buffer.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
1	DRY CLEANERS, PRESSERS & DYERS	Lyke-Nu Dry Cleaning Co. Ltd. 25 Hill St., Roseville	35475	1950	Premise Match	347m	West
	DRY CLEANERS, PRESSERS & DYERS.	Lyke-Nu Dry Cleaning Co. Ltd., 25 Hill St Roseville	17312	1948-49	Premise Match	347m	West
2	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St Roseville	53270	1988	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service, 49 Hill St., Roseville. 2069	25498	1986	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St Roseville	38774	1985	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St_ Roseville	22166	1984	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service, 49 Hill St., Roseville	8760	1983	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.(D8500)	Roseville Valet Service, 49 Hill St., Roseville. 2069.	24030	1982	Premise Match	409m	West
	DRY CLEANERS & PRESSERS.	Roseville Valet Service., 49 Hill St Roseville	63520	1981	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	50002	1980	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	35540	1979	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS	Roseville Valet Service, 49 Hill St., Roseville.	20940	1978	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	23789	1976	Premise Match	409m	West
	DRY CLEANERS, PRESSERS&/OR DYERS.	Roseville Valet Service, 49 Hill St., Roseville.	24313	1975	Premise Match	409m	West
	DRY CLEANERS, PRESSERS &/OR DYERS.	Roseville Valet Service., 49 Hill St Roseville	7224	1972	Premise Match	409m	West
3	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Auto Centre., 75 Pacific Highway Roseville	46273	1979	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Auto Centre, 75 Pacific Hway, Roseville.	50773	1978	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Auto Centre., 75 Pacific Highway Roseville	34840	1976	Premise Match	411m	West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
3	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Centre, 73 Pacific H'way, Roseville.	59487	1975	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Centre., 75 Pacific Highway Roseville	12992	1972	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS	Roseville Auto Repairs.,75 Pacific Highway Roseville	48611	1964	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS.	Roseville Auto Repairs.,75 Pacific Highway Roseville	33360	1962	Premise Match	411m	West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Auto Repairs.,75 Pacific Highway Roseville	38649	1962	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS	Roseville Auto Repairs, 75 Pacific Highway. ROSEVILLE	348061	1961	Premise Match	411m	West
	MOTOR GARAGES & ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	19924	1959	Premise Match	411m	West
	MOTOR GARAGE/ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	4895	1958	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	61421	1956	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Rose Ville	54037	1954	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., -75 Pacific Highway Roseville	40617	1953	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Auto Repairs., 75 Pacific Highway Roseville	32185	1952	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS	Roseville Auto Repairs, 75 Pacific Highway., Roseville	84316	1950	Premise Match	411m	West
	MOTOR GARAGES &/OR ENGINEERS	Roseville Auto Repairs, 75 Pacific Highway., Roseville	84317	1950	Premise Match	411m	West
	MOTOR SERVICE STATIONS-PETROL, Etc.	Roseville Auto Repairs, 75 Pacific Highway., Roseville	86359	1950	Premise Match	411m	West
4	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Service Centre Boundary St., Roseville	34843	1976	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre Pty. Ltd., Cnr. Pacific H'way & Boundary St.,	58303	1975	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre, Boundary St, Roseville.	59490	1975	Premise Match	431m	South West
	MOTOR SERVICE STATIONS - PETROL, OIL	Roseville Service Centre, Boundary St., Roseville.	61925	1975	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Rosebery	12986	1972	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Roseville	12994	1972	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	12988	1972	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Rosebery	62651	1971	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Boundary St Roseville	62657	1971	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	62653	1971	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS(M6S6)	Roseville Service Centre, Boundary St. Roseville	338545	1970	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS.	Roseville Service Centre., Boundary St Rosebery	47092	1969	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS.	Roseville Service Centre., Boundary St Roseville	47097	1969	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	47094	1969	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	1773	1966	Premise Match	431m	South West

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Property Boundary or Road Intersection	Direction
4	Motor Service Stations - Petrol, Oil, Etc.	Roseville Service Centre, Cnr. Pacific Highway. & Boundary St. Roseville	126120	1965	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary St Roseville	52373	1964	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary St Roseville	52374	1964	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary St Roseville	38646	1962	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL, OIL, ETC.	Roseville Service Centre.,Cnr Pacific Highway & Boundary Sts Roseville	38650	1962	Premise Match	431m	South West
	MOTOR GARAGES & ENGINEERS	McGill Motor Co., Boundary St. & Pacific Highway. ROSEVILLE	347675	1961	Premise Match	431m	South West
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Roseville Service Centre Cnr. Pacific Highway. & Boundary St. ROSEVILLE	351041	1961	Premise Match	431m	South West
	MOTOR SERVICE STATIONS—PETROL, OIL, Etc.	Roseville Service Centre, Cnr. Pacific Highway. & Boundary Sts. ROSEVILLE	351042	1961	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Roseville Service Centre., Cnr Pacific Highway & Boundary St Roseville	24534	1959	Premise Match	431m	South West
	MOTOR SERVICE STATIONS-PETROL,. OIL, ETC.	Roseville Service Centre., Cnr Pacific Highway & Boundary Sts Roseville	24537	1959	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS.	McGill Motor Co., Boundary St. & Pacific Hghwy., Rsvle	40302	1953	Premise Match	431m	South West
	MOTOR GARAGES &/OR ENGINEERS	McGill Motor-Co., Boundary St. and Pacific Highway., Roseville	84061	1950	Premise Match	431m	South West
5	MOTOR SERVICE STATIONS-PETROL, Etc.	Seymours Service Station Pty. Ltd., 991 Pacific Highway., Chatswood	86385	1950	Premise Match	450m	South West
6	DRY CLEANERS, PRESSERS & DYERS	London Dry Cleaners, 66a Pacific Highway., Roseville	35436	1950	Premise Match	469m	West
	DRY CLEANERS, PRESSERS & DYERS.	London Dry Cleaners, 66A Pacific Highway Roseville	17291	1948-49	Premise Match	469m	West
7	DRY CLEANERS, PRESSERS & DYERS	Lindfield Laundry and Dry Cleaners Pty. Ltd. 88 Pacific Highway., Roseville	35416	1950	Premise Match	499m	West
	DRY CLEANERS, PRESSERS & DYERS.	Lindfield Laundry And Dry Cleaners Pty. Ltd., 88 Pacific Highway Roseville	17279	1948-49	Premise Match	499m	West

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Dry Cleaners, Motor Garages & Service Stations
Road or Area Matches (1948-1993)

Dry Cleaners, Motor Garages & Service Stations from UBD Business Directories, mapped to a road or an area, within the dataset buffer. Records are mapped to the road when a building number is not supplied, cannot be found, or the road has been renumbered since the directory was published.

Note: The Universal Business Directories were published between 1948 and 1993. Dry Cleaners, Motor Garages & Service Stations have been extracted from all of these directories except the following years 1951, 1955, 1957, 1960, 1963, 1973, 1974, 1977, 1987.

Map Id	Business Activity	Premise	Ref No.	Year	Location Confidence	Distance to Road Corridor or Area
8	MOTOR GARAGES &/OR ENGINEERS.	Jackson's Garage & Service Station., Boundary St Rsvle	31797	1952	Road Match	203m
	MOTOR GARAGES &/OR ENGINEERS	Jackson's Garage and Service Station, Boundary St., Roseville	83919	1950	Road Match	203m
	MOTOR GARAGES &/OR ENGINEERS.	Jackson's Garage And Service Station., Boundary St Roseville	22497	1948-49	Road Match	203m
9	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Station Pty Ltd. (Mobil)., Boundary St Roseville	20294	1993	Road Match	428m
	Motor Garages & Service Stations	Roseville Self Service Station Pty. Ltd. (Mobil), Boundary St., Roseville 2069	97774	1991	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Station Pty. Ltd. (Mobil)., Boundary St Roseville	12061	1990	Road Match	428m
	MOTOR GARAGE & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil)., Boundary St Roseville	5483	1989	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil)., Boundary St Roseville	59871	1988	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., (Mobil), Boundary St., Roseville. 2069	65370	1986	Road Match	428m
	MOTOR GARAGES & SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil)., Boundary St Roseville	45487	1985	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil)., Boundary St Roseville	34056	1984	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd (Mobil)., Boundary St Roseville	21507	1983	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS. (M6860)	Roseville Self Service Centre Pty. Ltd., (Mobil), Boundary St., Roseville. 2069.	57498	1982	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., Boundary St Roseville	58773	1980	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., Boundary St., Roseville	46275	1979	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS &/OR SERVICE STATIONS.	Roseville Self Service Centre Pty. Ltd., Boundary St, Roseville.	50775	1978	Road Match	428m
	MOTOR GARAGES &/OR ENGINEERS	“Waters Service Station”, Pacific Highway., Roseville	83345	1950	Road Match	428m
	MOTOR SERVICE STATIONS-PETROL, Etc.	McGill Motor Co., Pacific Highway., Roseville	86189	1950	Road Match	428m

Business Directory Content Derived from Universal Business Directories (UBD) - Licensed from Hardie Grant

Aerial Imagery 2009

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Scale:
0 25 50 100
Meters

Data Source Aerial Imagery: © 2019 Google Inc, used with permission. Google and the Google logo are registered trademarks of Google Inc.

Coordinate System:
GDA 1994 MGA Zone 56

Date: 19 March 2019

Aerial Imagery 2005

29 & 37 Bancroft Avenue, Roseville, NSW 2069

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Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Aerial Imagery 1991

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Data Sources: Aerial Imagery © Department of Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Aerial Imagery 1982

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Data Sources: Aerial Imagery © Department of Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Aerial Imagery 1970

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Data Sources: Aerial Imagery © Department of Finance, Services & Innovation

Coordinate System: GDA 1994 MGA Zone 56

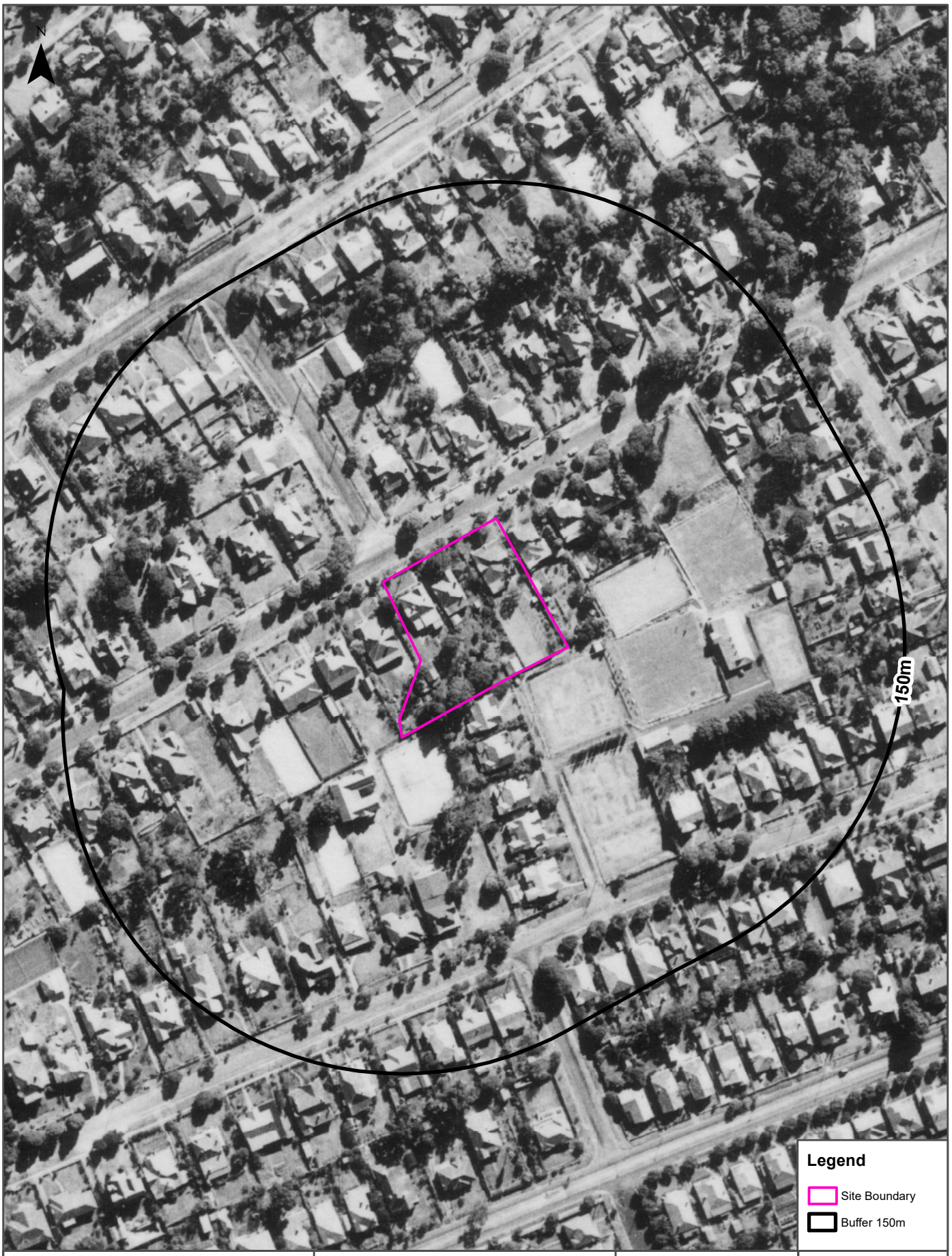
Date: 20 March 2019

Aerial Imagery 1965

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Aerial Imagery 1961

29 & 37 Bancroft Avenue, Roseville, NSW 2069

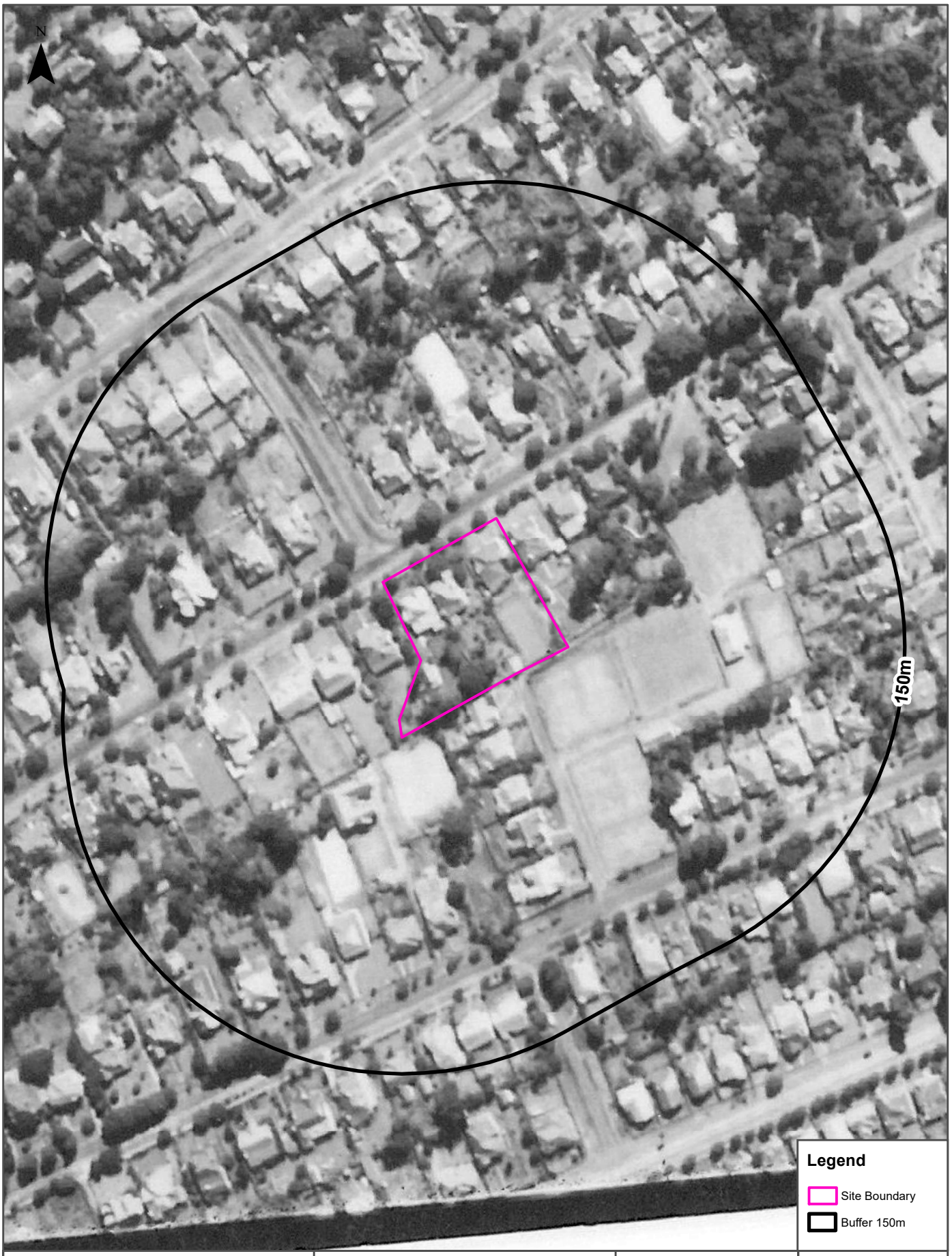


Aerial Imagery 1956

29 & 37 Bancroft Avenue, Roseville, NSW 2069

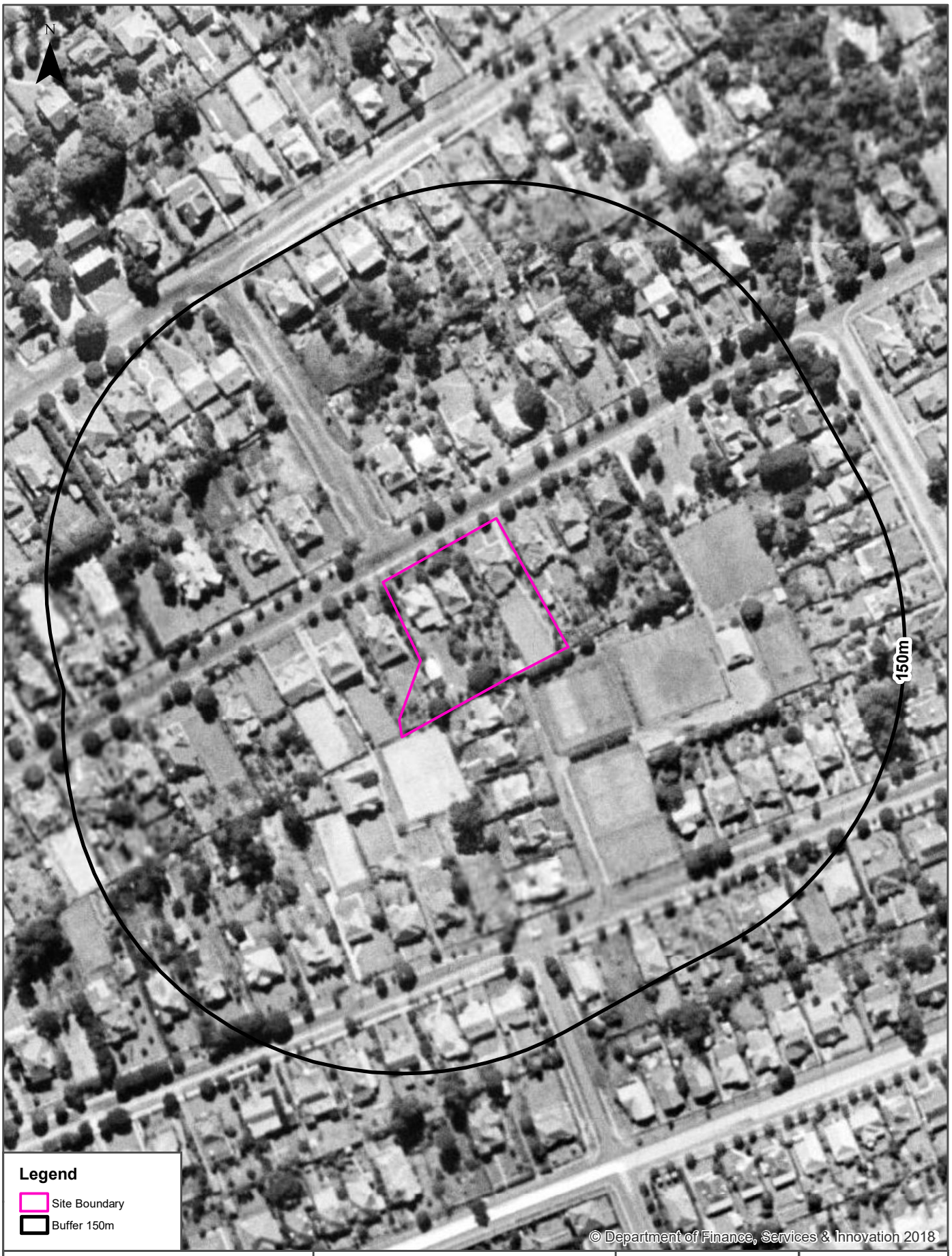
Aerial Imagery 1951

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Aerial Imagery 1943

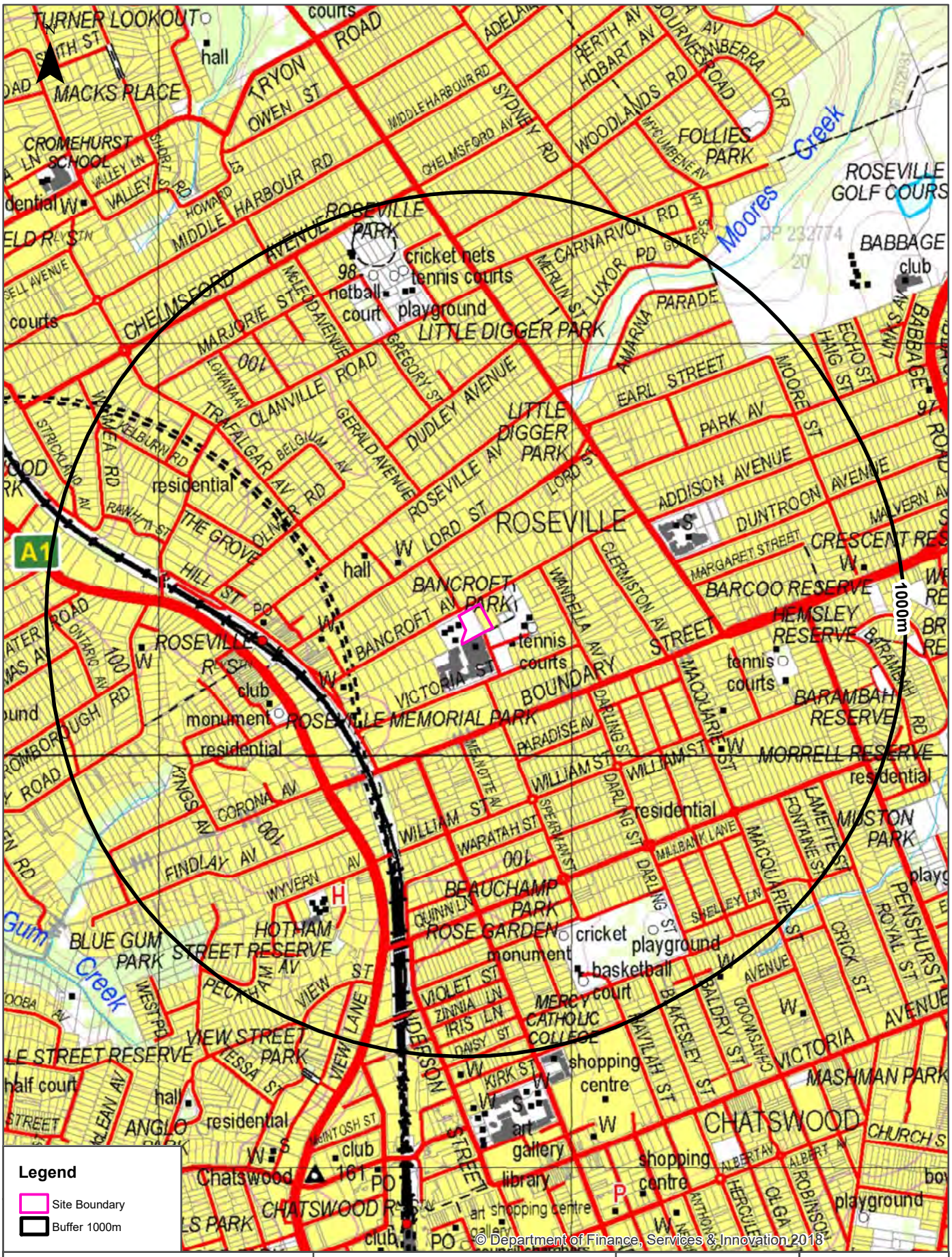
29 & 37 Bancroft Avenue, Roseville, NSW 2069



Scale: 0 25 50 100 Metres	Data Sources: Aerial Imagery © Department of Finance, Services & Innovation	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 March 2019

Topographic Map 2015

29 & 37 Bancroft Avenue, Roseville, NSW 2069

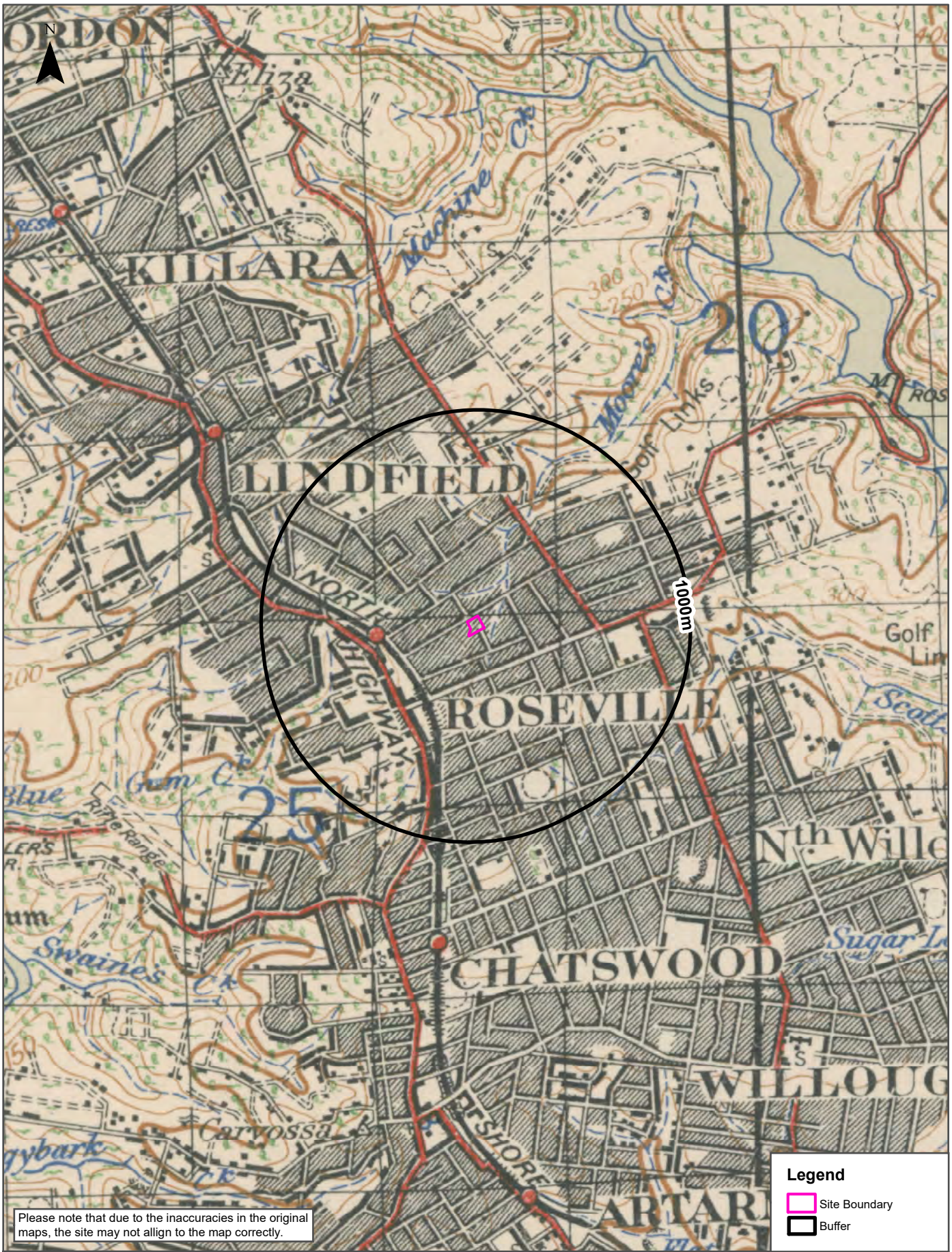


Historical Map 1975

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Historical Map c.1936

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Scale: 0 125 250 500 750 1,000 1,250 Meters

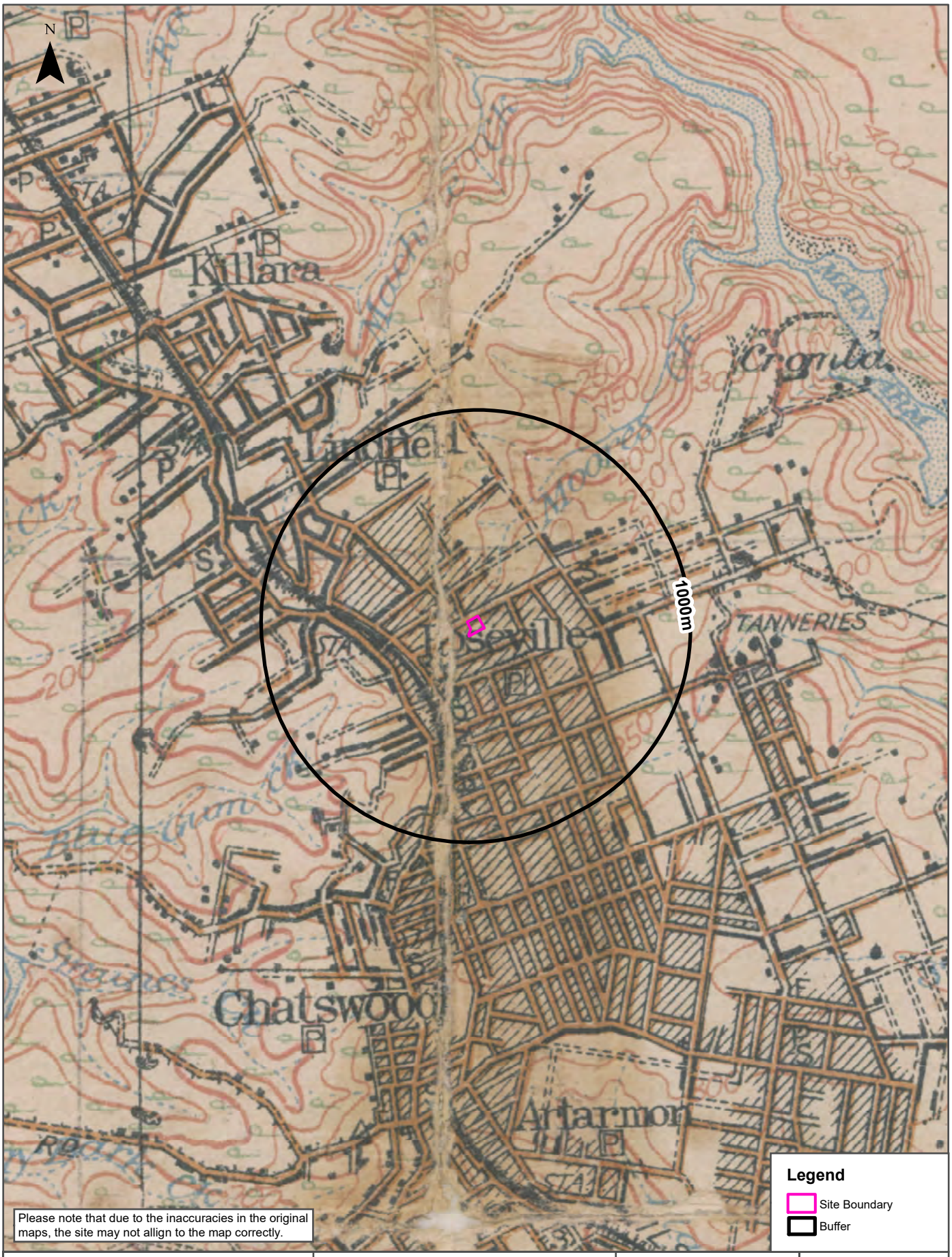
Data Sources: Australia 1:63360, Produced by Australian Section Imperial General Staff

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

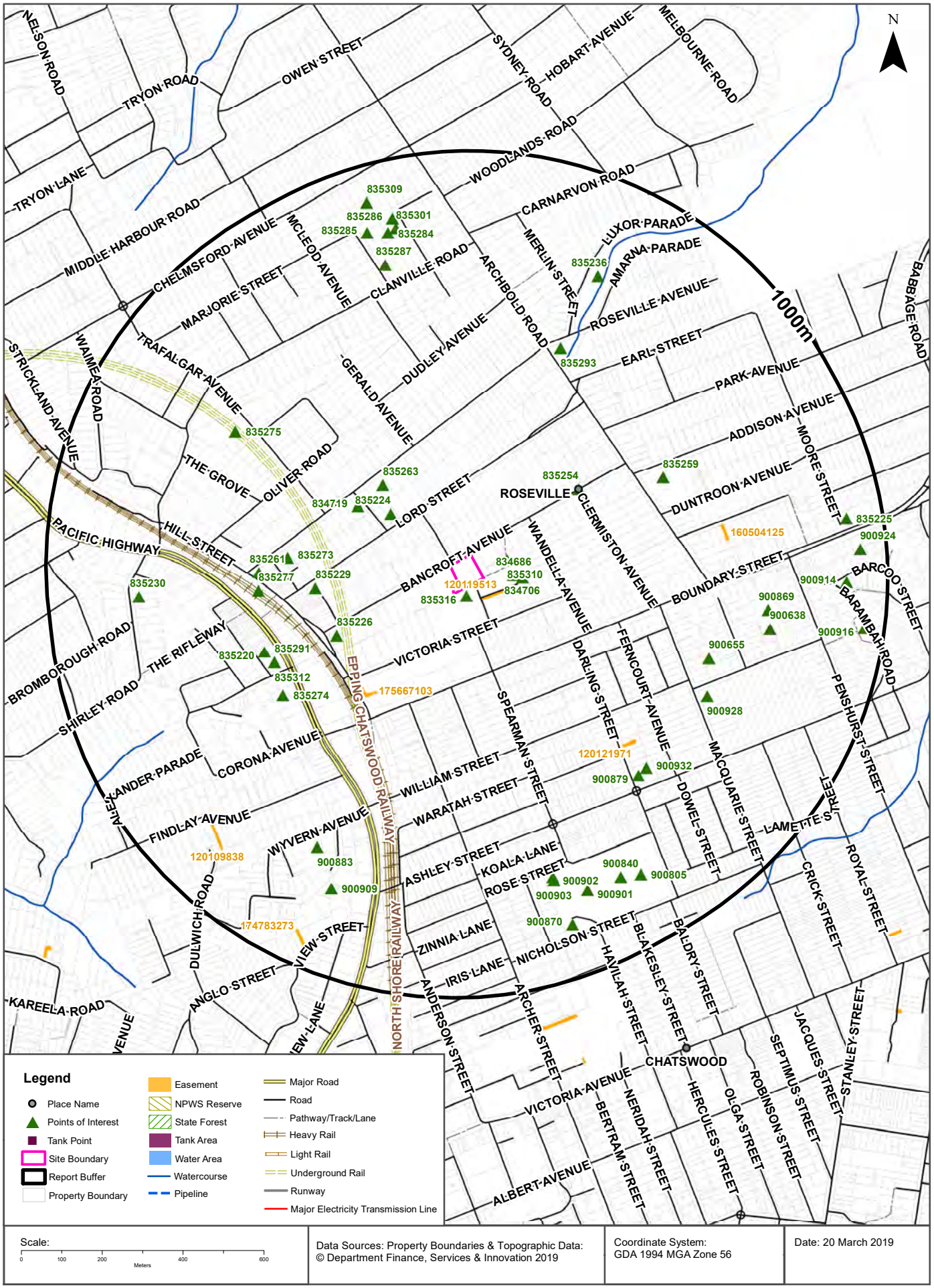
Historical Map c.1917

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Legend

Place Name	Easement	Major Road
Points of Interest	NPWS Reserve	Road
Tank Point	State Forest	Pathway/Track/Lane
Site Boundary	Tank Area	Heavy Rail
Report Buffer	Water Area	Light Rail
Property Boundary	Watercourse	Underground Rail
	Pipeline	Runway
		Major Electricity Transmission Line

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Points of Interest

What Points of Interest exist within the dataset buffer?

Map Id	Feature Type	Label	Distance	Direction
835316	Combined Primary-Secondary School	ROSEVILLE COLLEGE	20m	South
835310	Park	BANCROFT PARK	73m	East
834686	Community Facility	ROSEVILLE LAWN TENNIS CLUB	75m	East
834706	Community Facility	KU-RING-GAI ART CENTRE	75m	East
835292	Sports Court	TENNIS COURTS	96m	East
835224	Place Of Worship	PRESBYTERIAN CHURCH	195m	North West
835263	Retirement Village	HEATHER BRAE	260m	North West
834719	Community Facility	1ST ROSEVILLE SCOUT HALL	272m	North West
835226	Place Of Worship	ANGLICAN CHURCH	307m	South West
835254	Suburb	ROSEVILLE	312m	North East
835229	Place Of Worship	METHODIST CHURCH	338m	West
835273	Retirement Village	QUAMBIE SELF CARE UNITS KOPWA	402m	West
835261	Post Office	ROSEVILLE POST OFFICE	473m	West
835312	Park	ROSEVILLE MEMORIAL PARK	474m	South West
835291	Monument	ROSEVILLE WAR MEMORIAL	474m	South West
835277	Railway Station	ROSEVILLE RAILWAY STATION	478m	West
835220	Club	ROSEVILLE RETURNED SERVICEMENS MEMORIAL CLUB	489m	West
835274	Community Home	BUPA ROSEVILLE	491m	South West
835259	Primary School	ROSEVILLE PUBLIC SCHOOL	509m	North East
835293	Park	LITTLE DIGGER PARK	558m	North East
900655	Community Facility	CHATSWOOD HALL ROSEVILLE	592m	East
900932	Nursing Home	ASHLEY HOUSE PTY LTD	620m	South East
900879	Retirement Village	ASHLEY HOUSE APARTMENTS	622m	South East
900928	Place Of Worship	ANGLICAN CHURCH	626m	South East
835275	Community Home	ARCHBOLD HOUSE HOSTEL	627m	North West
900869	Sports Court	TENNIS COURTS	708m	East
900883	General Hospital	HIRONDELLE PRIVATE HOSPITAL	712m	South West
900638	Community Facility	KOOROORA TENNIS CLUB	720m	East
900902	Park	BEAUCHAMP PARK ROSE GARDEN	743m	South
835287	Park	PLAYGROUND	748m	North

Map Id	Feature Type	Label	Distance	Direction
900903	Monument	REG MCMAHON SUN DIAL MEMORIAL	752m	South
835236	Park	LITTLE DIGGER PARK	758m	North East
835230	Place Of Worship	Place Of Worship	773m	West
900909	Park	HOTHAM STREET RESERVE	789m	South West
900901	Sports Field	CRICKET	805m	South
900840	Park	BEAUCHAMP PARK	814m	South East
835284	Sports Court	MULTIPURPOSE COURT	822m	North
835301	Sports Court	TENNIS COURTS	828m	North
900805	Picnic Area	PLAYGROUND	832m	South East
835285	Sports Court	NETBALL COURT	836m	North
835286	Sports Field	CRICKET NETS	853m	North
900870	Sports Court	BASKETBALL COURT	870m	South
900914	Park	HEMSLEY RESERVE	898m	East
835309	Sports Field	ROSEVILLE PARK	909m	North
835225	Place Of Worship	Place Of Worship	909m	East
900924	Park	BARCOO RESERVE	935m	East
900916	Park	BARAMBAH RESERVE	950m	East

Topographic Data Source: © Land and Property Information (2015)
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Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Tanks (Areas)

What are the Tank Areas located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks (Points)

What are the Tank Points located within the dataset buffer?
Note. The large majority of tank features provided by LPI are derived from aerial imagery & are therefore primarily above ground tanks.

Map Id	Tank Type	Status	Name	Feature Currency	Distance	Direction
	No records in buffer					

Tanks Data Source: © Land and Property Information (2015)
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Major Easements

What Major Easements exist within the dataset buffer?
Note. Easements provided by LPI are not at the detail of local governments. They are limited to major easements such as Right of Carriageway, Electrical Lines (66kVa etc.), Easement to drain water & Significant subterranean pipelines (gas, water etc.).

Map Id	Easement Class	Easement Type	Easement Width	Distance	Direction
120119513	Primary	Undefined		44m	South East
175667103	Primary	Right of way	Var	308m	South West
120121971	Primary	Undefined		539m	South East
160504125	Primary	Right of way	variable	602m	East
120109838	Primary	Undefined		823m	South West
174783273	Primary	Right of way	4m	915m	South West

Easements Data Source: © Land and Property Information (2015)
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Topographic Features

29 & 37 Bancroft Avenue, Roseville, NSW 2069

State Forest

What State Forest exist within the dataset buffer?

State Forest Number	State Forest Name	Distance	Direction
N/A	No records in buffer		

State Forest Data Source: © NSW Department of Finance, Services & Innovation (2018)
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National Parks and Wildlife Service Reserves

What NPWS Reserves exist within the dataset buffer?

Reserve Number	Reserve Type	Reserve Name	Gazetted Date	Distance	Direction
N/A	No records in buffer				

NPWS Data Source: © NSW Department of Finance, Services & Innovation (2018)
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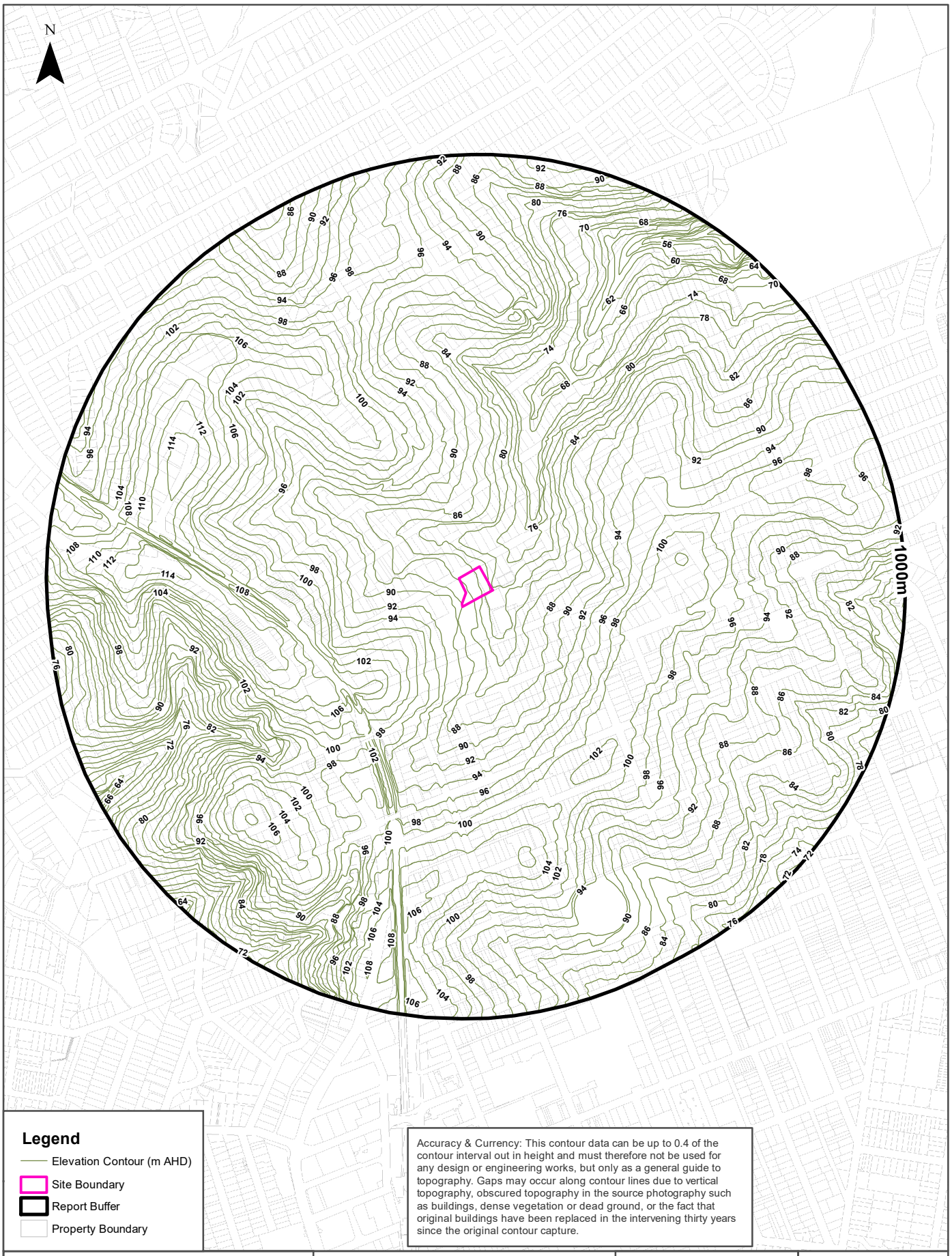
Elevation Contours (m AHD)

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Hydrogeology & Groundwater

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive aquifers of low to moderate productivity

Description of aquifers within the dataset buffer:

Description
Porous, extensive aquifers of low to moderate productivity

Hydrogeology Map of Australia : Commonwealth of Australia (Geoscience Australia)
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Botany Groundwater Management Zones

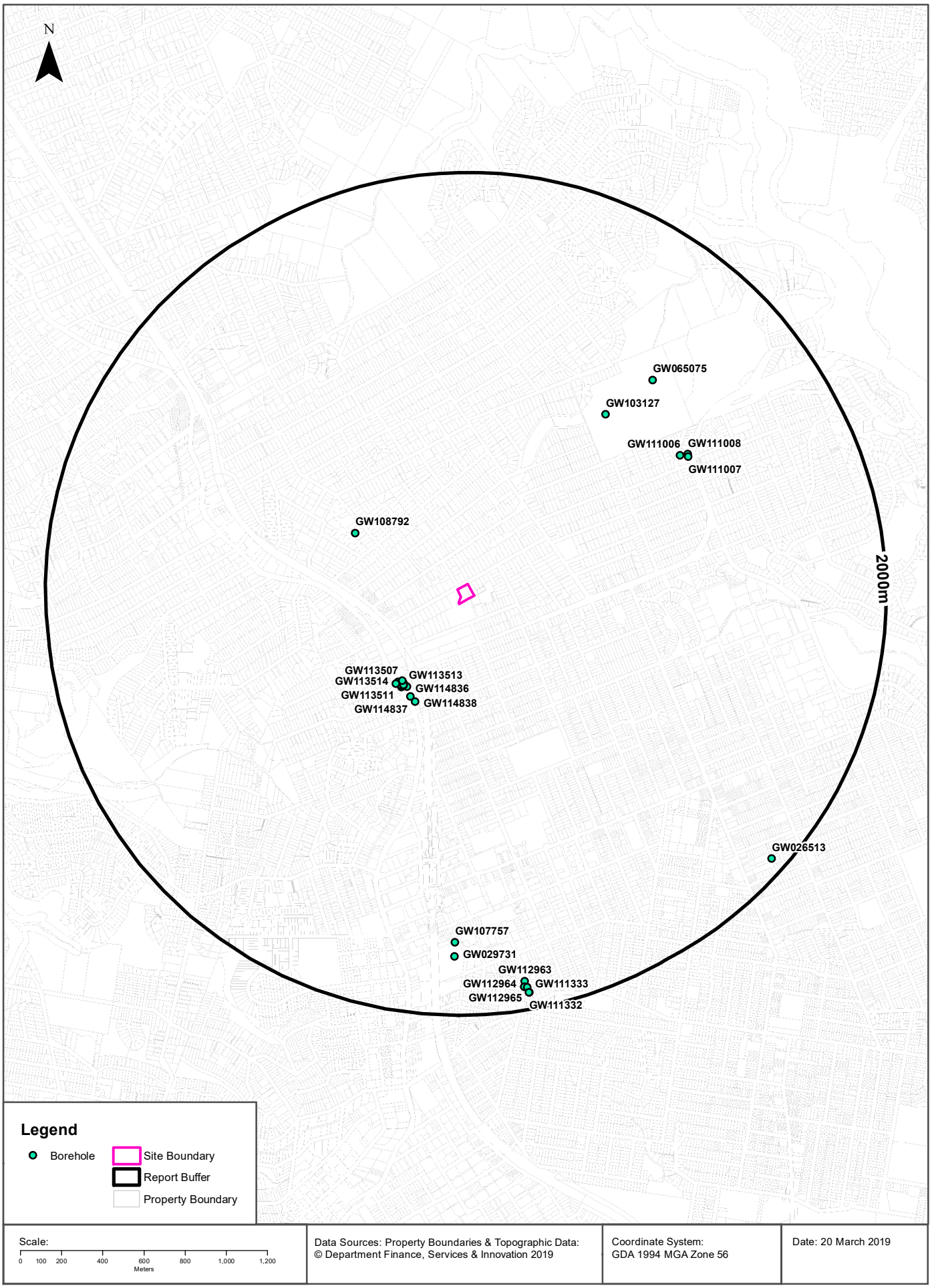
Groundwater management zones relating to the Botany Sand Beds aquifer within the dataset buffer:

Management Zone No.	Restriction	Distance	Direction
N/A	No records in buffer		

Botany Groundwater Management Zones Data Source : NSW Department of Primary Industries

Groundwater Boreholes

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Hydrogeology & Groundwater

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Groundwater Boreholes

Boreholes within the dataset buffer:

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW113510	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	7.80	7.80					464m	South West
GW113512	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	8.00	8.00					471m	South West
GW113513	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	2.80	2.80					473m	South West
GW114836	10BL604596	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2011	15.00	15.00		8.80			475m	South West
GW113509	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	3.00	3.00					478m	South West
GW113508	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	7.50	7.50					479m	South West
GW113507	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	7.60	7.60					480m	South West
GW113506	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	3.10	3.10					485m	South West
GW113505	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	31/08/2004	8.00	8.00					486m	South West
GW113511	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	01/09/2004	8.00	8.00					491m	South West
GW113514	10BL164807	Bore	Private	Monitoring Bore	Monitoring Bore	Mobil	06/09/2004	8.60	8.60					494m	South West
GW114837	10BL604596	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2011	5.00	5.00		2.60			509m	South West
GW114838	10BL604596	Bore	Private	Monitoring Bore	Monitoring Bore		30/07/2011	9.70	9.70		3.90			521m	South West
GW108792	10BL601685, 10WA109199	Bore	Private	Domestic	Domestic		25/05/2007	174.00	174.00	2800	65.00	0.300		564m	North West
GW103127	10BL159693, 10CA109365	Bore		Irrigation, Recreation (groundwater)	Recreation (groundwater)		31/07/2000	138.00	138.00	Fresh				1062m	North East
GW111006	10BL603947	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/2010	7.50	7.50		3.80			1207m	North East
GW111007	10BL603947	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/2010	7.50	7.50		3.80			1237m	North East
GW111008	10BL603947	Bore	Private	Monitoring Bore	Monitoring Bore		19/04/2010	7.50	7.50		3.80			1241m	North East
GW065075	10BL154122, 10CA109365	Bore	Private	Irrigation, Recreation (groundwater)	Irrigation, Recreation (groundwater)		15/02/1994	150.00	150.00	Fresh	44.00	6.000		1337m	North East
GW107757	10BL165399, 10BL602036, 10WA109507	Bore		Recreation (groundwater), Test Bore	Recreation (groundwater)		29/07/2005	162.60	162.60	1360	25.60	0.300		1646m	South
GW029731	10BL019677	Bore open thru rock	Local Govt	Recreation (groundwater)	Recreation (groundwater)		01/04/1967	21.60	21.60					1715m	South
GW112963	10BL605047	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Willoughby CC	15/03/2012	9.00	9.00					1863m	South

GW No.	Licence No	Work Type	Owner Type	Authorised Purpose	Intended Purpose	Name	Complete Date	Final Depth (m)	Drilled Depth (m)	Salinity (mg/L)	SWL (m)	Yield (L/s)	Elev (AHD)	Dist	Dir
GW112964	10BL605047	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Willoughby CC	15/03/2012	2.00	2.00					1890m	South
GW112965	10BL605047	Bore	Local Govt	Monitoring Bore	Monitoring Bore	Willoughby CC	15/03/2012	9.00	9.00					1894m	South
GW111332	10BL604464	Bore	Other Govt	Monitoring Bore	Monitoring Bore		24/01/2011	3.20	3.20					1920m	South
GW111333	10BL604464	Bore	Private	Monitoring Bore	Monitoring Bore		24/01/2011	9.00	9.00					1920m	South
GW026513	10BL019159	Bore open thru rock	Private	Recreation (groundwater)	Irrigation		01/12/1966	64.00	64.00	Fresh				1930m	South East

Borehole Data Source : NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation for all bores prefixed with GW. All other bores © Commonwealth of Australia (Bureau of Meteorology) 2015. Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Hydrogeology & Groundwater

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Driller's Logs

Drill log data relevant to the boreholes within the dataset buffer:

Groundwater No	Drillers Log	Distance	Direction
GW114836	0.00m-0.60m COMPACTED GRAVEL / BALLAST 0.60m-2.00m COMPACTED GRAVEL / BALLAST 2.00m-2.20m CLAY LIGHT RED BROWN 2.20m-3.00m CLAY WHITE RED 3.00m-4.50m CLAY GREY VERY HARD 4.50m-6.00m CLAY GREY 6.00m-9.00m SHALE GREY VERY HARD CLAY 9.00m-15.00m SHALE VERY WEATHERED GREY SHALE	475m	South West
GW114837	0.00m-0.20m GRAVEL COMPACTED 0.20m-1.40m NON DESTRUCTIVE EXCAVATIONS,GRAVEL 1.40m-2.50m CLAY YELLOW 2.50m-3.80m CLAY RED GREY 3.80m-5.00m CLAY RED, WEATHERED ROCK	509m	South West
GW114838	0.00m-0.20m SAND GRAVEL 0.20m-1.60m COMPACTED BALLAST,SAND GRAVEL 1.60m-2.80m CLAY RED YELLOW 2.80m-3.90m CLAY RED GREY 3.90m-6.00m CLAY RED/WHITE,SOME WET ROCKS 6.00m-7.00m ROCK AND CLAY RED WEATHERED 7.00m-7.50m ROCK WHITE WEATHERED 7.50m-8.00m SHALE ORANGE WHEATHERED 8.00m-9.70m SHALE MUDDY WEATHERED	521m	South West
GW108792	0.00m-4.00m clay 4.00m-15.00m shale 15.00m-52.00m sandstone, grey 52.00m-54.00m sandstone, quartz 54.00m-70.00m sandstone, grey 70.00m-75.00m sandstone, quartz 75.00m-76.00m shale 76.00m-80.00m sandstone, shale bands 80.00m-89.00m sandstone, grey 89.00m-90.00m shale 90.00m-94.00m sandstone, siltstone band 94.00m-110.00m sandstone, grey 110.00m-112.00m sandstone, quartz 112.00m-130.00m sandstone, grey 130.00m-131.00m sitlstone 131.00m-132.00m sandstone, grey 132.00m-135.50m sandstone, quartz 135.50m-145.00m sandstone, grey 145.00m-152.20m sandstone, quartz 152.20m-161.00m sandstone, grey 161.00m-168.00m sandstone, quartz 168.00m-174.00m sandstone, grey	564m	North West
GW103127	0.00m-0.50m TOPSOIL 0.50m-1.50m SANDY CLAY 1.50m-5.20m SANDSTONE YELLOW 5.20m-39.70m SANDSTONE GREY 39.70m-40.10m SANDSTONE GREY W.B. 40.10m-70.40m SANDSTONE GREY 70.40m-74.00m SANDSTONE GREY 74.00m-130.50m SANDSTONE GREY 130.50m-132.20m SANDSTONE GREY W.B. 132.20m-138.00m SANDSTONE GREY	1062m	North East
GW111006	0.00m-0.20m CONCRETE 0.20m-0.40m FILL,SILTY SANDY CLAY,TRACE OF IRONSTONE 0.40m-0.80m SILTY CLAY 0.80m-1.80m SHALE,/ QUARTZ 1.80m-3.50m SANDSTONE,FINE TO MEDIUM GRAINED RED. 3.50m-6.20m SANDSTONE YELLOW 6.20m-7.50m SANDSTONE,FINE TO MED.GRAINED,GREY	1207m	North East

Groundwater No	Drillers Log	Distance	Direction
GW111007	0.00m-0.20m CONCRETE SLAB:0.2m 0.20m-0.60m FILL,SILTY SAND,FINE TO MED.GRAINED,YELLOW 0.60m-0.70m CONCRETE SLAB:0.1m 0.70m-1.60m FILL,SILTY SAND,CLAY,IRONSTONE,GRAVEL 1.60m-3.00m SHALE,GREY WITH CLAY BANDS,GREY AND ORANGE 3.00m-4.40m SANDSTONE FINE TO MED. GRAINED,GREY AND ORANGE 4.40m-5.40m SANDSTONE WITH SHALE BANDS 5.40m-7.50m SANDSTONE FINE TO MEDIUM GRAINED.ORANGE WITH CLAY BANDS	1237m	North East
GW111008	0.00m-0.20m CONCRETE SLAB:0.15m 0.20m-1.80m FILL,AS ABOVE,TRACE OF IRONSTONE AND IGNEOUS GRAVEL 1.80m-4.20m SANDSTONE FINE TO MEDIUM GRAINED,RED WITH GREY CLAY BANDS. 4.20m-6.40m SANDSTONE,FINE TO MEDIUM GRAINED,LIGHT YELLOW 6.40m-7.50m SANDSTONE FINE TO MEDIUM GRAINED,DARK BROWN WITH CLAY BANDS.	1241m	North East
GW065075	 137.00m-147.00m SHALE DARK GREY 147.00m-150.00m SANDSTONE GREY DARK	1337m	North East
GW107757	0.00m-1.40m FILL 1.40m-4.30m CLAY:BROWN,RED, WHITE 4.30m-5.10m SHALE; BROWN,WEATHERED 5.10m-5.50m CLAY BROWN 5.50m-16.80m SHALE GREY 16.80m-18.50m SANDSTONE GREY,SHALE GREY 18.50m-28.70m SANDSTONE GREY 28.70m-29.00m SANDSTONE GREY,FRACTURED 29.00m-42.40m SANDSTONE L/GREY 42.40m-42.80m SILTSTONE D/GREY 42.80m-51.10m SANDSTONE L/GREY 51.10m-65.70m SANDSTONE L/GREY,QUARTZ 65.70m-66.70m SHALE,GREY,SILTY 66.70m-74.60m SANDSTONE L/GREY 74.60m-76.10m SANDSTONE L/GREY 76.10m-76.30m SHALE L/GREY,SOFT 76.30m-88.00m SANDSTONE L/GREY 88.00m-88.60m SHALE,SILTY,D/GREY 88.60m-162.60m SANDSTONE L/GREY,GREY	1646m	South
GW029731	0.00m-3.45m Clay Red Sandy 0.00m-3.45m Gravel 0.00m-3.45m Boulders Large 3.45m-6.70m Ironstone Gravel 3.45m-6.70m Clay Red Yellow Puggy Sandy 6.70m-17.98m Shale Grey Black Hard 17.98m-21.64m Sandstone Grey Very Fractured Medium-coarse 17.98m-21.64m Clay Bands	1715m	South
GW111332	0.00m-0.18m CONCRETE 0.18m-2.80m FILL,SILTY SANDY CLAY,ORANGE BROWN 2.80m-3.00m SILTY CLAY,LIGHT GREY MOTTLED RED/BROWN 3.00m-3.20m SHALE GREY WEATHERED	1920m	South
GW111333	0.00m-0.17m CONCRETE 0.17m-2.80m FILL,SILTY SANDY CLAY,ORANGE BROWN 2.80m-3.00m SILTY CLAY,LIGHT GREY MOTT.RED.BROWN 3.00m-9.00m SHALE,GREY WEATHERED	1920m	South
GW026513	0.00m-9.14m Clay Soil 9.14m-12.19m Sandstone White Soft 12.19m-13.71m Shale Water Supply 13.71m-22.86m Sandstone White Soft 22.86m-31.08m Sandstone 31.08m-35.05m Sandstone White 35.05m-36.57m Shale 36.57m-39.01m Sandstone White 39.01m-39.62m Shale 39.62m-57.91m Sandstone White 57.91m-59.43m Sandstone White Soft Water Supply 59.43m-60.35m Shale Sandy 60.35m-64.00m Driller	1930m	South East

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
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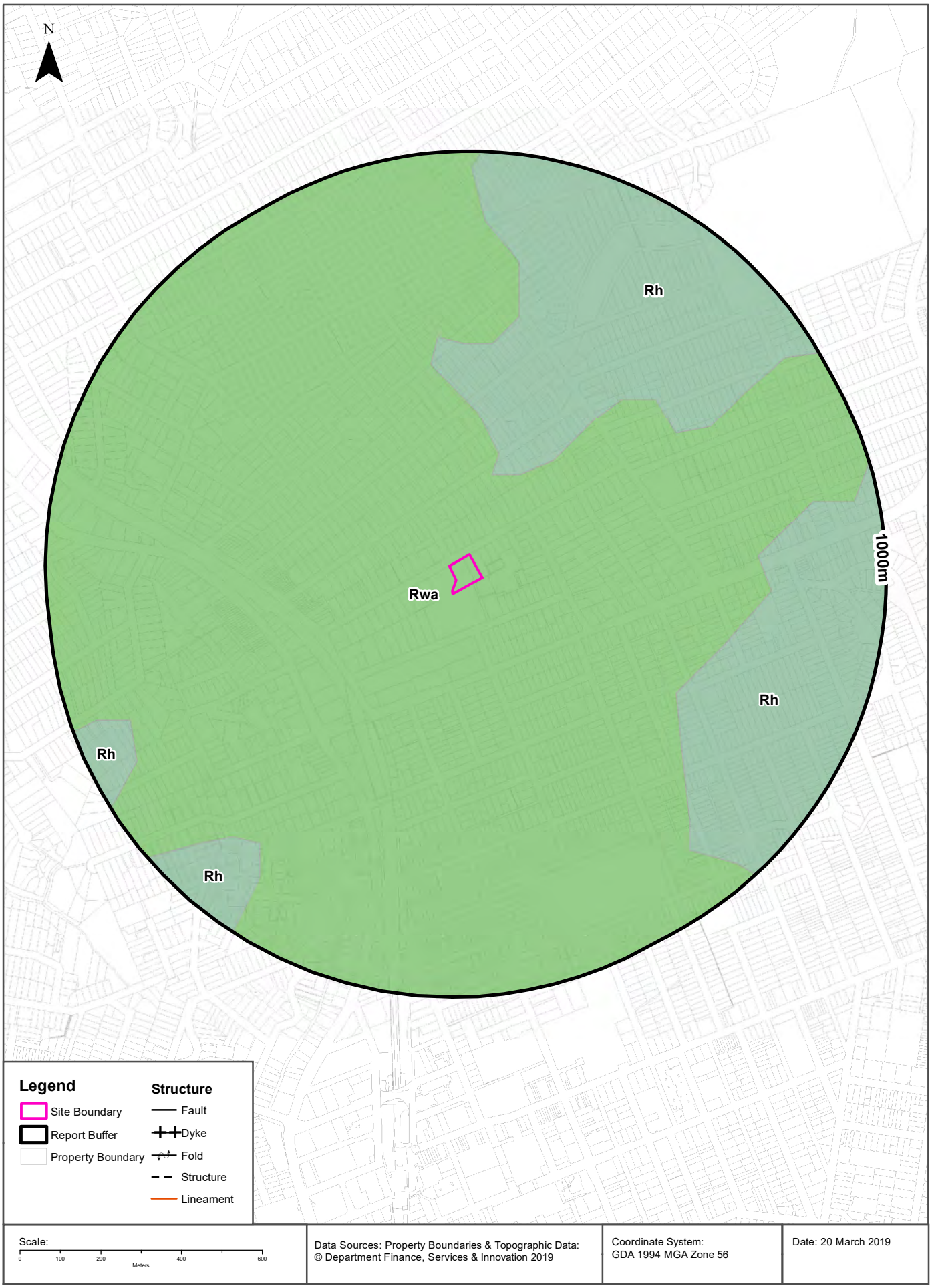
Geology 1:100,000

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Geology

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rwa7	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

What are the Geological Units within the dataset buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Rh	Medium to coarse grained quartz sandstone, very minor shale and laminate lenses				Triassic		Sydney	1:100,000
Rwa	Black to dark grey shale and laminate	Ashfield Shale	Wianamatta Group		Triassic		Sydney	1:100,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

What are the Geological Structures within the dataset buffer?

Feature	Name	Description	Map Sheet	Dataset
No features				1:100,000

Geological Data Source : NSW Department of Industry, Resources & Energy
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Naturally Occurring Asbestos Potential

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Naturally Occurring Asbestos Potential

Naturally Occurring Asbestos Potential within the dataset buffer:

Potential	Sym	Strat Name	Group	Formation	Scale	Min Age	Max Age	Rock Type	Dom Lith	Description	Dist	Dir
No records in buffer												

Mining Subsidence District Data Source: © State of New South Wales through NSW Department of Industry, Resources & Energy

Soil Landscapes

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

What are the Soil Landscapes within the dataset buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
ERgn	GLENORIE		EROSIONAL	Sydney	1:100,000
ERgy	GYMEA		EROSIONAL	Sydney	1:100,000
REbt	BLACKTOWN		RESIDUAL	Sydney	1:100,000
RElh	LUCAS HEIGHTS		RESIDUAL	Sydney	1:100,000

Soils Landscapes Data Source : NSW Office of Environment and Heritage
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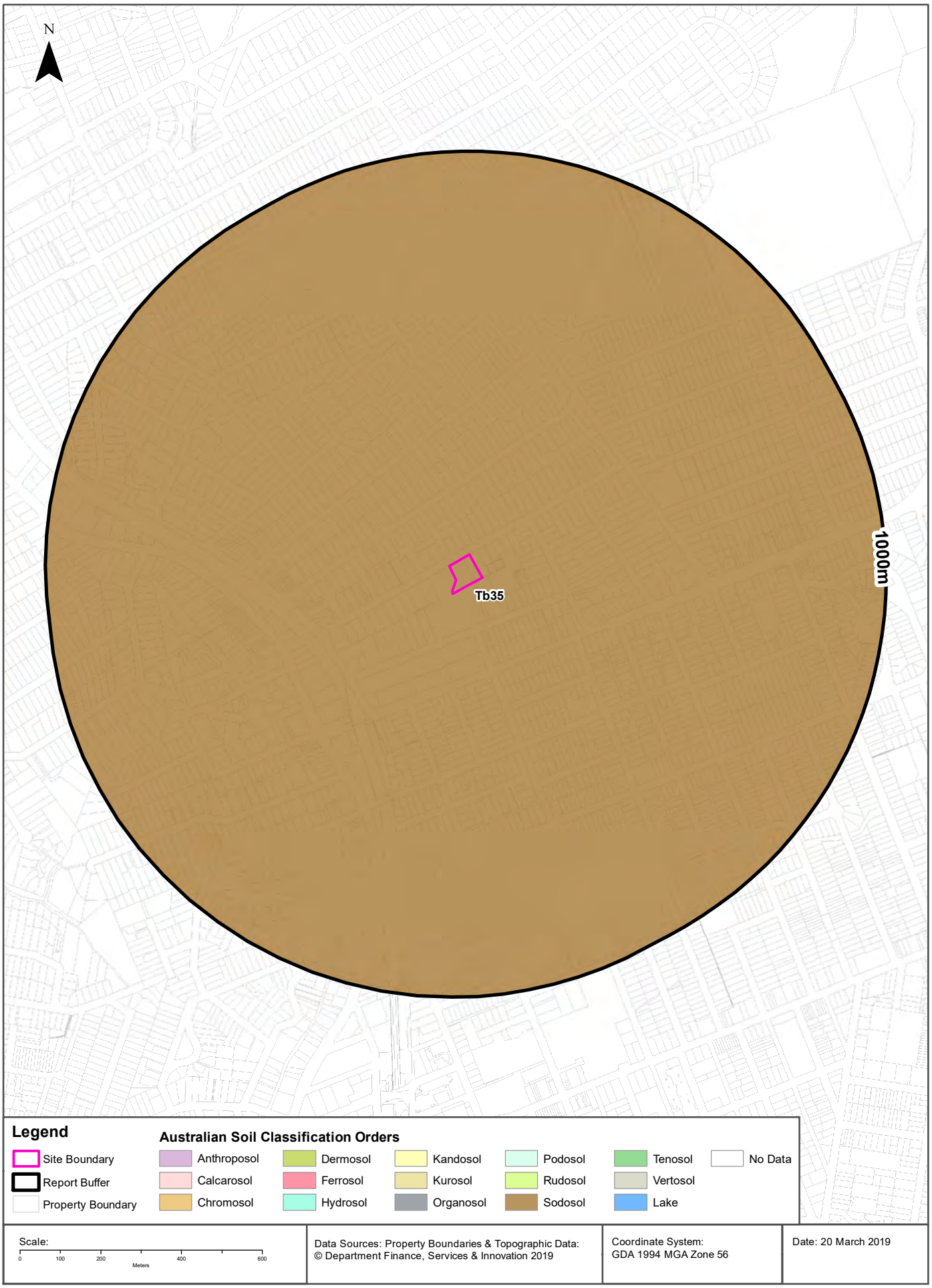
Atlas of Australian Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Atlas of Australian Soils

Soil mapping units and Australian Soil Classification orders within the dataset buffer:

Map Unit Code	Soil Order	Map Unit Description	Distance
Tb35	Sodosol	Dissected plateau remnants--flat to undulating ridge tops with moderate to steep side slopes: chief soils are hard acidic yellow and yellow mottled soils (Dy3.41), (Dy2.21), and (Dy2.41) and hard acidic red soils (Dr2.21); many shallow profiles occur and profile thickness varies considerably over short distances. Associated are: (Gn3.54), (Gn3.14), and possibly other (Gn3) soils; (Db1.2) soils on some ridges; (Dy5.81) soils in areas transitional to unit Mb2; soils common to unit Mb2; and eroded lateritic remnants. Small areas of other soils are likely. Flat ferruginous shale or sandstone fragments are common on and/or in and/or below the soils of this unit.	0m

Atlas of Australian Soils Data Source: CSIRO
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Acid Sulfate Soils

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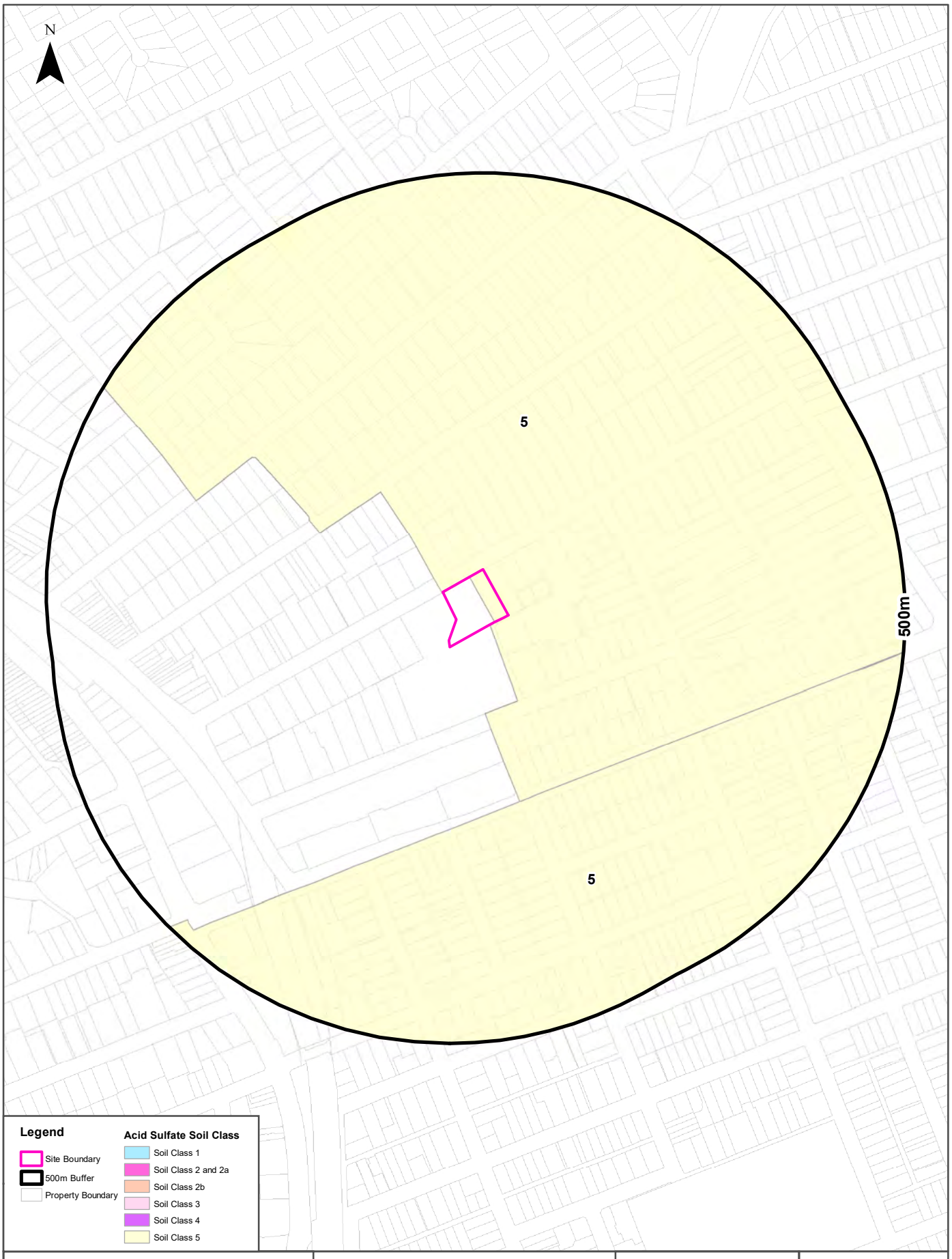

Scale:	Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019	Coordinate System: GDA 1994 MGA Zone 56	Date: 20 March 2019

Acid Sulfate Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Environmental Planning Instrument - Acid Sulfate Soils

What is the on-site Acid Sulfate Soil Plan Class that presents the largest environmental risk?

Soil Class	Description	EPI Name
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Ku-ring-gai Local Environmental Plan 2015

If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	EPI Name	Distance	Direction
None				

Acid Sulfate Data Source Accessed 23/10/2018: NSW Crown Copyright - Planning and Environment
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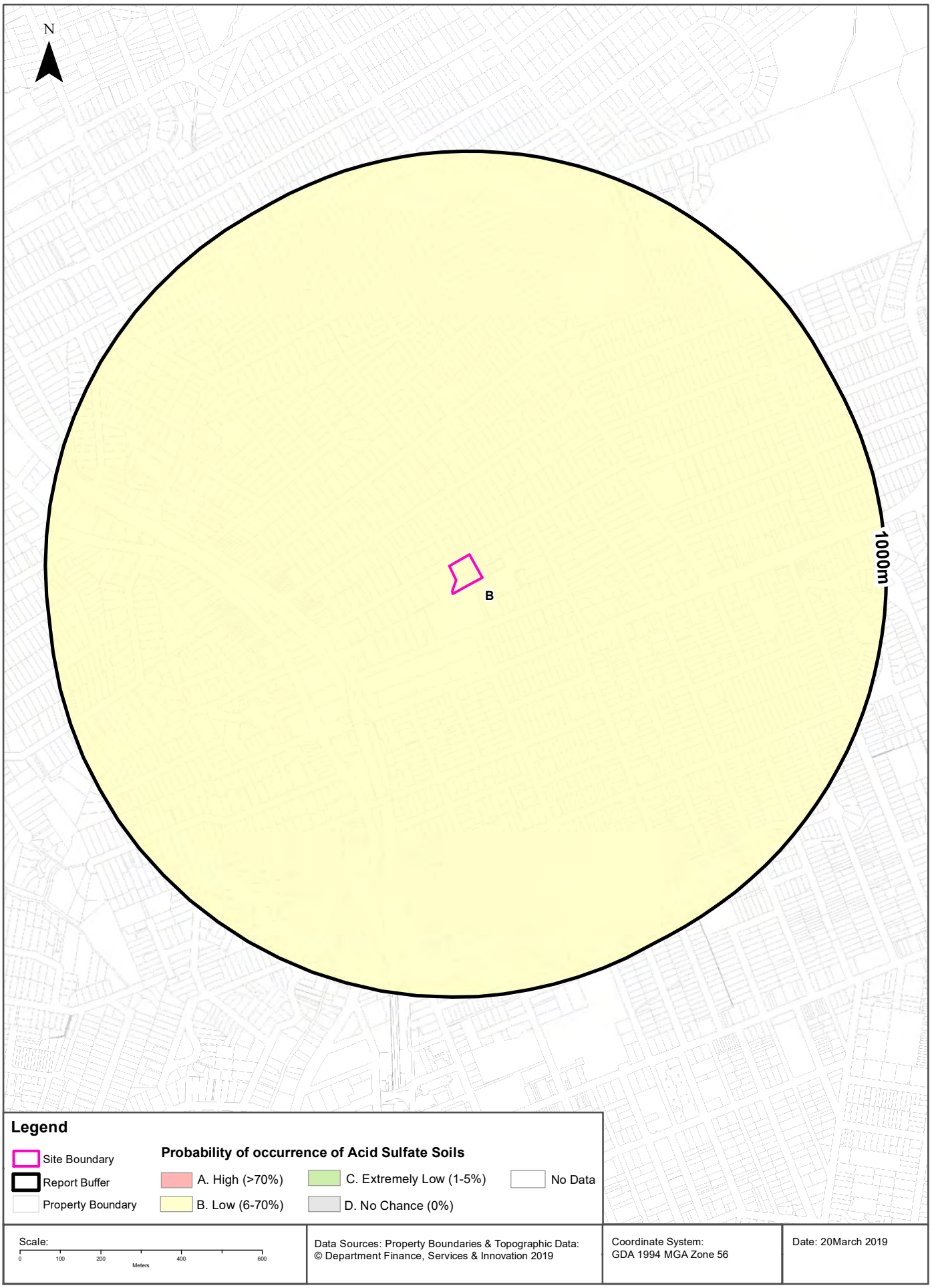
Atlas of Australian Acid Sulfate Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Acid Sulfate Soils

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Atlas of Australian Acid Sulfate Soils

Atlas of Australian Acid Sulfate Soil categories within the dataset buffer:

Class	Description	Distance
B	Low Probability of occurrence. 6-70% chance of occurrence.	0m

Atlas of Australian Acid Sulfate Soils Data Source: CSIRO
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Dryland Salinity

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Dryland Salinity - National Assessment

Is there Dryland Salinity - National Assessment data onsite?

No

Is there Dryland Salinity - National Assessment data within the dataset buffer?

No

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
N/A	N/A	N/A	N/A	N/A

Dryland Salinity Data Source : National Land and Water Resources Audit
The Commonwealth and all suppliers of source data used to derive the maps of "Australia, Forecast Areas Containing Land of High Hazard or Risk of Dryland Salinity from 2000 to 2050" do not warrant the accuracy or completeness of information in this product. Any person using or relying upon such information does so on the basis that the Commonwealth and data suppliers shall bear no responsibility or liability whatsoever for any errors, faults, defects or omissions in the information. Any persons using this information do so at their own risk.
In many cases where a high risk is indicated, less than 100% of the area will have a high hazard or risk.

Dryland Salinity Potential of Western Sydney

Dryland Salinity Potential of Western Sydney within the dataset buffer?

Feature Id	Classification	Description	Distance	Direction
N/A	Outside Data Coverage			

Dryland Salinity Potential of Western Sydney Data Source : NSW Office of Environment and Heritage
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Mining Subsidence Districts

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Mining Subsidence Districts

Mining Subsidence Districts within the dataset buffer:

District	Distance	Direction
There are no Mining Subsidence Districts within the report buffer		

Mining Subsidence District Data Source: © Land and Property Information (2016)
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State Environmental Planning Policy

29 & 37 Bancroft Avenue, Roseville, NSW 2069

State Significant Precincts

What SEPP State Significant Precincts exist within the dataset buffer?

Map Id	Precinct	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
N/A	No Records in Buffer							

State Environment Planning Policy Data Source: NSW Crown Copyright - Planning & Environment
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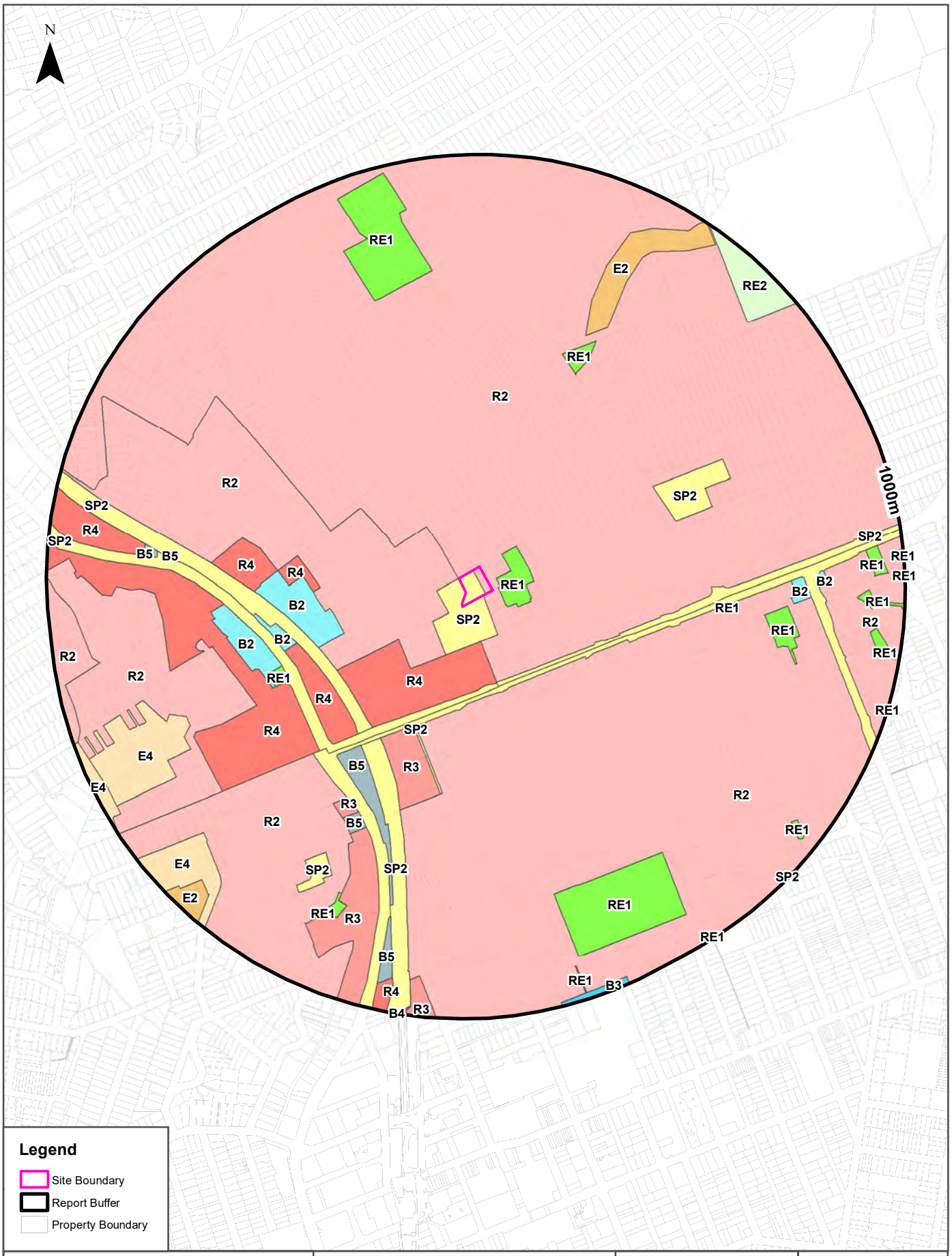
EPI Planning Zones

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019
Planning: NSW Crown Copyright - Planning & Environment

Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Environmental Planning Instrument

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Land Zoning

What EPI Land Zones exist within the dataset buffer?

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
SP2	Infrastructure	Educational Establishment	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		0m	Onsite
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan 2015	19/01/2018	19/01/2018	19/01/2018	Amendment No 14	0m	Onsite
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		2m	West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		14m	East
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		94m	South West
SP2	Infrastructure	Classified Road	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		200m	West
SP2	Infrastructure	Classified Road	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		201m	North East
SP2	Infrastructure	Classified Road	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		213m	South East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		224m	South East
B2	Local Centre		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		294m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		314m	South
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		338m	West
SP2	Infrastructure	Railway	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		339m	West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		369m	South West
SP2	Infrastructure	Railway	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		376m	South
B2	Local Centre		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		411m	West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		416m	South West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		440m	West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		458m	West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		458m	South West
B2	Local Centre		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		460m	West
SP2	Infrastructure	Educational Establishment	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		460m	North East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		508m	South West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		520m	North East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		541m	South West
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		553m	West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		557m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		562m	East
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		582m	South
E2	Environmental Conservation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		615m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		661m	East
SP2	Infrastructure	Hospital	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		681m	South West
B5	Business Development		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		694m	West
RE1	Public Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		694m	North
E4	Environmental Living		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		720m	South West
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		723m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		730m	South East
B5	Business Development		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		733m	West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		754m	South West
R4	High Density Residential		Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/01/2013	08/02/2013	29/09/2017		766m	West
B5	Business Development		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		769m	South
B2	Local Centre		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		785m	East
R2	Low Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		789m	South East
E4	Environmental Living		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		833m	South West
RE2	Private Recreation		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		879m	North East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		884m	East
R2	Low Density Residential		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		890m	West
R3	Medium Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		903m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		908m	East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		914m	South
E2	Environmental Conservation		Willoughby Local Environmental Plan 2012	13/06/2014	13/06/2014	20/10/2017	Amendment No 1	915m	South West
R4	High Density Residential		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		916m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		916m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		920m	East

Zone	Description	Purpose	EPI Name	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
E4	Environmental Living		Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	19/01/2018		966m	South West
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		974m	East
B4	Mixed Use		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		978m	South
B3	Commercial Core		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		981m	South
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		986m	South East
SP2	Infrastructure	Stormwater Management	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		994m	South East
RE1	Public Recreation		Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	20/10/2017		998m	East

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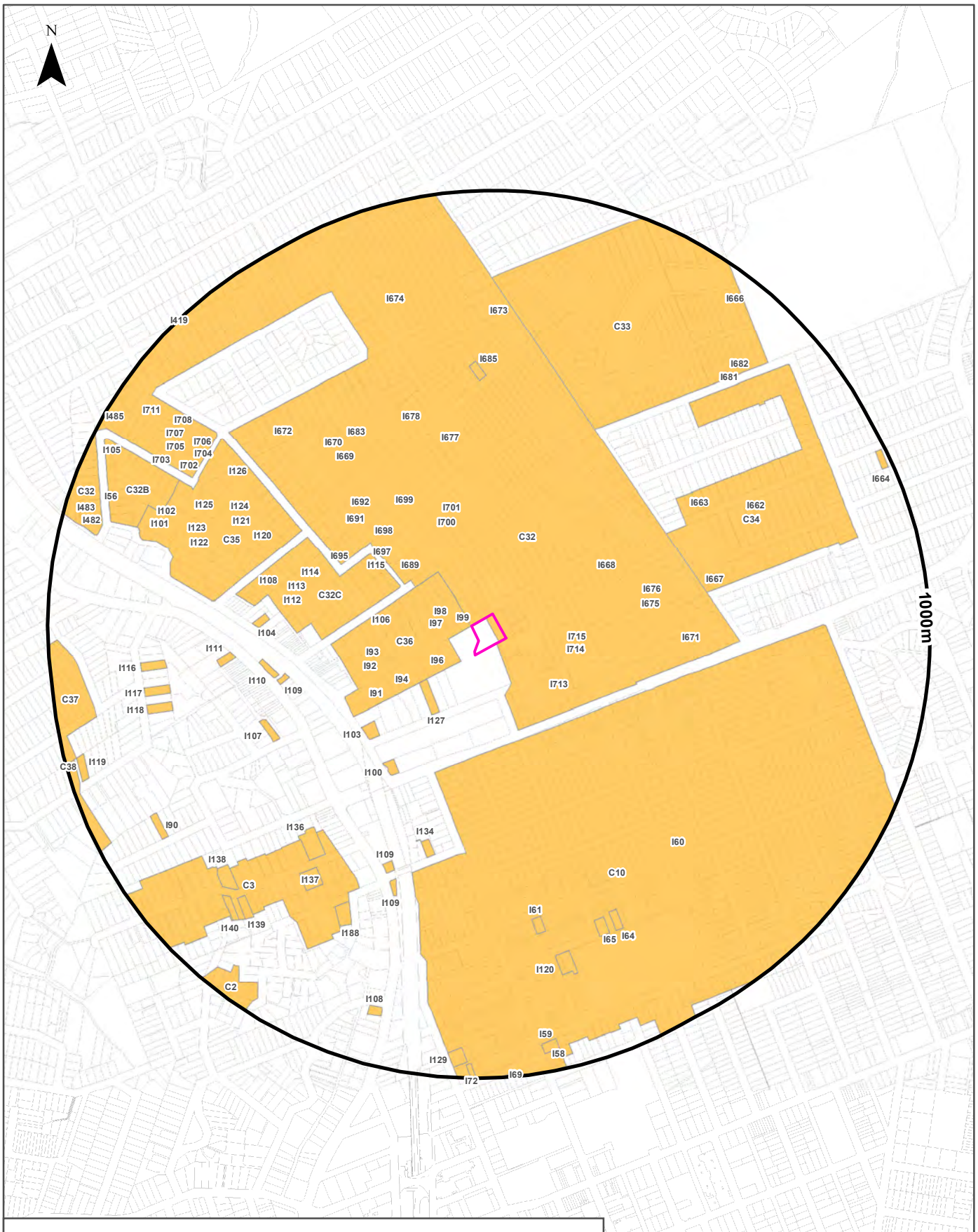
Heritage Items

29 & 37 Bancroft Avenue, Roseville, NSW 2069



Legend

Property Boundary	Site Boundary	Commonwealth Heritage List	State Heritage Items
	Report Buffer	National Heritage List	EPI Heritage Items

Scale: 0 100 200 400 600 Meters

Data Sources: Property Boundaries & Topographic Data: © Department Finance, Services & Innovation 2019
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Coordinate System: GDA 1994 MGA Zone 56

Date: 20 March 2019

Heritage

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Commonwealth Heritage List

What are the Commonwealth Heritage List Items located within the dataset buffer?

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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National Heritage List

What are the National Heritage List Items located within the dataset buffer?
Note. Please click on Place Id to activate a hyperlink to online website.

Place Id	Name	Address	Place File No	Class	Status	Register Date	Distance	Direction
N/A	No records in buffer							

Heritage Data Source: Australian Government Department of the Environment and Energy - Heritage Branch
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State Heritage Register - Curtilages

What are the State Heritage Register Items located within the dataset buffer?

Map Id	Name	Address	LGA	Listing Date	Listing No	Plan No	Distance	Direction
N/A	No records in buffer							

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Environmental Planning Instrument - Heritage

What are the EPI Heritage Items located within the dataset buffer?

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
C32	Clanville Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	0m	Onsite
C36	Lord Street/Bancroft Avenue Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	2m	West
I99	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	21m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I98	Dwelliing House "Westover"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	36m	West
I97	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	60m	West
I96	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	67m	South West
I127	Dwelliing House "Walthamstow"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	128m	South West
I714	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	141m	East
I713	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	142m	South East
I715	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	160m	East
I94	Dwelliing House "Leightonlyn"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	166m	South West
I689	St. Luke's Hall	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	169m	North West
I106	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	187m	West
C32C	Clanville Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	192m	West
I95	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	199m	West
I93	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	213m	West
C10	North Chatswood	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	224m	South East
I92	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	229m	West
I700	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	233m	North
I91	Dwelliing House "Rochester"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	235m	South West
I701	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	238m	North
I697	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	238m	North West
I115	Roseville Scout Group Hall	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	242m	North West
I668	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	282m	North East
I103	Dwelliing House "Beresford"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	284m	South West
I698	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	302m	North West
I699	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	304m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I100	Residential Flat Building "Ku-ring-gai Court"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	312m	South West
I676	Dwelling house "Chilcote"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	330m	East
I695	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	331m	North West
I675	Dwelling house "Taylor"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	336m	East
I692	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	359m	North West
I691	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	360m	North West
I114	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	372m	West
I671	Dwelling house "Clermiston"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	390m	East
I113	Dwelliing House "Lawarra"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	397m	West
I677	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	408m	North
I112	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	410m	West
I109	Former Commonwealth Bank Building	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	441m	West
I134	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	448m	South
C34	Archbold Farms Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	449m	North East
C35	The Grove Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	460m	West
I108	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	460m	West
I110	Former Station Masters Residence	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	465m	West
I678	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	466m	North
I104	Former Westpac Bank Building	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	476m	West
I667	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	484m	East
I669	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	489m	North West
C33	Earl of Canarvon Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	497m	North East
I107	"Killiecrankie" Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	501m	South West
I120	Dwelliing House "Colmar"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	518m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I683	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	520m	North West
I109	Commercial buildings	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	523m	South West
I670	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	533m	North West
I663	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	543m	North East
C3	Findlay and Wyvem Avenues	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	547m	South West
I685	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	25/11/2016	25/11/2016	10/08/2018	551m	North
I136	House (including original interiors and grounds)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	557m	South West
I109	Commercial buildings	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	561m	South
I111	Roseville Cinema	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	561m	West
I121	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	576m	North West
I124	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	599m	North West
I60	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	603m	South East
I672	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	613m	North West
I137	House (including original interiors and grounds)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	626m	South West
I61	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	636m	South
I126	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	642m	North West
I122	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	648m	West
I188	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	655m	South West
I662	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	655m	North East
I123	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	671m	West
I125	Residential Flat Building	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	673m	North West
I673	Dwelling house "Bryn-Mawr"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	681m	North
I64	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	684m	South East
I65	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	687m	South

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I674	The Firs Estate Cottage	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	694m	North
I117	Dwelliing House "Rose Haven"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	724m	West
I118	Dwelliing House "Netherwood"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	724m	West
I102	Dwelliing House "Luton"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	725m	West
I116	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	726m	West
I101	Dwelliing House "Gooyong"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	728m	West
I120	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	731m	South
I702	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	745m	North West
I704	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	745m	North West
I706	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	746m	North West
I138	House (including original interiors and circular driveway)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	765m	South West
C32B	Clanville Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	770m	North West
I139	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	786m	South West
I681	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	786m	North East
I707	Dwelling house "Cerne Abbas"	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	811m	North West
I703	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	811m	North West
I705	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	811m	North West
I708	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	813m	North West
I140	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	813m	South West
I682	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	814m	North East
I90	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	840m	South West
I56	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	857m	West
I108	Boarding house (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	862m	South
I711	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	891m	North West

Map Id	Name	Classification	Significance	EPI Name	Published Date	Commenced Date	Currency Date	Distance	Direction
I482	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	903m	West
C37	Garden of Roseville Estate Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	905m	West
I483	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	912m	West
C2	Blue Gum	Conservation Area - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	921m	South West
I666	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	925m	North East
I59	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	926m	South
I129	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	927m	South
I105	Dwelliing House "Doralyn"	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	933m	North West
I58	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	945m	South
I119	Dwelliing House	Item - General	Local	Ku-ring-gai Local Environmental Plan (Local Centres) 2012	25/02/2013	08/02/2013	08/07/2016	953m	West
I485	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	955m	North West
I72	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	964m	South
C38	Shirley Road Conservation Area	Conservation Area - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	966m	West
I664	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	971m	North East
I69	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	986m	South
I70	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	990m	South
I71	House (including original interiors)	Item - General	Local	Willoughby Local Environmental Plan 2012	21/12/2012	31/01/2013	31/01/2013	994m	South
I419	Dwelling house	Item - General	Local	Ku-ring-gai Local Environmental Plan 2015	05/03/2015	02/04/2015	10/08/2018	997m	North West

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Natural Hazards - Bush Fire Prone Land

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Natural Hazards

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Bush Fire Prone Land

What are the nearest Bush Fire Prone Land Categories that exist within the dataset buffer?

Bush Fire Prone Land Category	Distance	Direction
Vegetation Buffer	586m	North
Vegetation Category 2	616m	North East
Vegetation Category 1	724m	South West

NSW Bush Fire Prone Land - © NSW Rural Fire Service under Creative Commons 4.0 International Licence

Ecological Constraints - Native Vegetation & RAMSAR Wetlands

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Legend

Site Boundary	Rainforest	Forested Wetlands	Grasslands	Artificial Wetlands	RAMSAR Wetlands
Report Buffer	Wet Sclerophyll Forests	Grassy Woodlands	Freshwater Wetlands	Water	
Property Boundary	Dry Sclerophyll Forests	Heathlands	Saline Wetlands	Other	

Scale: 0 100 200 400 600 Meters

Propert Boundary Data Source:
© Department Finance, Services & Innovation 2019

Coordinate System:
GDA 1994 MGA Zone 56

Date: 20 March 2019

Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Native Vegetation

What native vegetation exists within the dataset buffer?

Map ID	Map Unit Name	Threatened Ecological Community NSW	Threatened Ecological Community EPBC Act	Understorey	Disturbance	Disturbance Index	Dominant Species	Dist	Direction
Urban_E/N	Urban_E/N: Urban Exotic/Native			00: Not assessed	00: Not assessed	0: Not assessed	Urban Exotic/Native	0m	Onsite
S_WSF09	S_WSF09: Sydney Turpentine-Ironbark Forest	Sydney Turpentine Ironbark Forest	Turpentine Ironbark Forest (possible)	24: Urban and hard surface	24: Urban mixed use	4: Very high	E.paniculata/S.glomuliferaE.resinifera/E.punctata	51m	South West
S_WSF01	S_WSF01: Blue Gum High Forest	Blue Gum High Forest	Blue Gum High Forest (possible)	11: Semi sheltered dry/mesic	24: Urban mixed use	4: Very high	E.salignaE.pilularis/S.glomullifera/E.paniculata/A.costata	109m	South
S_WSF06	S_WSF06: Coastal Shale-Sandstone Forest			13: Dry shrubs and grasses	24: Urban mixed use	4: Very high	E.resinifera/E.pilularis/A.costata/S.glomulifera	491m	North
S_WSF02	S_WSF02: Coastal Enriched Sandstone Moist Forest			10: Mesic/rainforest	13: Weeds	3: High	E.piperita/A.costaE.pilularis	627m	North East
S_DSF04	S_DSF04: Coastal Enriched Sandstone Dry Forest			11: Semi sheltered dry/mesic	13: Weeds	3: High	E.piperita/A.costaE.pilularis	947m	North East

Native Vegetation of the Sydney Metropolitan Area : NSW Office of Environment and Heritage
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Ramsar Wetlands

What Ramsar Wetland areas exist within the dataset buffer?

Map Id	Ramsar Name	Wetland Name	Designation Date	Source	Distance	Direction
N/A	No records in buffer					

Ramsar Wetlands Data Source: © Commonwealth of Australia - Department of Environment

Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Groundwater Dependent Ecosystems Atlas

Type	GDE Potential	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Groundwater Dependent Ecosystems Atlas Data Source: The Bureau of Meteorology
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Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

Inflow Dependent Ecosystems Likelihood

Type	IDE Likelihood	Geomorphology	Ecosystem Type	Aquifer Geology	Distance
N/A	No records within buffer				

Inflow Dependent Ecosystems Likelihood Data Source: The Bureau of Meteorology
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Ecological Constraints

29 & 37 Bancroft Avenue, Roseville, NSW 2069

NSW BioNet Atlas

Species on the NSW BioNet Atlas that have a NSW or federal conservation status, a NSW sensitivity status, or are listed under a migratory species agreement, and are within 10km of the site?

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Amphibia	Heleioporus australiacus	Giant Burrowing Frog	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Amphibia	Litoria aurea	Green and Golden Bell Frog	Endangered	Not Sensitive	Vulnerable	
Animalia	Amphibia	Pseudophryne australis	Red-crowned Toadlet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Actitis hypoleucos	Common Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Anous stolidus	Common Noddy	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Anseranas semipalmata	Magpie Goose	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Anthochaera phrygia	Regent Honeyeater	Critically Endangered	Not Sensitive	Critically Endangered	
Animalia	Aves	Apus pacificus	Fork-tailed Swift	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Ardea ibis	Cattle Egret	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ardenna carneipes	Flesh-footed Shearwater	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Ardenna pacificus	Wedge-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Ardenna tenuirostris	Short-tailed Shearwater	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Arenaria interpres	Ruddy Turnstone	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Artamus cyanopterus cyanopterus	Dusky Woodswallow	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Botaurus poiciloptilus	Australasian Bittern	Endangered	Not Sensitive	Endangered	
Animalia	Aves	Burhinus grallarius	Bush Stone-curlew	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Calidris acuminata	Sharp-tailed Sandpiper	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris canutus	Red Knot	Not Listed	Not Sensitive	Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ferruginea	Curlew Sandpiper	Endangered	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Calidris ruficollis	Red-necked Stint	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Endangered Population, Vulnerable	Category 3	Not Listed	
Animalia	Aves	Callocephalon fimbriatum	Gang-gang Cockatoo	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Calyptorhynchus banksii banksii	Red-tailed Black-Cockatoo (coastal subspecies)	Critically Endangered	Category 2	Not Listed	
Animalia	Aves	Calyptorhynchus lathami	Glossy Black-Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Cecropis daurica	Red-rumped Swallow	Not Listed	Not Sensitive	Not Listed	ROKAMBA

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Climacteris picumnus victoriae	Brown Treecreeper (eastern subspecies)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Daphoenositta chrysoptera	Varied Sittella	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Diomedea exulans	Wandering Albatross	Endangered	Not Sensitive	Endangered	JAMBA
Animalia	Aves	Egretta sacra	Eastern Reef Egret	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Ephippiorhynchus asiaticus	Black-necked Stork	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Erythrotriorchis radiatus	Red Goshawk	Critically Endangered	Category 2	Vulnerable	
Animalia	Aves	Esacus magnirostris	Beach Stone-curlew	Critically Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Eudyptula minor	Little Penguin	Endangered Population	Not Sensitive	Not Listed	
Animalia	Aves	Falco subniger	Black Falcon	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Glossopsitta pusilla	Little Lorikeet	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus fuliginosus	Sooty Oystercatcher	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Haematopus longirostris	Pied Oystercatcher	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Haliaeetus leucogaster	White-bellied Sea-Eagle	Vulnerable	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Hieraaetus morphnoides	Little Eagle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Hirundapus caudacutus	White-throated Needletail	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Hydroprogne caspia	Caspian Tern	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Ixobrychus flavicollis	Black Bittern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Lathamus discolor	Swift Parrot	Endangered	Category 3	Critically Endangered	
Animalia	Aves	Limicola falcinellus	Broad-billed Sandpiper	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa lapponica	Bar-tailed Godwit	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Limosa limosa	Black-tailed Godwit	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Lophochroa leadbeateri	Major Mitchell's Cockatoo	Vulnerable	Category 2	Not Listed	
Animalia	Aves	Lophoictinia isura	Square-tailed Kite	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Melanodryas cucullata cucullata	Hooded Robin (south-eastern form)	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Merops ornatus	Rainbow Bee-eater	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Neophema pulchella	Turquoise Parrot	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Nettapus coromandelianus	Cotton Pygmy-Goose	Endangered	Not Sensitive	Not Listed	
Animalia	Aves	Ninox connivens	Barking Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Ninox strenua	Powerful Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Numenius madagascariensis	Eastern Curlew	Not Listed	Not Sensitive	Critically Endangered	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Numenius minutus	Little Curlew	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Onychoprion fuscata	Sooty Tern	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Pachycephala olivacea	Olive Whistler	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Aves	Pandion cristatus	Eastern Osprey	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Petroica boodang	Scarlet Robin	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Phaethon lepturus	White-tailed Tropicbird	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Plegadis falcinellus	Glossy Ibis	Not Listed	Not Sensitive	Not Listed	CAMBA
Animalia	Aves	Pluvialis fulva	Pacific Golden Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Pluvialis squatarola	Grey Plover	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Polytelis swainsonii	Superb Parrot	Vulnerable	Category 3	Vulnerable	
Animalia	Aves	Pterodroma leucoptera leucoptera	Gould's Petrel	Vulnerable	Not Sensitive	Endangered	
Animalia	Aves	Ptilinopus superbus	Superb Fruit-Dove	Vulnerable	Not Sensitive	Not Listed	
Animalia	Aves	Stercorarius longicaudus	Long-tailed Jaeger	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Stercorarius parasiticus	Arctic Jaeger	Not Listed	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Stercorarius pomarinus	Pomarine Jaeger	Not Listed	Not Sensitive	Not Listed	CAMBA;JAMBA
Animalia	Aves	Sterna hirundo	Common Tern	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sternula albifrons	Little Tern	Endangered	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Sula dactylatra	Masked Booby	Vulnerable	Not Sensitive	Not Listed	ROKAMBA;JAMBA
Animalia	Aves	Tringa brevipes	Grey-tailed Tattler	Not Listed	Not Sensitive	Not Listed	ROKAMBA;CAMBA; JAMBA
Animalia	Aves	Tringa incana	Wandering Tattler	Not Listed	Not Sensitive	Not Listed	JAMBA
Animalia	Aves	Tyto novaehollandiae	Masked Owl	Vulnerable	Category 3	Not Listed	
Animalia	Aves	Tyto tenebricosa	Sooty Owl	Vulnerable	Category 3	Not Listed	
Animalia	Insecta	Petalura gigantea	Giant Dragonfly	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus forsteri	New Zealand Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Arctocephalus pusillus doriferus	Australian Fur-seal	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Cercartetus nanus	Eastern Pygmy-possum	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Chalinolobus dwyeri	Large-eared Pied Bat	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Dasyurus maculatus	Spotted-tailed Quoll	Vulnerable	Not Sensitive	Endangered	
Animalia	Mammalia	Dugong dugon	Dugong	Endangered	Not Sensitive	Not Listed	
Animalia	Mammalia	Eubalaena australis	Southern Right Whale	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Falsistrellus tasmaniensis	Eastern False Pipistrelle	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Isoodon obesulus obesulus	Southern Brown Bandicoot (eastern)	Endangered	Not Sensitive	Endangered	
Animalia	Mammalia	Megaptera novaeangliae	Humpback Whale	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Miniopterus australis	Little Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Miniopterus schreibersii oceanensis	Eastern Bentwing-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Mormopterus norfolkensis	Eastern Freetail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Myotis macropus	Southern Myotis	Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Animalia	Mammalia	Perameles nasuta	Long-nosed Bandicoot	Endangered Population	Not Sensitive	Not Listed	
Animalia	Mammalia	Petauroides volans	Greater Glider	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Petaurus australis	Yellow-bellied Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Petaurus norfolcensis	Squirrel Glider	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Phascolarctos cinereus	Koala	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pseudomys novaehollandiae	New Holland Mouse	Not Listed	Not Sensitive	Vulnerable	
Animalia	Mammalia	Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Mammalia	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Mammalia	Scoteanax rueppellii	Greater Broad-nosed Bat	Vulnerable	Not Sensitive	Not Listed	
Animalia	Reptilia	Chelonia mydas	Green Turtle	Vulnerable	Not Sensitive	Vulnerable	
Animalia	Reptilia	Dermochelys coriacea	Leatherback Turtle	Endangered	Not Sensitive	Endangered	
Animalia	Reptilia	Myuchelys bellii	Western Sawshelled Turtle, Bell's Turtle	Endangered	Not Sensitive	Vulnerable	
Animalia	Reptilia	Varanus rosenbergi	Rosenberg's Goanna	Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Camarophyllopsis kearneyi		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe anomala var. ianthinomarginata		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe aurantipes		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe austropratensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe collucera		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe griseoramosa		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe lanecovensis		Endangered	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe reesiae		Vulnerable	Not Sensitive	Not Listed	
Fungi	Flora	Hygrocybe rubronivea		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia bynoeana	Bynoe's Wattle	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia clunies-rossiae	Kanangra Wattle	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Acacia gordonii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Acacia pubescens	Downy Wattle	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Acacia terminalis subsp. terminalis	Sunshine Wattle	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Allocasuarina portuensis	Nielsen Park She-oak	Endangered	Category 3	Endangered	
Plantae	Flora	Caladenia tessellata	Thick Lip Spider Orchid	Endangered	Category 2	Vulnerable	
Plantae	Flora	Callistemon linearifolius	Netted Bottle Brush	Vulnerable	Category 3	Not Listed	
Plantae	Flora	Chamaesyce psammogeton	Sand Spurge	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Cryptostylis hunteriana	Leafless Tongue Orchid	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Darwinia biflora		Vulnerable	Not Sensitive	Vulnerable	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Darwinia peduncularis		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Deyeuxia appressa		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Epacris purpurascens var. purpurascens		Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus camfieldii	Camfield's Stringybark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus leucoxylon subsp. pruinosa	Yellow Gum	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Eucalyptus nicholii	Narrow-leaved Black Peppermint	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Eucalyptus scoparia	Wallangarra White Gum	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Genoplesium baueri	Bauer's Midge Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Genoplesium plumosum	Tallong Midge Orchid	Critically Endangered	Category 2	Endangered	
Plantae	Flora	Grammitis stenophylla	Narrow-leaf Finger Fern	Endangered	Category 3	Not Listed	
Plantae	Flora	Grevillea caleyi	Caley's Grevillea	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Grevillea hilliana	White Yiel Yiel	Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Grevillea juniperina subsp. juniperina	Juniper-leaved Grevillea	Vulnerable	Not Sensitive	Not Listed	
Plantae	Flora	Haloragodendron lucasii		Endangered	Not Sensitive	Endangered	
Plantae	Flora	Hibbertia puberula		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Hibbertia spanantha	Julian's Hibbertia	Critically Endangered	Category 2	Critically Endangered	
Plantae	Flora	Hibbertia superans		Endangered	Not Sensitive	Not Listed	
Plantae	Flora	Isotoma fluviatilis subsp. fluviatilis		Not Listed	Not Sensitive	Extinct	
Plantae	Flora	Lasiopetalum joyceae		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Leptospermum deanei		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia integrifolia	Macadamia Nut	Not Listed	Not Sensitive	Vulnerable	
Plantae	Flora	Macadamia tetraphylla	Rough-shelled Bush Nut	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca biconvexa	Biconvex Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Melaleuca deanei	Deane's Paperbark	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Microtis angusii	Angus's Onion Orchid	Endangered	Category 2	Endangered	
Plantae	Flora	Persoonia hirsuta	Hairy Geebung	Endangered	Category 3	Endangered	
Plantae	Flora	Persoonia laxa		Presumed Extinct	Not Sensitive	Extinct	
Plantae	Flora	Pimelea curviflora var. curviflora		Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Prostanthera junonis	Somersby Mintbush	Endangered	Not Sensitive	Endangered	
Plantae	Flora	Prostanthera marifolia	Seaforth Mintbush	Critically Endangered	Category 3	Critically Endangered	
Plantae	Flora	Sarcochilus hartmannii	Hartman's Sarcochilus	Vulnerable	Category 2	Vulnerable	
Plantae	Flora	Syzygium paniculatum	Magenta Lilly Pilly	Endangered	Not Sensitive	Vulnerable	
Plantae	Flora	Tetratheca glandulosa		Vulnerable	Not Sensitive	Not Listed	

Kingdom	Class	Scientific	Common	NSW Conservation Status	NSW Sensitivity Class	Federal Conservation Status	Migratory Species Agreements
Plantae	Flora	Tetratheca juncea	Black-eyed Susan	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Thesium australe	Austral Toadflax	Vulnerable	Not Sensitive	Vulnerable	
Plantae	Flora	Wilsonia backhousei	Narrow-leafed Wilsonia	Vulnerable	Not Sensitive	Not Listed	

Data does not include NSW category 1 sensitive species.
NSW BioNet: © State of NSW and Office of Environment and Heritage
Data obtained 19/03/2019

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12. These Terms are subject to New South Wales law.

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Summary of Owners Report

LRS NSW **Sydney**

Address: - 29 & 37 Bancroft Road, Roseville

Description: - Lot 18 Section C D.P. 5035 and part of Lot 2003 D.P. 1084428

As regards Lot 18 Section C D.P. 5035

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
05.08.1911 (1911 to 1949)	Herbert Stanley Tebbutt (Journalist)	Vol 2145 Fol 14
04.03.1949 (1949 to 1958)	William Antony Whitlock (Journalist)	Vol 2145 Fol 14
13.05.1958 (1958 to 1964)	Nancy Wilmore Atkin (Married Woman)	Vol 2145 Fol 14
12.10.1964 (1964 to 1985)	Joan Colban Roberts (Barrister – at – Law) (& Deceased Estate)	Vol 2145 Fol 14
15.10.1985 (1985 to 1993)	Michael John Kean Jennifer Anne Kean	Vol 2145 Fol 14 Now 18/C/5035
14.12.1993 (1993 to 2016)	Kun Yu Hou Yin Shen Chiu Hou	18/C/5035
21.05.2016 (2016 to date)	# Anglican Schools Corporation	18/C/5035

Denotes current registered proprietor

Leases & Easements: - NIL

As regards the part of Lot 2003 D.P. 1084428 tinted yellow on the attached Cadastral Records enquiry Report

As regards that part numbered (1) on the attached Cadastral Records enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
10.06.1908 (1908 to 1959)	Selina Roberts (Married Woman)	Vol 1859 Fol 117
16.03.1959 (1959 to 1996)	Selina Eleanor Roberts (Spinster) (Section 94 Application not investigated)	Vol 1859 Fol 117 Now 2/205691
15.02.1996 (1996 to 1997)	Penelope Jane Hunstead Richard Waller Hunstead	2/205691
27.06.1997 (1997 to 1999)	The Roseville Girls College Limited	2/205691

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

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Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

Continued as regards that part numbered (1) on the attached Cadastral Records enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	2/205691 Now 5003/1084428

Denotes current registered proprietor

As regards that part numbered (2) on the attached Cadastral Records enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
15.02.1908 (1908 to 1939)	Alexander Willoughby Button (Civil Servant)	Vol 1853 Fol 81
27.02.1939 (1939 to 1939)	Alexander Theodore Britton (Civil Engineer) Harold William Britton (Civil Engineer) Jessie Rosalind Bucknell (Married Woman) (Transmission Application not investigated)	Vol 1853 Fol 81
03.04.1939 (1939 to 1992)	Jessie Rosalind Bucknell (Married Woman)	Vol 1853 Fol 81 Now 1/205691
31.07.1992 (1992 to 1999)	The Roseville Girls College Limited	1/205691
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	1/205691 Now 5003/1084428

Denotes current registered proprietor

As regards the part numbered (3) on the attached Cadastral Records Enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
10.06.1908 (1908 to 1959)	Selina Roberts (Married Woman)	Vol 1859 Fol 117
16.03.1959 (1959 to 1961)	Selina Eleanor Roberts (Spinster) (Section 94 Application not investigated)	Vol 1859 Fol 117 Now Vol 9075 Fol 243
12.10.1961 (1961 to 1983)	Marjorie Joyce Ramsay (Married Woman)	Vol 9075 Fol 243
04.03.1983 (1983 to 1999)	The Roseville Girls College Limited	Vol 9075 Fol 243 Now 32/791493 (title not investigated)
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	32/791493 Now 5003/1084428

Denotes current registered proprietor

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

As regards that part numbered (4) on the attached Cadastral Records enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
15.02.1908 (1908 to 1939)	Alexander Willoughby Button (Civil Servant)	Vol 1853 Fol 81
27.02.1939 (1939 to 1939)	Alexander Theodore Britton (Civil Engineer) Harold William Britton (Civil Engineer) Jessie Rosalind Bucknell (Married Woman) (Transmission Application not investigated)	Vol 1853 Fol 81
03.04.1939 (1939 to 1983)	Jessie Rosalind Bucknell (Married Woman)	Vol 1853 Fol 81 Now Vol 9075 Fol 243
04.03.1983 (1983 to 1999)	The Roseville Girls College Limited	Vol 9075 Fol 243 Now 32/791493 (titles not investigated)
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	32/791493 Now 5003/1084428

Denotes current registered proprietor

As regards that part numbered (5) on the attached Cadastral Records enquiry Report

Date of Acquisition and term held	Registered Proprietor(s) & Occupations where available	Reference to Title at Acquisition and sale
02.06.1927 (1927 to 1956)	Arthur Henry Blanche (Stock Salesman)	Vol 2651 Fol 31
20.09.1956 (1956 to 1956)	Thomas Edward Blanche (Grazier) (Section 94 Application not investigated)	Vol 2651 Fol 31
20.09.1956 (1956 to 1957)	Allan William Quinn (Clerk) Estelle Marie Quinn (Married Woman)	Vol 2651 Fol 31
25.03.1957 (1957 to 1982)	Roland George Murphy (Chartered Engineer)	Vol 2651 Fol 31 Now Vol 12274 Fol 139
05.08.1982 (1982 to 1994)	Sylvia Beatrice Murphy (Transmission Application not investigated)	Vol 12274 Fol 139 Now 31/791493
14.07.1994 (1994 to 1999)	The Roseville Girls College Limited	31/791493
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	31/791493 Now 5003/1084428

Denotes current registered proprietor

ABN: 36 092 724 251
Ph: 02 9099 7400
(Ph: 0412 199 304)

Level 14, 135 King Street, Sydney
Sydney 2000
GPO Box 4103 Sydney NSW 2001
DX 967 Sydney

As regards that part numbered (5B) on the attached Cadastral Records enquiry Report

Date of Acquisition and term held	**Registered Proprietor(s) & Occupations where available**	**Reference to Title at Acquisition and sale**
02.06.1927 (1927 to 1956)	Arthur Henry Blanche (Stock Salesman)	Vol 2651 Fol 31
20.09.1956 (1956 to 1956)	Thomas Edward Blanche (Grazier) (Section 94 Application not investigated)	Vol 2651 Fol 31
20.09.1956 (1956 to 1957)	Allan William Quinn (Clerk) Estelle Marie Quinn (Married Woman)	Vol 2651 Fol 31
25.03.1957 (1957 to 1982)	Roland George Murphy (Chartered Engineer)	Vol 2651 Fol 31 Now Vol 12274 Fol 139
05.08.1982 (1982 to 1989)	Sylvia Beatrice Murphy (Transmission Application not investigated)	Vol 12274 Fol 139 Now 32/791493
20.10.1989 (1989 to 1996)	The Roseville Girls College Limited	32/791493
08.03.1999 (1999 to date)	# Sydney Anglican Schools Corporation Now # Anglican Schools Corporation	32/791493 Now 5003/1084428

Denotes current registered proprietor

As regards the thin strip tinted pink on the attached Cadastral Records enquiry Report

This part was formerly a strip of land 0.3 metres wide – this has not been investigated at this stage

Leases: - NIL

Easements: -

- 06.03.2003 (9418936) Easement for Electricity Substation purposes 3.34 metres wide (? Affecting)

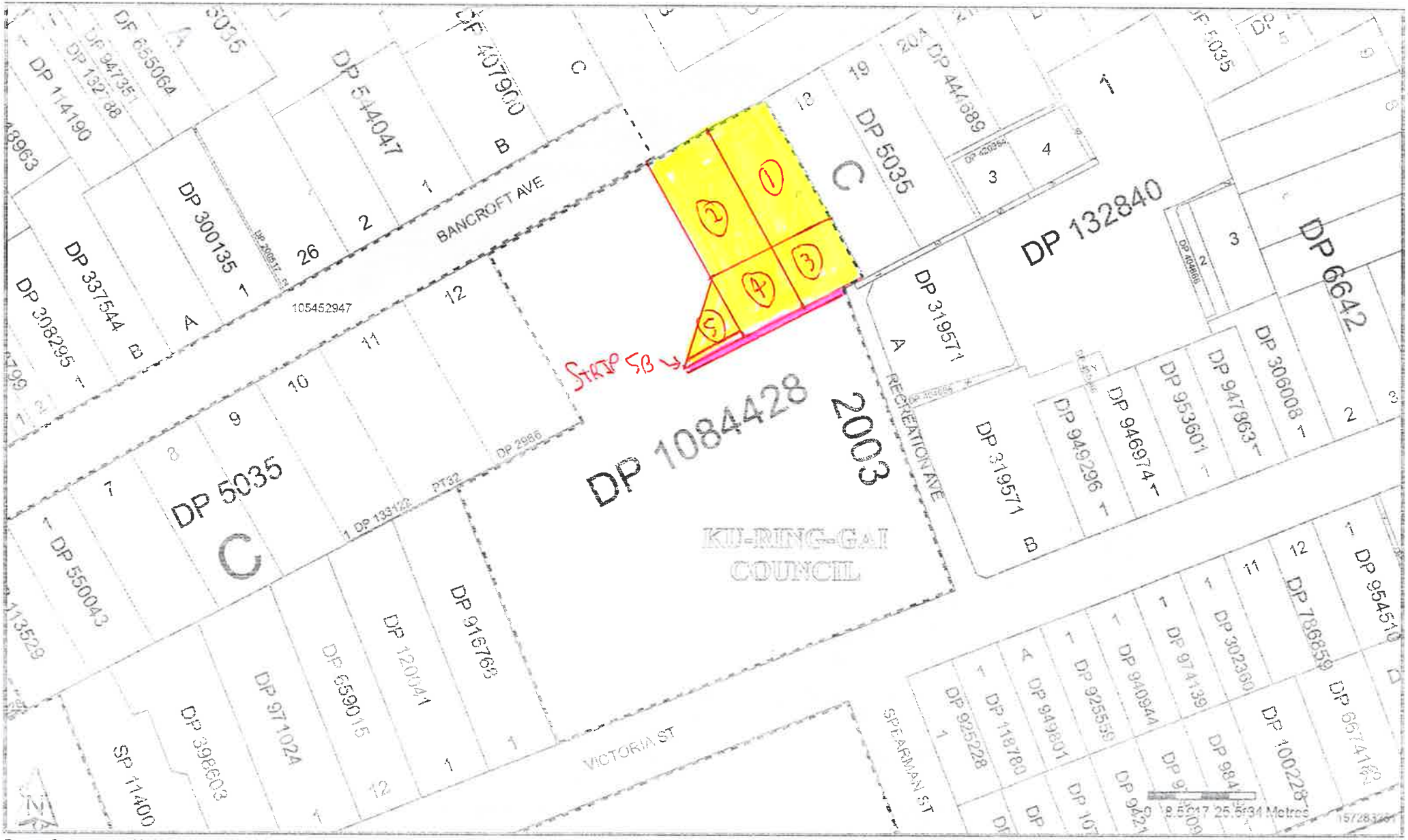
Yours Sincerely,
Mark Groll
25 March 2019

LAND REGISTRY SERVICES

Cadastral Records Enquiry Report : Lot 2003 DP 1084428

Ref : roseville

Locality : ROSEVILLE
LGA : KU-RING-GAI
Parish : GORDON
County : CUMBERLAND



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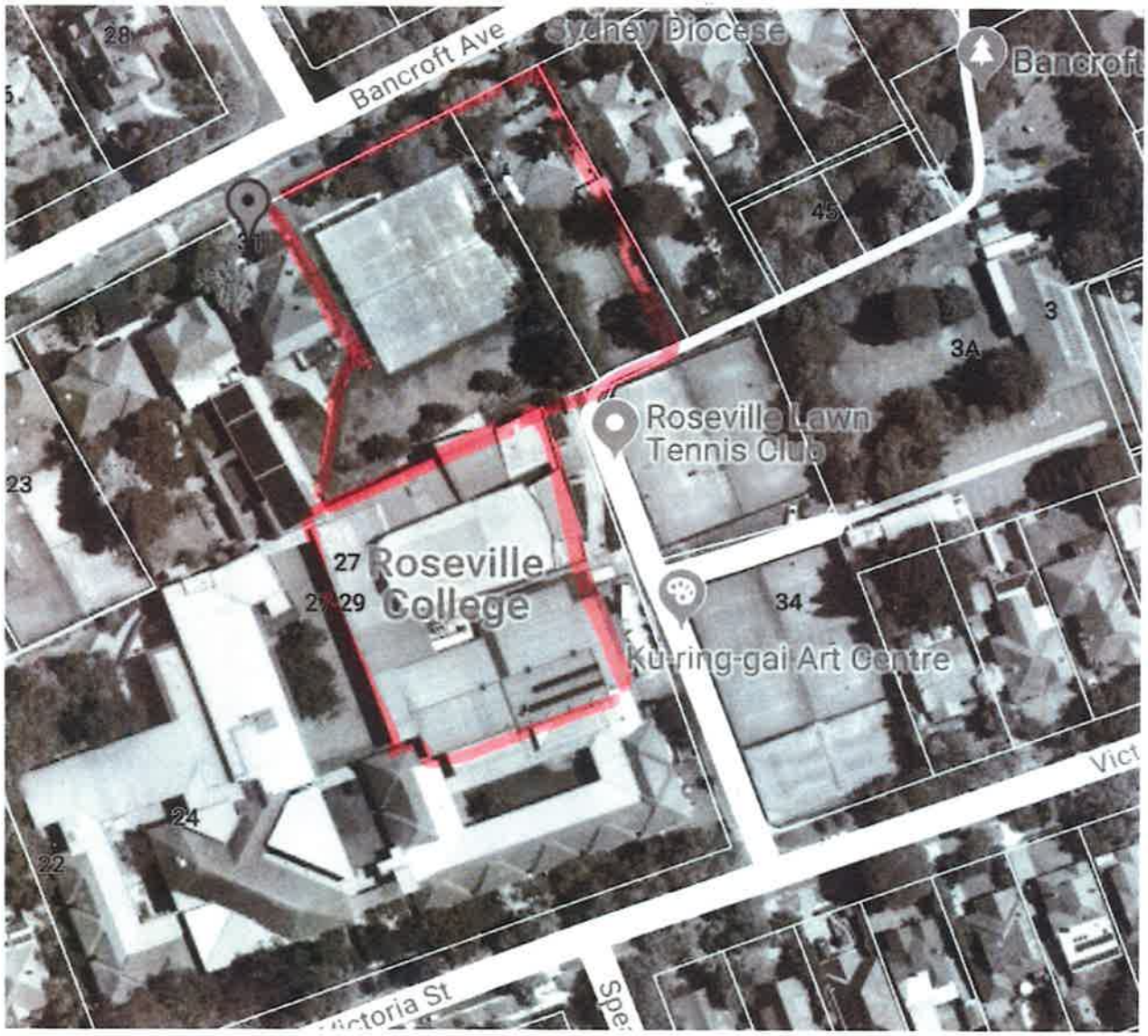

Douglas Partners
Geotechnics | Environment | Groundwater

29 & 37 Bancroft Av, Roseville

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Req:R156094 /Doc:DP 0791493 P /Rev:14-Jun-1992 /Sts:OK.OK /Pgs:ALL /Prt:25-Mar-2019 19:56 /Seq:1 of 1
Ref:roseville /Src:M

PLAN FORM 2

Plan Drawing only to appear in this space

OFFICE USE ONLY

DP 791493

Registered: 24-8-1989

C.A: No 89/13 of 2-8-1989

Title System: TORRENS

Purpose: SUBDIVISION

Ref Map: KU-RING-GAI SH 33

Last Plan: DP 5035 # DP 205691 # DP 951732

PLAN OF LOT 3 IN D.P. 205691, LOT 1 IN D.P. 951732 AND PART LOT 15 SECTION C IN D.P. 5035

Locality: KU-RING-GAI

Locality: ROSEVILLE

Parish: GORDON

County: CUMBERLAND

I, ROBERT ALFRED PIKE of WHITE PYL Dr 1993 HORNSBY

a surveyor registered under the Surveyors Act, 1929, as amended, hereby declare that the survey represented in this plan is accurate and has been made in accordance with the Survey Practice Regulations, 1933 and any applicable requirements of the Department of Lands and was completed on 6th JULY, 1989

Signature: .....

Surveyor registered under the Surveyors Act, 1929, as amended.

Datum Line of Azimuths: 'A' - 'B'

Plans used in preparation of survey/compilation.

D.P's 319571, 404666, 431682, 951109, 944047, 988083, 991732, 29466, 205691, 5035, 205691 & 229200

PANEL FOR USE ONLY for statements of intention to dedicate public roads or to create public reserves, drainage reserves, easements, restrictions on the use of land or positive covenants

SIGNATURE AND SEALS ONLY

THE COMMON SEAL OF THE ROSEVILLE GIRLS' CO-OPERATIVE LIMITED WAS HEREUNTO AFFIXED BY NUMBER OF A RESOLUTION OF THE COUNCIL OF DIRECTORS IN THE PRESENCE OF A DIRECTOR AND THE SECRETARY WHOSE SIGNATURES APPEAR

Seal

THE ROSEVILLE GIRLS' CO-OPERATIVE LIMITED

Director

Secretary

Signed and sealed by the said [illegible] at Sydney in the presence of:

[illegible]

JOHN STEWART HAGUE
SOLICITOR
SYDNEY

Signed and sealed by the said [illegible] at Sydney in the presence of:

[illegible]

Allan Vernon Stockton

Crown Lands Office Approval

PLAN APPROVED

Authorised Officer

Land District .....

Town No. .....

Town Block .....

Parish .....

Council Clerk's Certificate

I hereby certify that —

(a) the requirements of the Local Government Act, 1919 (other than the requirements for the registration of plans); and

(b) the requirements of section 349 of the Local Government (Town and Drainage) Act, 1924, as amended, have been complied with by the applicant in relation to the proposed SUBDIVISION (insert "new road", "subdivision" or "consolidation") set out herein

Subdivision No. 89/13

Date 2nd August 1989

(Signature) .....

Council Clerk

Council File No. 3.9143/1

*This part of certificate to be deleted where the application is only for a consolidation of lots or the closing of a road open or where the land to be subdivided is wholly outside the area of operations of the Metropolitan Water, Sewerage and Drainage Board and the Hunter District Water Board.

I, [illegible] of [illegible]

SURVEYOR'S REFERENCE: 11900 M.R.B.

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 25 August, 1989

10 20 30 40 50 60 70 Table of mm 110 120 130 140

Req:R156016 /Doc:CT 15463-025 CT /Rev:20-Dec-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:00
Ref:roseville /Src:M

[redacted]

ICATE OF TITLE

NEW SOUTH WALES

PROPERTY ACT, 1900

First Title Old System

Prior Title Vol.2145 Fol.14

Vol. 15463 Fol. 25

SEE AUTO FOLIO

EDITION ISSUED 26 9 1986

I certify that the person named in the First Schedule is the registered proprietor of an estate in fee simple (or such other estate or interest as is set out below) in the land described subject to the recordings appearing in the Second Schedule and to the provisions of the Real Property Act, 1900.

Registrar General.

Vol. 15463 Fol. 25

(Page 1) Vol.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

LAND REFERRED TO

S Lot 18 of Section C in DP5035 at Roseville in the Municipality of Ku-ring-gai Parish of Gordon County of Cumberland.

Title Diagram: DP5035

FIRST SCHEDULE

MICHAEL JOHN KEAN and JENNIFER ANNE KEAN, as Joint Tenants. V981453

SECOND SCHEDULE

GR4 1. Reservations and conditions in the Crown Grant.

M 2. V981454 Mortgage to Sussex Beheermaatschappij B.V.

3. W451251 Mortgage to Commonwealth Bank of Australia X204154

LT 2/64

L.O. 55

Vol 15463 Fol 25

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Registrar General

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION
~~X204155 Mortgage to Westpac Banking Corporation. Registered 17-11-1987.~~		Y316126
~~X91939 Caveat by Alfred Moss Investments Pty. Limited. Registered 11-1-1989.~~		Lapsed
Y316127 Mortgage to Alfred Moss Investments Pty. Limited Registered 1-5-1989		Y316127

CANCELLED

SEE AUTO FOLIO

NOTATIONS AND UNREGISTERED DEALINGS

Y91939 x L
Y316126 DM
7/4 /R

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL AF

Req:R156016 /Doc:CT 15463-025 CT /Rcv:20-Dec-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:00 Ref:roseville /Src:M

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 7:07PM

FOLIO: 18/C/5035

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 15463 FOL 25

Recorded	Number	Type of Instrument	C.T. Issue
9/8/1989		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
29/9/1989		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
20/2/1991	Z501118	DISCHARGE OF MORTGAGE	
20/2/1991	Z501119	DISCHARGE OF MORTGAGE	
20/2/1991	Z501120	MORTGAGE	EDITION 1
19/11/1993	I811157	CAVEAT	
14/12/1993	I874589	WITHDRAWAL OF CAVEAT	
14/12/1993	I874590	DISCHARGE OF MORTGAGE	
14/12/1993	I874591	TRANSFER	EDITION 2
20/5/2004	AA624162	MORTGAGE	EDITION 3
19/8/2005	AB707903	DISCHARGE OF MORTGAGE	
19/8/2005	AB707904	MORTGAGE	EDITION 4
23/8/2007	AD362807	DISCHARGE OF MORTGAGE	
23/8/2007	AD362808	MORTGAGE	EDITION 5
26/7/2014	AI770362	DISCHARGE OF MORTGAGE	
26/7/2014	AI770363	MORTGAGE	EDITION 6
21/5/2016	AK446817	DISCHARGE OF MORTGAGE	
21/5/2016	AK446818	TRANSFER	EDITION 7
2/1/2018	AM890340	MORTGAGE	EDITION 8 CORD ISSUED

*** END OF SEARCH ***

roseville

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Req:R156043 /Doc:DL I874591 /Rev:13-Apr-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:07 /Seq:1 of 1
Ref:roseville /Src:M

97-01T

TRANSFER

Real Property Act, 1900

I
874591 S

B

$2.00

Office of State Revenue use only

(1) $2

071293 3105 04 00159659Z/01

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

18/C/5035

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
	JENNIFER DARIN DX 29609 CHATSWOOD LTO BOX 590X REFERENCE (max. 15 characters): L-HOU

(C) **TRANSFEROR** MICHAEL JOHN KEAN & JENNIFER ANNE KEAN

(D) acknowledges receipt of the consideration of $805,000.00

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. 2. 3.

(F) **TRANSFEREE**

T

KUN YU HOU and YIN SHEN CHIU HOU of 6/18 Margaret St NORWOOD. SA.

(G) **TENANCY:** JOINT TENANTS

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED**

Signed in my presence by the Transferor who is personally known to me.

Signature of Witness

HOLLY JANE COLE
Name of Witness (BLOCK LETTERS)

30A NATALIE ST KILLARA
Address of Witness

Signature of Transferor

Signed in my presence by the Transferee who is personally known to

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

TITLE
☑ HEREWITH
☐ PRODUCED

Signature of Transferee

JENNIFER E DARIN, Solicitor

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)

Ausdoc Commercial and Law Stationers 1991

LAND REGISTRY SERVICES Title Search

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 18/C/5035

SEARCH DATE	TIME	EDITION NO	DATE
25/3/2019	7:08 PM	8	2/1/2018

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY NATIONAL AUSTRALIA BANK LIMITED.

LAND

LOT 18 OF SECTION C IN DEPOSITED PLAN 5035
AT ROSEVILLE
LOCAL GOVERNMENT AREA KU-RING-GAI
PARISH OF GORDON COUNTY OF CUMBERLAND
TITLE DIAGRAM DP5035

FIRST SCHEDULE

ANGLICAN SCHOOLS CORPORATION (T AK446818)

SECOND SCHEDULE (2 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 AM890340 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

roseville PRINTED ON 25/3/2019

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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Received: 25/03/2019 19:09:24

Req:R156068 /Doc:CT 09075-242 CT /Rev:07-Feb-2011 /Sts:OK.OK /Pgs:ALL /Prt:25-Mar-2019 19:32
Ref:roseville /Src:M

[redacted]

NEW SOUTH WALES

CERTIFICATE OF TITLE

PERTY ACT, 1900, as amend

09075242

(For Grant and title reference prior to first edition see Deposited Plan.)

Vol. 9075 Fol. 242

1st Edition issued 22-11-1961.

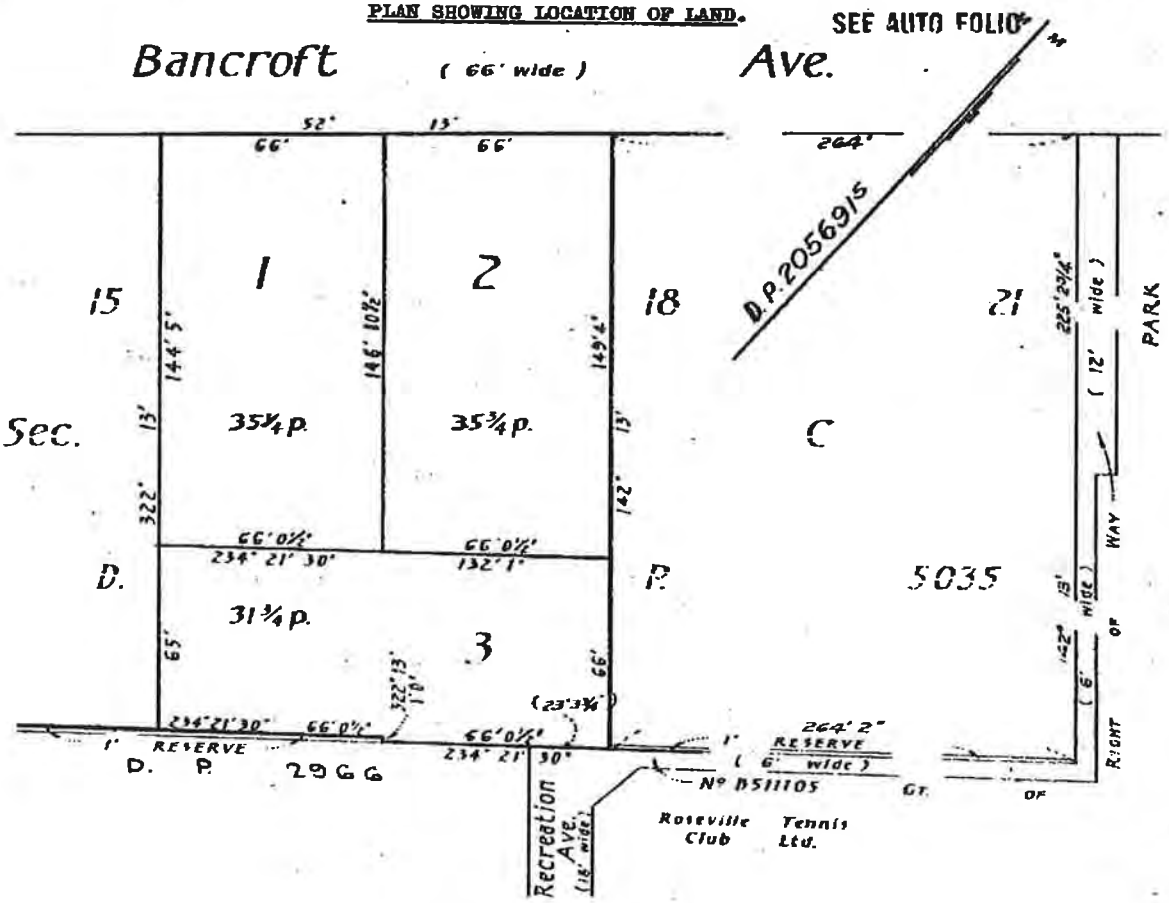
Fol. 242 Vol. 9075 (Page 1)

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

CANCELLED
Registrar-General.

PLAN SHOWING LOCATION OF LAND.



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 2 in Deposited Plan 205691s at Roseville in the Municipality of Ku-ring-gai Parish of Gordon and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

SELINA ELEANOR ROBERTS, of Roseville, Spinster.

Registrar General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenant created by Transfer No. 476948.

Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

Req:R156068 /Doc:CT 09075-242 CT /Rev:07-Feb-2011 /Sts:OK.OK /Pgs:ALL /Prt:25-Mar-2019 19:32
Ref:roseville /Src:M)

Vol. 9075 Fol. 242

25031 11.60 St 1609 V. C. N. Blight, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT			ENTERED	Signature of Registrar-General
	NATURE	NUMBER	DATE		

SECOND SCHEDULE (continued)

INSTRUMENT			PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
NATURE	NUMBER	DATE						
			SEE AUTO FOLIO					

CANCELLED

FORM No. 184

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 7:31PM

FOLIO: 2/205691

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9075 FOL 242

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
30/7/1993		AMENDMENT: LOCAL GOVT AREA	
12/8/1993		AMENDMENT: LOCAL GOVT AREA	
15/2/1996	O915163	APPLICATION FOR REPLACEMENT CERTIFICATE OF TITLE	
15/2/1996	O915164	TRANSMISSION APPLICATION	EDITION 1
27/2/1996	O942569	DEPARTMENTAL DEALING	EDITION 2
27/6/1997	3181063	TRANSFER	EDITION 3
8/3/1999	5652166	TRANSFER	EDITION 4
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville PRINTED ON 25/3/2019

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Received: 25/03/2019 19:32:47

RP3

TRANSMISSION APPLICATION

Section 93 Real Property Act 1900

0
915164 P

Office of State Revenue use only
$10.00
14029G 0403 12 001907033/01
N.S.W. STAMP DUTY

B

(A) LAND
Show no more than 20 References to Title.

FOLIO IDENTIFIER 2/205691

(B) REGISTERED DEALING
If applicable.

(C) LODGED BY

L.T.O. Box	Name, Address or DX and Telephone
4Q	ASHTON STEDMAN SOLICITORS 155 CATHEDRAL STREET WOOLLOOMOOLOO NSW 2011 REFERENCE (max. 15 characters): DX 879 SYDNEY

(D) DECEASED REGISTERED PROPRIETOR

SELINA ELEANOR ROBERTS

(E) APPLICANT

TA PENELOPE JANE HUNSTEAD & RICHARD WALLER HUNSTEAD
AS JOINT TENANTS

(F) I, the Applicant, being entitled as BENEFICIARIES of the will/[redacted] of the Deceased Registered Proprietor (who died on 16 AUGUST 1995) pursuant to Probate/[redacted] No. 118137/95 granted on 7 DECEMBER 1995 to RICHARD WALLER HUNSTEAD, apply to be registered as proprietor of the estate or interest of the Deceased Registered Proprietor in the Land/[redacted] specified above.

(G) Certified correct for the purposes of the Real property Act 1900.

DATE 10 FEBRUARY 1996

Signed in my presence by the Applicant who is personally known to me.

P. J. Hunstead

Signature of Witness

John Ashton

Name of Witness (BLOCK LETTERS)

49 Augusta Cres Forestville

Address of Witness

Signature of Applicant

EVIDENCE SIGHTED (office use only) ✓

CHECKED BY (office use only)

DOD: 16/8/95
Probate: 118137/95.

CONSENT OF EXECUTOR OR ADMINISTRATOR

(H)

I, RICHARD WALLER HUNSTEAD ..... Executor of the will / [redacted]

of the Deceased Registered Proprietor, hereby consent to this application.

.....
Signature of Witness

John Ashton
Name of Witness (BLOCK LETTERS)

49 Angophora Cres. Forestville NSW
Address of Witness

.....
Signature of Executor/Administrator

INSTRUCTIONS FOR COMPLETION

STAMP DUTY: If the Applicant is a devisee, beneficiary, next-of-kin or otherwise beneficially entitled or if the Deceased Registered Proprietor died prior to 31 December 1981 the application must be presented to the Office of State Revenue prior to lodgment at the Land Titles Office.

1. The Application must be completed clearly and legibly in permanent, dense, black or dark blue non-copying ink. If using a dot-matrix printer the print must be letter-quality.
2. Do not use an eraser or correction fluid to make alterations: rule through rejected material. Initial each alteration in the lefthand margin.
3. If the space provided at any point is insufficient, you may annex additional pages. These must be the same size as the form; paper quality, colour. etc, must conform to the requirements set out in Land Titles Office Information Bulletin No. 19. All pages of any annexure must be signed by the person executing the Application and any attesting witness.
4. The following instructions relate to the marginal letters on the application.

(A) LAND
Show the relevant Reference to Title. If there are more than 20 show none in this panel. Place ALL of them on an annexure (see 3 above) with 20 per sheet.

(B) REGISTERED DEALING
Show the registration number of any lease, mortgage or charge in regard to which the Applicant is applying to be registered as a proprietor.

(C) LODGED BY
This section relates to the person or firm lodging the Application at the Land Titles Office.
Reference (max. 15 characters) This is optional. Any slashes, dots, blank spaces, etc, will be counted as characters.

(D) DECEASED REGISTERED PROPRIETOR
Show the name in full. Address and occupation need not be shown.

(E) APPLICANT
Show the name in full. Address and occupation need not be shown.

(F) WILL/ESTATE, etc
Amend "will/estate", "Probate/Letters of Administation" and "Land/Registered Dealing" as appropriate.
In the relevant spaces show the capacity (executor, devisee, etc) in which the Applicant is entitled to apply, the date of death of the Deceased Registered Proprietor, the number and date of grant of the Probate or Letters of Administration pursuant to which the Application is made, and the name of the person to whom the grant was made.

(G) EXECUTION
General The application must be executed by or on behalf of the Applicant.
By the Applicant Personally The application must be signed in the presence of an adult witness who is not an Applicant and who knows the party executing personally. The witness should complete the appropriate section of the application.
By the Applicant's Attorney The Power of Attorney must be registered in the General Register of Deeds at the Land Titles Office. The execution should take the form, "AB by her attorney XY *[full name]* pursuant to Power of Attorney Book 1234 Number 567".
Under Authority If the application is made pursuant to any stantory, judicial or other authority, except a Power of Attorney (see above), the nature of the authority should be disclosed.
By a Corporation under Seal The execution should include a statement that the seal has been properly affixed, for example, "... pursuant to a resolution of the board of directors ...". Alternatively, all those attesting the affixing of the seal must state their position in the corporation.

(H) CONSENT OF EXECUTOR OR ADMINISTRATOR
This is required only where the Applicant claims to be entitled other than as executor, administrator or trustee.

The completed Application must be lodged by hand at the LAND TITLES OFFICE, Queen's Square, Sydney, together with the Certificate of Title, the probate or letters of administration (or a copy thereof certified by a solicitor to be a true copy) and a completed Notice of Sale.

If you have any questions about filling out the form, please call 228-6666 and ask for our Customer Services Branch.

Req:R156071 /Doc:DL 3181063 /Rcv:03-Jul-1997 /Sts:NO.OK /Pgs:ALL /Prt:25 Mar 2019 19:33 /Seq:1 of 1
Ref:roseville /Src:M
97-011

TRANSFER

Real Property Act, 1900

3181063 H

Office of State Revenue (N.S.W. TREASURY) 1996/97 P10 NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIER 2/205691

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
378V	BARNETTS DX 29619 CHATSWOOD Tel: 9411 5555 REFERENCE (max. 15 characters): J - 35349

OFFICE OF STATE REVENUE (N.S.W. TREASURY) 1996/97 ALTERATION NOTED

(C) **TRANSFEROR** PENELOPE JANE HUNSTEAD and RICHARD WALLER HUNSTEAD

(D) acknowledges receipt of the consideration of $637,500

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. ..... 2. ..... 3. .....

(F) **TRANSFEREE**

T TS (s713 LGA) TW (Sheriff)	THE ROSEVILLE GIRLS COLLEGE LIMITED ACN 000 288 335

(G) **TENANCY:**

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** 23 JUNE 1997

Signed in my presence by the Transferor who is personally known to me.

Peter J Ashton
Signature of Witness

PETER J ASHTON
Name of Witness (BLOCK LETTERS) TO BOTH OF THE TRANSFERORS

SOLICITOR SYDNEY
Address of Witness

R W Hunstead
P J Hunstead
Signature of Transferor s

Signed in my presence by the Transferee who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

Signature of Transferee

Jann B. Y. Tan - Solicitor for Transferee

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)

AUSDOC Office Pty. Ltd.

Req:R156072 /Doc:DL 5652166 /Rev:11-Mar-1999 /Sts:NO.OK /Pgs:ALL /Prt:25-Mar-2019 19:33 /Seq:1 of 1
Ref:roseville /Src:M

Form: 97-01T
Licence: LAW/0526/98

TRANSFER

New South Wales
Real Property Act 1900

5652166X

Office of State Revenue use only

OFFICE OF STATE REVENUE (N.S.W. TREASURY) P6 1996/97 NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT

(A) **LAND TRANSFERRED**
If appropriate, specify the unit(s) or share or part transferred.

OFFICE OF STATE REVENUE (N.S.W. TREASURY) P6 1996/97 ALTERATION NOTED

16/662121 B/974795 B/955109 A/955109 16/662120 32/791493 1/920049 B/339961 A/388083 ~~B/388083 C/388083~~ AUTO CONSOL 2531-225 31/791493 1/205691 2/205691 Vol 7011 Folio 9

(B) **LODGED BY**

LTO Box	Name, Address or DX and Telephone
887X	R J WALSH MURPHY & ROSKOV, Solicitors, P.O. Box 505 HURSTVILLE B C 1481 Telephone 02 9579 6633 REFERENCE (optional): RJW.MA.298106

(C) **TRANSFEROR** **THE ROSEVILLE GIRLS COLLEGE LIMITED (ACN 000 288 335)** IN LIQUIDATION

(D) acknowledges receipt of the consideration of $1.00

and as regards the land specified above transfers to the transferee an estate in fee simple.

(E) Encumbrances (if applicable) 1. Mortgage I540752 2. 3.

(F) **TRANSFEREE**

T TS (s713 LGA) TW (Sheriff)	**SYDNEY ANGLICAN SCHOOLS CORPORATION a Corporation incorporated under the Anglican Church of Australia (Bodies Corporate) Act, 1938**
(G)	**TENANCY:** S

(H) We certify this dealing correct for the purposes of the Real Property Act 1900. **DATE** 29/4/99

Signed in my presence by the transferor who is personally known to me.

Signature of Witness

Name of Witness (BLOCK LETTERS) Vanda Russell Gould.

Address of Witness

THE ROSEVILLE GIRLS COLLEGE LIMITED Common Seal A.C.N. 000 288 335

Signature of Transferor Liquidator LIQUIDATOR

Signed in my presence by the transferee who is personally known to me.

Signature of Witness Secretary

Name of Witness (BLOCK LETTERS) WILLIAM ALAN CLARKE

Address of Witness 1/34 MACMAHON ST HURSTVILLE

SYDNEY ANGLICAN SCHOOLS CORPORATION Common Seal

The Common Seal of Sydney Anglican Schools Corporation was hereunto affixed by the Authority of the Board of Directors in the presence of-

Signature of Transferee ~~Directors~~ Members

MDE prepared

Vol 7011 - Folio 9

CT - 887X 7011-9-425-P Page 9

Now from me 4/3/99

CHECKED BY (LTO use) .....

Req:R156067 /Doc:CT 09075-241 CT /Rev:07-Feb-2011 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:32
Ref:roseville /Src:M

[redacted]

NEW SOUTH WALES

CERTIFICATE OF TITLE

[redacted]PERTY ACT, 1900, as ame

09075241

(For Grant and title reference prior to first edition see Deposited Plan.)

Vol. 9075 Fol. 241

1st Edition issued 22-11-1961.

Fol. 241 — Vol. 9075 (Page 1)

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

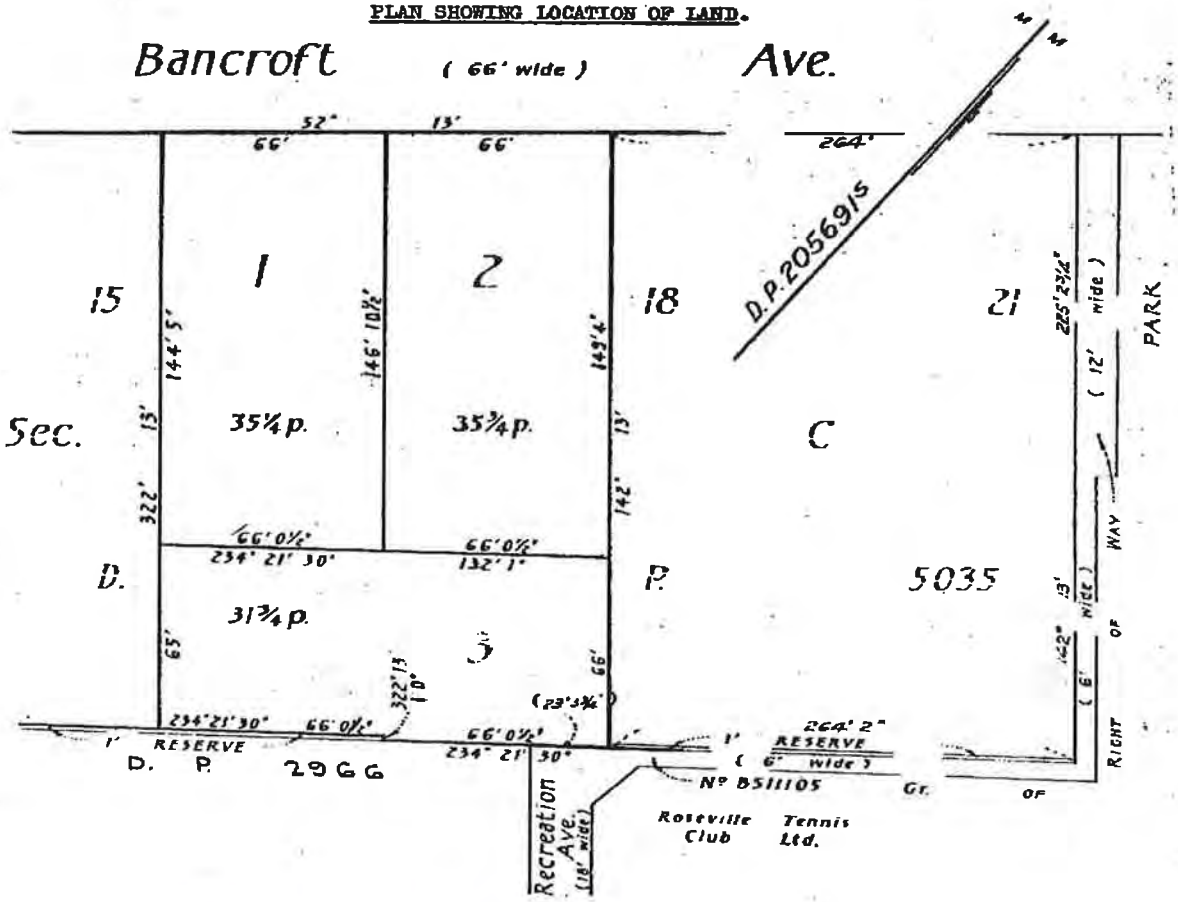
Witness

CANCELLED

Registrar-General.

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND.



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 1 in Deposited Plan 205691s at Roseville in the Municipality of Ku-ring-gai Parish of Gordon and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

JESSIE ROSALIND BUCKNELL, wife of Adrian Bucknell, of Roseville, Civil Servant.

Registrar General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenant created by by Transfer No. 476948.

Registrar General.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

25031 11.60 St 1609 V. C. N. Blight, Government Printer

Vol. 9075 Fol. 241

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
			SEE AUTO FOLIO					

CANCELLED

(Page 2 of 2 pages)

FORM No. 184

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Req:R156067 /Doc:CT 09075-241 CT /Rev:07-Feb-2011 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:32
Ref:roseville /Src:M

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 7:44PM

FOLIO: 1/205691

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9075 FOL 241

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
31/7/1992	E649652	TRANSFER	
31/7/1992	E649653	MORTGAGE	EDITION 1
30/7/1993		AMENDMENT: LOCAL GOVT AREA	
12/8/1993		AMENDMENT: LOCAL GOVT AREA	
4/3/1999	5652017	DISCHARGE OF MORTGAGE	EDITION 2
8/3/1999	5652166	TRANSFER	EDITION 3
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville PRINTED ON 25/3/2019

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Received: 25/03/2019 19:44:12

Req:R156080 /Doc:DL E649652 /Rev:27-May-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:44 /Seq:1 of 1
Ref:roseville /Src:M

RP13

[redacted]

TRANSFER

Real Property Act, 1900

E 649652 G

Office of State Revenue use only

OFFICE OF STATE REVENUE (NSW TREASURY) P17 NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

Folio Identifier 1/205691

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
853R	THORNTONS Solicitors MANCHESTER UNITY BUILDING 255 PITT STREET, SYDNEY

REFERENCE (max. 15 characters): J-03515 SYDNEY DX 362R

(C) **TRANSFEROR** JESSIE ROSALIND BUCKNELL

(D) acknowledges receipt of the consideration of FIVE HUNDRED AND TEN THOUSAND DOLLARS ($510,000.00)

and as regards the land specified above transfers to the transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. ..... 2. ..... 3. .....

(F) **TRANSFEREE**

T

THE ROSEVILLE GIRLS' COLLEGE LIMITED of
95 The Avenue, Hurstville in the State of New South Wales
(A.C.N. 000 288 335)

(G) as joint tenants/tenants in common

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATE OF EXECUTION** 15th July 1992

Signed in my presence by the transferor who is personally known to me.

K. L. Walker
Signature of Witness

K. L. WALKER
Name of Witness (BLOCK LETTERS)

Solicitor Sydney
Address of Witness

J. R. Bucknell
Signature of Transferor

Signed in my presence by the transferee who is personally known to me.

.....
Signature of Witness

.....
Name of Witness (BLOCK LETTERS)

.....
Address of Witness

S Mum
Solicitor for the ~~Transferor~~ Transferee
STEPHEN MARTIN FREEMAN

☞ **INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE**

CHECKED BY (office use only) 28 A

Ausdoc Commercial and Law Stationers 1991

Req:R156069 /Doc:CT 09075-243 CT /Rev:07-Feb-2011 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:32
Ref:roseville /Src:M

[redacted]

NEW SOUTH WALES

[redacted]TIFICATE OF TITLE

[redacted]PERTY ACT, 1900, as amen

09075243

Vol. 9075 Fol. 243

(For Grant and title reference prior to first edition see Deposited Plan.)

1st Edition issued 22-11-1961.

Vol. 9075 Fol. 243

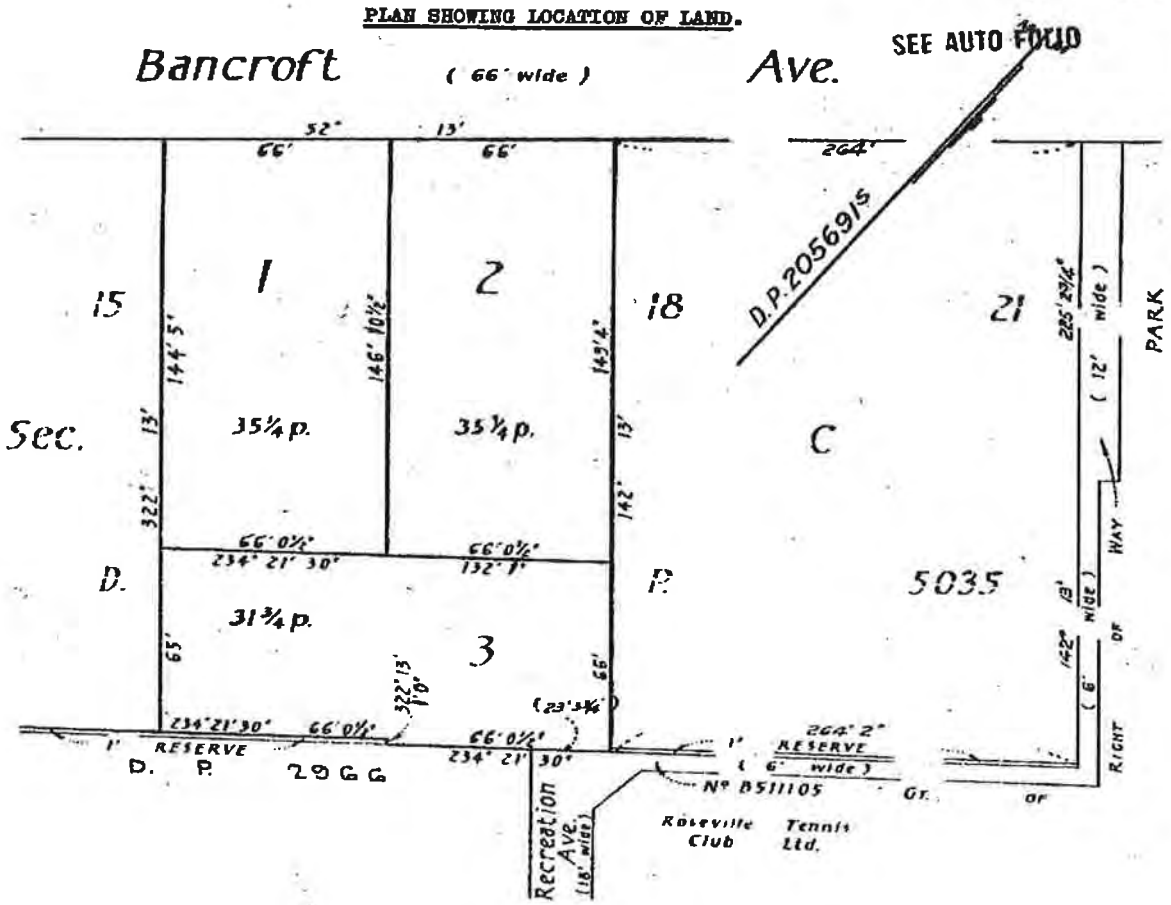
(Page 1)

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Witness

CANCELLED
Registrar-General.

PLAN SHOWING LOCATION OF LAND.



ESTATE AND LAND REFERRED TO.

Estate in Fee Simple in Lot 3 in Deposited Plan 205691s at Roseville in the Municipality of Ku-ring-gai Parish of Gordon and County of Cumberland.

FIRST SCHEDULE (Continued overleaf)

~~JESSIE ROSALIND BUCKNELL, wife of Adrian Bucknell, of Roseville, Civil Servant, as to that part of the land above described formerly comprised in Certificate of Title Volume 1853 Folio 81 and SELINA ELEANOR ROBERTS, of Roseville, Spinster, as to that part formerly comprised in Certificate of Title Volume 1859 Folio 117.~~

Registrar General.

SECOND SCHEDULE (Continued overleaf)

1. Reservations and conditions, if any, contained in the Crown Grant(s) referred to in the said Deposited Plan.
2. Covenant created by Transfer No. 476948 affecting part.

Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

25031 11.60 St 1609 V. C. N. Blight, Government Printer

Vol. 9075 Fol. 243

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar-General
~~Marjorie Joyce Ramsay of Roseville, Married Woman~~	~~Transfer~~	~~H 920731~~	~~12-10-1961~~	~~19-12-1961~~	~~Jamieson~~
The Roseville Girls' College Limited by Transfer T437241. Registered 4-3-1983					

H920731
T437241
— 42
X410230M
M

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		
~~Mortgage~~	~~J 249410~~	~~4-1-1963~~	~~to Commonwealth Savings Bank of Australia~~	~~1-2-1963~~	~~Jamieson~~	Discharged	M454118	Jamieson
~~T437242 Mortgage to The Mutual Life and Citizens' Assurance Company Limited. Registered 4-3-1983~~						Discharged	X410230	
MY X410231 Mortgage to Australia And New Zealand Banking Group Limited. Registered 9-3-1988.								

SEE AUTO FOLIO

CANCELLED

(Page 2 of 2 pages)

FORM No. 184 NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR-GENERAL ARE CANCELLED

Req:R156069 /Doc:CT 09075-243 CT /Rev:07-Feb-2011 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:32
Ref:roseville /Src:M

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 7:50PM

FOLIO: 3/205691

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 9075 FOL 243

Recorded	Number	Type of Instrument	C.T. Issue
4/6/1987		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
7/6/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
1/9/1989	DP791493	DEPOSITED PLAN	FOLIO CANCELLED
30/7/1993		AMENDMENT: LOCAL GOVT AREA	
12/8/1993		AMENDMENT: LOCAL GOVT AREA	

*** END OF SEARCH ***

roseville PRINTED ON 25/3/2019

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Received: 25/03/2019 19:49:56

Req:R156093 /Doc:CT 12274-139 CT /Rev:21-Dec-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:56
Ref:roseville /Src:M

[redacted]ICATE OF TITLE

NEW SOUTH WALES — PROPERTY ACT, 1900

Appln. No. 10116

Prior Title Vol.2651 Fol.31

Vol. 12274 Fol. 139

Edition issued 13-11-1973.

N385797 CANCELLED

I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General.

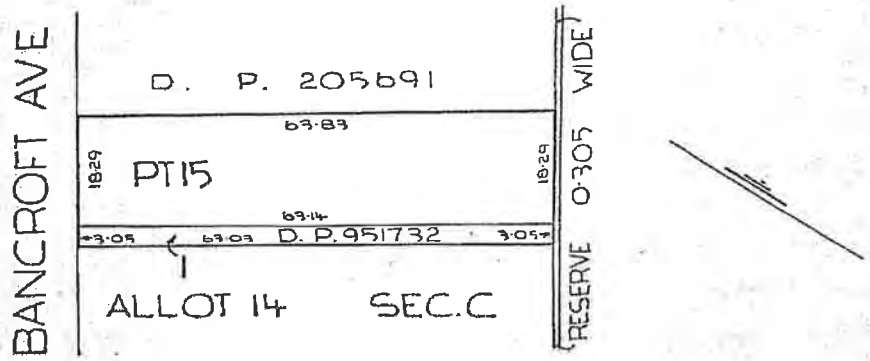
(Page 1) Vol. 12274 Fol. 139

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

WARNING THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



TOTAL AREA : 1353 m²

REDUCTION RATIO 1:800

N385797

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in the part of Lot 15 Section C in Deposited Plan 5035 and Lot 1 in Deposited Plan 951732 in the Municipality of Ku-ring-gai Parish of Gordon County of Cumberland being part of Portion 395 granted to Daniel Dering Mathew on 15-7-1819.

FIRST SCHEDULE

~~ROLAND GEORGE MURPHY of Roseville, Chartered Engineer.~~

SECOND SCHEDULE

GRM

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~Covenant created by Transfer No.476948.~~
3. ~~Covenant created by Transfer No.[redacted]064 affecting the part of Lot 15, Section C, Deposited Plan 5035 shown in the plan hereon.~~
4. ~~Mortgage No.K105917 to Southern Districts Starr-Bowkett Co-operative Building Society (No.6) Limited. Entered [redacted]-1965.~~ Discharged Y200127
5. ~~Mortgage No.K105918 to Southern Districts Starr-Bowkett Co-operative Building Society (No.9) Limited. Entered 17-8-1965.~~ Discharged Y200126

Registrar General.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R156093 /Doc:CT 12274-139 CT /Rev:21-Dec-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 19:56
Ref:roseville /Src:M

V. C. N. BLIGHT, GOVERNMENT PRINTER

Vol. 12274 Fol 139

CT. 13.1
T169955?
DP7914
Y550243

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
Sylvia Beatrice Murphy by Transmission T169955. Registered 5-8-1982					

DP/SP 791493 Registered 24/8/1989
This folio is cancelled as to whole/~~part~~ upon creation of computer folios for lots 31 in the abovementioned plan.

SECOND SCHEDULE (continued)

INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	PARTICULARS	ENTERED	Signature of Registrar-General	CANCELLATION		

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

(Page 2 of 2 pages)

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 8:05PM

FOLIO: 31/791493

First Title(s): OLD SYSTEM
Prior Title(s): VOL 12274 FOL 139

Recorded	Number	Type of Instrument	C.T. Issue
1/9/1989	DP791493	DEPOSITED PLAN	FOLIO CREATED EDITION 1
14/7/1994	U439317	TRANSFER	EDITION 2
8/3/1999	5652166	TRANSFER	EDITION 3
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

roseville PRINTED ON 25/3/2019

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Received: 25/03/2019 20:04:52

Req:R156110 /Doc:DL U439317 /Rev:24-Mar-2010 /Sts:OK.SC /Pgs:ALL /Prt:25-Mar-2019 20:06 /Seq:1 of 1
Ref:roseville /Src:M

RP13

[redacted]

TRANSFER

Real Property Act, 1900

U 439317 T

Office of State Revenue use only

GE 24(a)(11) Ref: F92/685

(A) **LAND TRANSFERRED**

Show no more than 20 References to Title.
If appropriate, specify the share transferred.

FOLIO IDENTIFIER 31/791493

(B) **LODGED BY**

L.T.O. Box	Name, Address or DX and Telephone
467W	BERNEY & ASSOCIATES Solicitors, DX 577 SYDNEY Tel: 416 4866 REFERENCE (max. 15 characters): ~~zmb 7849~~ S - 13093

(C) **TRANSFEROR** SYLVIA BEATRICE MURPHY

(D) acknowledges receipt of the consideration of $735,000.00

and as regards the land specified above transfers to the Transferee an estate in fee simple

(E) subject to the following **ENCUMBRANCES** 1. ..... 2. ..... 3. .....

(F) **TRANSFEREE**

T	THE ROSEVILLE GIRLS COLLEGE LIMITED (ACN 000 288 335)

(G) **TENANCY:**

(H) We certify this dealing correct for the purposes of the Real Property Act, 1900. **DATED** 8 July 1994

Signed in my presence by the Transferor who is personally known to me.

Signature of Witness

D. A. G GIBBS SOLICITOR

Name of Witness (BLOCK LETTERS)

Address of Witness

S.B. Murphy

Signature of Transferor

Signed in my presence by the Transferee who is personally known to

Signature of Witness

Name of Witness (BLOCK LETTERS)

Address of Witness

R.M. Berney

~~XXXXXX~~ Signature of Transferee's Solicitor

INSTRUCTIONS FOR FILLING OUT THIS FORM ARE AVAILABLE FROM THE LAND TITLES OFFICE

CHECKED BY (office use only)

Ausdoc Commercial and Law Stationers 1991

LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 8:08PM

FOLIO: 32/791493

First Title(s): OLD SYSTEM
Prior Title(s): 3/205691

Recorded	Number	Type of Instrument	C.T. Issue
1/9/1989	DP791493	DEPOSITED PLAN	FOLIO CREATED EDITION 1
20/10/1989	Y550243	TRANSFER	
	PRIOR TITLES(S) AS AMENDED: 3/205691, VOL 12274 FOL 139.		
20/10/1989	Y671211	DEPARTMENTAL DEALING	EDITION 2
10/4/1990	Y903106	DISCHARGE OF MORTGAGE	
10/4/1990	Y903107	MORTGAGE	EDITION 3
8/4/1993	I246387	DISCHARGE OF MORTGAGE	EDITION 4
6/8/1993	I540742	MORTGAGE	EDITION 5
8/3/1999	5652166	TRANSFER	EDITION 6
2/5/2001	7529087	DISCHARGE OF MORTGAGE	
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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Received: 25/03/2019 20:07:52

Req:R156450 /Doc:DL Y550243 /Rev:06-Aug-2010 /Sts:OK.SC /Pgs:ALL /Prt:26-Mar-2019 08:06 /Se
Ref:roseville /Src:M

RP 13 (1) STAMP DUTY

Y550243

OFFICE C... (N.S.W.) T...
1988/03
NO STAMP DUTY IS PAYABLE ON THIS INSTRUMENT
$8

TRANSFER

REAL PROPERTY ACT, 1900

T

A | 1 of 1 | X

$ ~~$50~~ 44

R 1/7

To Identify Land Reference	If Part Only, Delete Whole and Give Details	Location
VOLUME 12274 FOLIO 139 Now PART 32/791493	~~WHOLE~~ PART being that part of the land formerly comprised in Certificate of Title Volume 12274 Folio 139 and being now part of Lot 32 in Plan of Subdivision of Robert Alfred Pike dated 24th July 1989 DP 791493	Co. Cumberland Ph. Gordon D

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

SYLVIA BEATRICE MURPHY of Roseville

ESTATE Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of $25,000.00 and transfers an estate in fee simple in the land above described to the TRANSFEREE

TRANSFEREE Note (d)

THE ROSEVILLE GIRLS COLLEGE LIMITED of 27 Bancroft Avenue, Roseville

OFFICE USE ONLY

HIST

TENANCY Note (e)

~~as joint tenants/tenants in common~~

PRIOR ENCUMBRANCES Note (f)

subject to the following PRIOR ENCUMBRANCES 1. ..... 2. ..... 3. .....

DATE 11th August 1989

We hereby certify this dealing to be correct for the purposes of the Real Property Act, 1900.

EXECUTION Note (g)

Signed in my presence by the transferor who is personally known to me

Ian Foulsham
Signature of Witness

IAN W FOULSHAM
Name of Witness (BLOCK LETTERS)

SOLICITOR SYDNEY.
Address and occupation of Witness

S.B. Murphy
Signature of Transferor

Signed in my presence by the transferee who is personally known to me

Note (g)

Signature of Witness

Name of Witness (BLOCK LETTERS)

464
Address and occupation of Witness

Signature of Transferee

R M Woolner, Solicitor for the Transferee

TO BE COMPLETED BY LODGING PARTY
Notes (h) and (i) A
$64

LODGED BY LEGISTAT SERVICES

Delivery Box Number 230F

Checked	Passed	REGISTERED - -19
EB 2	EB	29 OCT 1989
Signed	Extra Fee	

OFFICE USE ONLY

LOCATION OF DOCUMENTS

CT	OTHER	
		Herewith.
		In L.T.O. with DP 791493
✓		Produced by ~~Foulsham & Cardes~~

Secondary Directions			
Delivery Directions			

LAND REGISTRY SERVICES — Historical Title

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 7:35PM

FOLIO: 100/1027386

First Title(s): OLD SYSTEM
Prior Title(s): 1-2/205691, A/388083, 16/662121, 1/920049, B/974795, VOL 7011 FOL 9, B/339961, 16/662120, 31-32/791493, A-B/955109, VOL 2531 FOL 225

Recorded	Number	Type of Instrument	C.T. Issue
3/5/2001	DP1027386	DEPOSITED PLAN	FOLIO CREATED EDITION 1
6/3/2003	9418936	TRANSFER GRANTING EASEMENT	EDITION 2
5/10/2005	DP1084428	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

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LAND REGISTRY SERVICES

Historical Title

InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE
25/3/2019 7:37PM

FOLIO: 2003/1084428

First Title(s): OLD SYSTEM
Prior Title(s): 100/1027386 1/1084427

Recorded	Number	Type of Instrument	C.T. Issue
5/10/2005	DP1084428	DEPOSITED PLAN	FOLIO CREATED EDITION 1
21/3/2016	AK302710	CHANGE OF NAME	
21/3/2016	AK302711	MORTGAGE	EDITION 2
9/9/2018	AN695392	DEPARTMENTAL DEALING	EDITION 3 CORD ISSUED

*** END OF SEARCH ***

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LAND REGISTRY SERVICES **Title Search** InfoTrack

NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 2003/1084428

SEARCH DATE	TIME	EDITION NO	DATE
25/3/2019	7:38 PM	3	9/9/2018

NO CERTIFICATE OF TITLE HAS ISSUED FOR THE CURRENT EDITION OF THIS FOLIO.
CONTROL OF THE RIGHT TO DEAL IS HELD BY NATIONAL AUSTRALIA BANK LIMITED.

LAND

LOT 2003 IN DEPOSITED PLAN 1084428
AT ROSEVILLE
LOCAL GOVERNMENT AREA KU-RING-GAI
PARISH OF GORDON COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1084428

FIRST SCHEDULE

ANGLICAN SCHOOLS CORPORATION (CN AK302710)

SECOND SCHEDULE (12 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
2 476948 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
3 A140415 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
4 A261883 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
5 A261883 RIGHT OF WAY 3.66 METRES WIDE APPURTENANT TO THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BENEFITED IN THE TITLE DIAGRAM (SEE DP662120)
6 A270386 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
7 A270386 RIGHT OF WAY 3.66 METRES WIDE APPURTENANT TO THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BENEFITED IN THE TITLE DIAGRAM (SEE DP954910)
8 A431275 RIGHT OF WAY 3.66 METRES WIDE APPURTENANT TO THE PART OF THE LAND ABOVE DESCRIBED SHOWN SO BENEFITED IN THE TITLE DIAGRAM (SEE DP954910)
9 B265111 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
10 G200378 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
11 9418936 EASEMENT FOR ELECTRICITY SUBSTATION PURPOSES 3.34 METRES WIDE AFFECTING THE PART OF THE LAND ABOVE DESCRIBED DESIGNATED (S) AS SHOWN SO BURDENED IN THE PLAN WITH 9418936

END OF PAGE 1 - CONTINUED OVER

FOLIO: 2003/1084428 PAGE 2

SECOND SCHEDULE (12 NOTIFICATIONS) (CONTINUED)

12 AK302711 MORTGAGE TO NATIONAL AUSTRALIA BANK LIMITED

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

* Any entries preceded by an asterisk do not appear on the current edition of the Certificate of Title. Warning: the information appearing under notations has not been formally recorded in the Register. InfoTrack an approved NSW Information Broker hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act 1900.

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Received: 25/03/2019 19:38:14

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Locked Bag 2906, Lisarow NSW 2252
Customer Experience 13 10 50
ABN 81 913 830 179 | www.safework.nsw.gov.au

Our Ref: D19/133559

6 June 2019

Douglas Partners Pty Ltd
Ms Chamali Nagodavithane
96 Hermitage Rd
WEST RYDE NSW 2114

Dear Ms Nagodavithane

RE SITE: 29 and 37 Bancroft Ave, Roseville NSW 2069

I refer to your site search request received by SafeWork NSW on 3 June 2019 requesting information on Storage of Hazardous Chemicals for the above site.

A search of the records held by SafeWork NSW has not located any records pertaining to the above-mentioned premises.

For further information or if you have any questions, please call us on 13 10 50 or email licensing@safework.nsw.gov.au

Yours sincerely

Customer Service Officer
Customer Experience - Operations
SafeWork NSW

PLANNING CERTIFICATE

818 Pacific Highway, Gordon NSW 2072
Locked Bag 1006, Gordon NSW 2072
T 02 9424 0000 F 02 9424 0001
DX 8703 Gordon TTY 02 9424 0875
E kmc@kmc.nsw.gov.au
W www.kmc.nsw.gov.au
ABN 86 408 856 411

UNDER SECTION 10.7 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

PROPERTY DETAILS

Address: **37 Bancroft Avenue ROSEVILLE NSW 2069**

Lot Description: **Lot 18 Sec C DP 5035**

CERTIFICATE DETAILS

Certificate No: **ePC3821/18** **Certificate Date:** **03/12/2018**

Certificate Type: **Section 10.7(2) & (5)**

APPLICANT DETAILS

REF:

Mr R Mooney
Level 2, 146 Arthur Street
NORTH SYDNEY NSW 2060

BACKGROUND INFORMATION

This certificate provides information on how a property (such as land, a house, a commercial building, etc.) may be used and the limits on its development. The certificate contains information Council is aware of through its records and environmental plans with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the Environmental Planning and Assessment Act.

THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

MATTERS AFFECTING THE LAND AS PRESCRIBED BY SCHEDULE 4 – ENVIRONMENTAL PLANNING & ASSESSMENT ACT REGULATION, 2000.

1. Names of relevant planning instruments and development control plans

(1) Which environmental planning instruments apply to the carrying out of development on this land?

Ku-ring-gai Local Environmental Plan 2015 as published on the NSW Legislation Website on 5 March 2015.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

State Environmental Planning Policy No.19 - Bushland in Urban Areas.
State Environmental Planning Policy No.21 - Caravan Parks
State Environmental Planning Policy No.33 - Hazardous & Offensive Development.
State Environmental Planning Policy No.44 - Koala Habitat Protection.
State Environmental Planning Policy No.55 - Remediation of Land.
State Environmental Planning Policy No.62 - Sustainable Aquaculture.
State Environmental Planning Policy No.64 - Advertising and Signage.
State Environmental Planning Policy No.65 - Design Quality of Residential Flat Development.
State Environmental Planning Policy No.70 - Affordable Housing (Revised Schemes).
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.
State Environmental Planning Policy (State Significant Precincts) 2005.
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007.
State Environmental Planning Policy (Infrastructure) 2007.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
State Environmental Planning Policy (Affordable Rental Housing) 2009.
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.
State Environmental Planning Policy (Coastal Management) 2018.
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

(2) Which proposed environmental planning instruments apply to the carrying out of development on this land? *(Including planning proposals and proposed environmental planning instruments that are or have been the subject of community consultation or on public exhibition under the E. P. & A. Act).*

There are no proposed environmental planning instruments that apply to this land.

(3) Which development control plans apply to the carrying out of development on this land?

Ku-ring-gai Development Control Plan

***SPECIAL NOTE**: A development control plan adds further detail to local environmental plans and may address issues such as building design, car parking, landscaping etc. Copies of the Plans are available from Council.*

2. Zoning and land use under relevant local environmental plans (other than a SEPP or proposed SEPP)

(a) What is the zoning of this property and the relevant environmental planning instrument?

R2 Low Density Residential under the provisions of Ku-ring-gai Local Environmental Plan 2015.

(b) What does not require development consent under the above environmental planning instrument?

Home occupations.

Note: Please refer to the provisions for Exempt and Complying Development as described in Part 3 of Ku-ring-gai Local Environmental Plan 2015.

(c) What does require development consent under the above environmental planning instrument?

Bed and breakfast accommodation; Boarding houses; Building identification signs, Business identification signs; Centre-based child care facilities; Community facilities; Dwelling houses; Environmental protection works; Exhibition homes; Flood mitigation works; Group homes; Health consulting rooms; Home-based child care; Home businesses; Home industries; Hospitals; Neighbourhood shops; Places of public worship; Recreation areas; Respite day care centres; Roads; Secondary dwellings.

(d) What is prohibited under the above environmental planning instrument?

Any development not specified in item (b) or (c).

(e) What is the proposed zoning of this property and the relevant proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(f) What does not require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(g) What does require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(h) What is prohibited under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(i) Do any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land?

There are no provisions in Ku-ring-gai Local Environmental Plan 2015 that regulate minimum dimension sizes for the erection of a dwelling house on this property.

(j) Does the land include or comprise critical habitat?

No.

(k) Is the land in a conservation area?

Yes.

This property is within a Heritage Conservation Area under the provisions of Ku-ring-gai Local Environmental Plan 2015.

***SPECIAL NOTE**: A conservation area is a place of historic and aesthetic value to the community. It contains a number of elements of significance, such as a historic subdivision layout, a pattern of building "footprints" within each street block, buildings of historic and architectural importance, road alignments, trees, gutters and kerb edges which all combine to create a sense of place that is worth keeping. Council's Heritage Planner can provide you with more information on this matter.*

(l) Is an item of environmental heritage situated on the land?

No.

***SPECIAL NOTE**: You are advised that the consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.*

3. Complying development

The extent to which the land is land on which complying development may or may not be carried out under each of the codes for complying development because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 and if complying development may not be carried out on that land the reason why it may not be carried out under those clauses?

*(**Special Note:** It is your responsibility to ensure that you comply with any other general requirements of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to do so may mean that a Complying Development Certificate issued under the provisions of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is invalid).*

Container Recycling Facilities Code

Complying development under the Container Recycling Facilities Code **may** be carried out on the land.

Commercial and Industrial Alterations Code

Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **may not** be carried out on the land. The land is affected by the following general exemptions and/or land based exclusions:

- The land is land within a heritage conservation area. However, this exclusion does not apply if the development is for a detached outbuilding or swimming pool.

Demolition Code

Complying development under the Demolition Code **may** be carried out on the land.

Fire Safety Code

Complying development under the Fire Safety Code **may** be carried out on the land.

General Development Code

Complying development under the General Development Code **may** be carried out on the land.

Housing Code

Complying development under the Housing Code **may not** be carried out on the land. The land is affected by the following general exemptions and/or land based exclusions:

- The land is land within a heritage conservation area. However, this exclusion does not apply if the development is for a detached outbuilding or swimming pool.

Housing Alterations Code

Complying development under the Housing Alterations Code **may** be carried out on the land.

Low Rise Medium Density Housing Code

Complying development under the Low Rise Medium Density Housing Code **may not** be carried out on the land. The land is affected by the following general exemptions and/or land based exclusions:

- The land is land within a heritage conservation area. However, this exclusion does not apply if the development is for a detached outbuilding or swimming pool.

Subdivision Code

Complying development under the Subdivision Code **may** be carried out on the land.

4B. Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable. This matter does not apply to land within Ku-ring-gai Local Government Area.

5. Mine subsidence

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No. Council has not been notified that the land is subject to such a proclamation.

6. Road widening and road realignment

Is the land affected by any road widening or road realignment under the Roads Act, any environmental planning instrument or any resolution of council?

No.

7. Council and other public authority policies on hazard risk restrictions.

Is the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, contamination, acid sulphate soils or other risk (other than flooding)?

No.

Note: A review of Council's readily available records has been conducted to identify previous land uses that may have caused land contamination. This review did not reveal any reason for contamination of this property. However, prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities. These uses are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination. If you are concerned about possible contamination of the site you should make your own investigations regarding the condition of this property.

7A. Flood related development controls information

Is development on the land or part of the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, subject to flood related development controls?

No.

8. Land reserved for acquisition

Do any environmental planning instruments or proposed environmental planning instruments referred to in clause 1 make provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No.

9. Contribution plans

Which contribution plans apply if this land is developed?

Ku-ring-gai Contributions Plan 2010.
Ku-ring-gai s94A Contributions Plan 2015.

***SPECIAL NOTE**: A contribution plan, commonly known as a section 94 plan, outlines the financial costs Council charges if land is developed and Council believes the development will require additional services such as parks, roads etc. Copies of the contribution plans are available from Council.*

9A. Biodiversity certified land

Is the land, land that is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity certified land.

***SPECIAL NOTE**: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.*

10. Biodiversity stewardship sites

Is the land, land that is a biodiversity stewardship site under a biodiversity stewardship agreement under part 5 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity stewardship land.

***SPECIAL NOTE**: Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.*

10A. Native vegetation clearing set asides

Is the land, land that contains a set aside area under section 60ZC of the Local Land Services Act 2013?

Council has not been notified that the land contains a set aside area.

11. Bush fire prone land

Is the land bush fire prone land?

No.

SPECIAL NOTE: *Bush fire prone land is defined in section 4 of the Environmental Planning and Assessment Act 1979 as meaning "land recorded for the time being as bushfire prone land on a bush fire prone land map for the area". The "area" is the local government area of Ku-ring-gai.*

12. Property vegetation plans

Is the land, land to which a property vegetation plan under Native Vegetation Act 2003 applies?

Council has not been notified that the land is subject to an approved property vegetation plan.

13. Orders under Trees (Disputes between Neighbours) Act 2006

Is the land, subject to an order under the Tree (Disputes between neighbours) Act 2006 to carry out work in relation to a tree on the land?

Council has not been notified that the land is subject to such an order.

14. Directions under Part 3A

Is the land, land subject to a direction under Part 3A Section 75P(2)(c1) of the Environmental Planning and Assessment Act 1979 No.203?

No.

15. Site Compatibility certificates and conditions for seniors housing

Is there a current site compatibility certificate (seniors housing), of which council is aware, in respect of proposed development on the land issued under clause 24 of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004?

The land is not subject to such a current site compatibility certificate (seniors housing) of which Council is aware.

16. Site Compatibility certificates for infrastructure, schools or TAFE establishments

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools and TAFE establishments), of which council is aware, in respect of proposed development on the land?

The land is not subject to such a valid site compatibility certificate (infrastructure) of which Council is aware.

17. Site Compatibility certificates and conditions for affordable rental housing

Is there a current site compatibility certificate (affordable rental housing), of which council is aware, in respect of proposed development on the land issued under clause 37 of State Environmental Planning Policy (Affordable Rental Housing) 2009?

The land is not subject to such a current site compatibility certificate (affordable rental housing) of which Council is aware.

18. Paper subdivision information

Is the land, land subject to a development plan adopted by a relevant authority, land proposed to be subject to a consent ballot or land subject to a subdivision order?

Not applicable.

SPECIAL NOTE: *Words and expressions used in this item have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000.*

19. Site verification certificate

Is there a current site verification certificate, of which council is aware, in respect of the land issued under clause 17C of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007?

The land is not subject to a current site verification certificate of which Council is aware.

SPECIAL NOTE: *A site verification certificate sets out the Secretary's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.*

20. Loose-fill asbestos insulation

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division?

NSW Fair Trading has not provided Council with written confirmation that this property is listed on the Loose-Fill Asbestos Insulation Register.

SPECIAL NOTE: *Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.*
You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

For further information about the Loos-fill asbestos Public Register contact NSW Fair Trading. Tel:13 32 20 or www.loosefillasbestos.nsw.gov.au.

21. Affected building notices and building product rectification orders

(1) Is there any affected building notice of which council is aware that is in force in respect of the land?

No.

(2) Is there any building product rectification order of which council is aware that is in force in respect of the land and has not been fully complied with?

No.

(3) Has any notice of intention to make a building product rectification order of which council is aware has been given in respect of the land and is outstanding?

No.

SPECIAL NOTE: *The terms "affected building notice" and "building product rectification order" have the same meaning as in the Building Products (Safety) Act 2017.*

The following matters are prescribed by Section 59(2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate.

(a) Is the land to which this certificate relates significantly contaminated land within the meaning of that Act?

No.

(b) Is the land to which this certificate relates subject to a management order within the meaning of that Act?

No.

(c) Is the land to which this certificate relates subject to an approved voluntary management proposal within the meaning of that Act?

No.

(d) Is the land to which this certificate relates subject to an ongoing maintenance order within the meaning of that Act?

No.

(e) Is the land of which this certificate relates subject to a site audit statement within the meaning of the Act?

No.

***SPECIAL NOTE**: If you have any concerns about land contamination beyond the information described in this certificate, you should contact the NSW Environmental Protection Authority. Tel: 131 555 or email info@environment.nsw.gov.au.*

THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Land Slip or Subsidence:

Council records do not have sufficient information to indicate land slip or subsidence is likely to restrict development on this land. However, some lots in Ku-ring-gai Local Government Area contain filling and/or road batters which may be subject to settlement and require special consideration in the design of foundations.

Flooding:

Some properties in the Ku-ring-gai Local Government area contain or adjoin natural drainage paths, pipelines, watercourses and depressions. During major rainfall or blockage of the drainage system surface water may affect the site or restrict future development.

SPECIAL NOTE: *The Department of Planning and Environment and the Department of Commerce have not indicated any private property which may be affected by flooding of major rivers or creeks in the Ku-ring-gai Local Government Area.*

Loose-fill asbestos insulation:

Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

For further information about the Loos-fill asbestos Public Register please contact NSW Fair Trading. Tel:13 32 20 or www.loosefillasbestos.nsw.gov.au.

Contamination:

Council records do not have sufficient information relating to any previous uses of this land to confirm that the land has not been used for a purpose which would be likely to have contaminated the land. Parties should make their own enquiries as to whether the land may be contaminated.

Threatened species, populations and ecological communities:

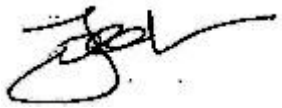
This land may contain threatened species, populations and ecological communities listed under the *Biodiversity Conservation Act 2016 (NSW)* and or the *Environment Protection Biodiversity Conservation Act 1999* (Commonwealth). For more information contact NSW Office of Environment and Heritage Tel: 131 555 or the Australian Government Department of Environment and Energy Tel: 1800 803 772.

This land may contain one or more of the following endangered or critically endangered

ecological communities listed under Schedule 2 of the *Biodiversity Conservation Act 2016 (NSW)*:

Blue Gum High Forest in the Sydney Basin Bioregion,
Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions,
Coastal Upland Swamp in the Sydney Basin Bioregion,
Duffys Forest Ecological Community in the Sydney Basin Bioregion,
Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions,
Sydney Turpentine Ironbark Forest.

For more information contact NSW Department of Environment & Heritage. Tel:131 555 or email info@environment.nsw.gov.au <mailto:info@environment.nsw.gov.au>



John McKee
General Manager

PLANNING CERTIFICATE

818 Pacific Highway, Gordon NSW 2072
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E kmc@kmc.nsw.gov.au
W www.kmc.nsw.gov.au
ABN 86 408 856 411

UNDER SECTION 10.7 OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT, 1979

PROPERTY DETAILS

Address: **29 Bancroft Avenue ROSEVILLE NSW 2069**

Lot Description: **Lot 2003 DP 1084428**

CERTIFICATE DETAILS

Certificate No: **ePC3822/18** **Certificate Date:** **03/12/2018**

Certificate Type: **Section 10.7(2) & (5)**

APPLICANT DETAILS

REF:

Mr R Mooney
Level 2, 146 Arthur Street
NORTH SYDNEY NSW 2060

BACKGROUND INFORMATION

This certificate provides information on how a property (such as land, a house, a commercial building, etc.) may be used and the limits on its development. The certificate contains information Council is aware of through its records and environmental plans with data supplied by the State Government. The details contained in this certificate are limited to that required by Section 10.7 of the Environmental Planning and Assessment Act.

THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(2) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

MATTERS AFFECTING THE LAND AS PRESCRIBED BY SCHEDULE 4 – ENVIRONMENTAL PLANNING & ASSESSMENT ACT REGULATION, 2000.

1. Names of relevant planning instruments and development control plans

(1) Which environmental planning instruments apply to the carrying out of development on this land?

Ku-ring-gai Local Environmental Plan (Local Centres) 2012 as published on the NSW Legislation Website on 25 January 2013.

Sydney Regional Environmental Plan (Sydney Harbour Catchment) 2005

State Environmental Planning Policy No.19 - Bushland in Urban Areas.
State Environmental Planning Policy No.21 - Caravan Parks
State Environmental Planning Policy No.33 - Hazardous & Offensive Development.
State Environmental Planning Policy No.44 - Koala Habitat Protection.
State Environmental Planning Policy No.55 - Remediation of Land.
State Environmental Planning Policy No.62 - Sustainable Aquaculture.
State Environmental Planning Policy No.64 - Advertising and Signage.
State Environmental Planning Policy No.65 - Design Quality of Residential Flat Development.
State Environmental Planning Policy No.70 - Affordable Housing (Revised Schemes).
State Environmental Planning Policy (Building Sustainability Index: BASIX) 2004.
State Environmental Planning Policy (State Significant Precincts) 2005.
State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.
State Environmental Planning Policy (Miscellaneous Consent Provisions) 2007.
State Environmental Planning Policy (Infrastructure) 2007.
State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.
State Environmental Planning Policy (Affordable Rental Housing) 2009.
State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017.
State Environmental Planning Policy (Educational Establishments and Child Care Facilities) 2017.
State Environmental Planning Policy (Coastal Management) 2018.
State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004.

(2) Which proposed environmental planning instruments apply to the carrying out of development on this land? *(Including planning proposals and proposed environmental planning instruments that are or have been the subject of community consultation or on public exhibition under the E. P. & A. Act).*

There are no proposed environmental planning instruments that apply to this land.

(3) Which development control plans apply to the carrying out of development on this land?

Ku-ring-gai Local Centres Development Control Plan

***SPECIAL NOTE**: A development control plan adds further detail to local environmental plans and may address issues such as building design, car parking, landscaping etc. Copies of the Plans are available from Council.*

2. Zoning and land use under relevant local environmental plans (other than a SEPP or proposed SEPP)

(a) What is the zoning of this property and the relevant environmental planning instrument?

SP2 Infrastructure - Educational Establishment under the provisions of Ku-ring-gai Local Environmental Plan (Local Centres) 2012.

(b) What does not require development consent under the above environmental planning instrument?

Nil.

Note: Please refer to the provisions for Exempt and Complying Development as described in Part 3 of Ku-ring-gai Local Environmental Plan (Local Centres) 2012.

(c) What does require development consent under the above environmental planning instrument?

Educational Establishment, including any development that is ordinarily incidental or ancillary to development for that purpose; Environmental protection works; Flood mitigation works; Recreation areas; Roads.

(d) What is prohibited under the above environmental planning instrument?

Any development not specified in item (b) or (c).

(e) What is the proposed zoning of this property and the relevant proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(f) What does not require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(g) What does require development consent under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(h) What is prohibited under the above proposed environmental planning instrument?

Not applicable. There are no proposed environmental planning instruments that relate to this matter.

(i) Do any development standards applying to the land fix minimum land dimensions for the erection of a dwelling-house on the land?

There are no provisions in Ku-ring-gai Local Environmental Plan (Local Centres) 2012 that regulate minimum dimension sizes for the erection of a dwelling house on this property.

(j) Does the land include or comprise critical habitat?

No.

(k) Is the land in a conservation area?

No.

***SPECIAL NOTE**: A conservation area is a place of historic and aesthetic value to the community. It contains a number of elements of significance, such as a historic subdivision layout, a pattern of building "footprints" within each street block, buildings of historic and architectural importance, road alignments, trees, gutters and kerb edges which all combine to create a sense of place that is worth keeping. Council's Heritage Planner can provide you with more information on this matter.*

(l) Is an item of environmental heritage situated on the land?

No.

***SPECIAL NOTE**: You are advised that the consent authority may, before granting consent to any development: (a) on land on which a heritage item is located, or (b) on land that is within a heritage conservation area, or (c) on land that is within the vicinity of land referred to in paragraph (a) or (b), require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.*

3. Complying development

The extent to which the land is land on which complying development may or may not be carried out under each of the codes for complying development because of the provisions of clauses 1.17A(1)(c) to (e), (2), (3) and (4), 1.18(1)(c3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 and if complying development may not be carried out on that land the reason why it may not be carried out under those clauses?

*(**Special Note:** It is your responsibility to ensure that you comply with any other general requirements of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008. Failure to do so may mean that a Complying Development Certificate issued under the provisions of the State Environmental Planning Policy (Exempt and Complying Development Codes) 2008 is invalid).*

Container Recycling Facilities Code

Complying development under the Container Recycling Facilities Code **may** be carried out on the land.

Commercial and Industrial Alterations Code

Complying development under the Commercial and Industrial Alterations Code **may** be carried out on the land.

Commercial and Industrial (New Buildings and Additions) Code

Complying development under the Commercial and Industrial (New Buildings and Additions) Code **may** be carried out on the land.

Demolition Code

Complying development under the Demolition Code **may** be carried out on the land.

Fire Safety Code

Complying development under the Fire Safety Code **may** be carried out on the land.

General Development Code

Complying development under the General Development Code **may** be carried out on the land.

Housing Code

Complying development under the Housing Code **may** be carried out on the land.

Housing Alterations Code

Complying development under the Housing Alterations Code **may** be carried out on the land.

Low Rise Medium Density Housing Code

Complying development under the Low Rise Medium Density Housing Code **may** be carried out on the land.

Subdivision Code

Complying development under the Subdivision Code **may** be carried out on the land.

4B. Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

Not applicable. This matter does not apply to land within Ku-ring-gai Local Government Area.

5. Mine subsidence

Is the land proclaimed to be a mine subsidence district within the meaning of section 15 of the Mine Subsidence Compensation Act 1961?

No. Council has not been notified that the land is subject to such a proclamation.

6. Road widening and road realignment

Is the land affected by any road widening or road realignment under the Roads Act, any environmental planning instrument or any resolution of council?

No.

7. Council and other public authority policies on hazard risk restrictions.

Is the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, contamination, acid sulphate soils or other risk (other than flooding)?

No.

Note: A review of Council's readily available records has been conducted to identify previous land uses that may have caused land contamination. This review did not reveal any reason for contamination of this property. However, prior to urban settlement, sizeable areas of Ku-ring-gai were covered by agricultural and horticultural activities. These uses are listed in the Managing Land Contamination Planning Guidelines as activities that may cause contamination. If you are concerned about possible contamination of the site you should make your own investigations regarding the condition of this property.

7A. Flood related development controls information

Is development on the land or part of the land affected by a policy adopted by council, or by any other public authority required to be referred to in a planning certificate, subject to flood related development controls?

No.

8. Land reserved for acquisition

Do any environmental planning instruments or proposed environmental planning instruments referred to in clause 1 make provision in relation to the acquisition of the land by a public authority, as referred to in section 3.15 of the Act?

No.

9. Contribution plans

Which contribution plans apply if this land is developed?

Ku-ring-gai Contributions Plan 2010.
Ku-ring-gai s94A Contributions Plan 2015.

***SPECIAL NOTE**: A contribution plan, commonly known as a section 94 plan, outlines the financial costs Council charges if land is developed and Council believes the development will require additional services such as parks, roads etc. Copies of the contribution plans are available from Council.*

9A. Biodiversity certified land

Is the land, land that is biodiversity certified land under Part 8 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity certified land.

***SPECIAL NOTE**: Biodiversity certified land includes land certified under Part 7AA of the Threatened Species Conservation Act 1995 that is taken to be certified under Part 8 of the Biodiversity Conservation Act 2016.*

10. Biodiversity stewardship sites

Is the land, land that is a biodiversity stewardship site under a biodiversity stewardship agreement under part 5 of the Biodiversity Conservation Act 2016?

Council has not been notified that the land is biodiversity stewardship land.

***SPECIAL NOTE**: Biodiversity stewardship agreements include biobanking agreements under Part 7A of the Threatened Species Conservation Act 1995 that are taken to be biodiversity stewardship agreements under Part 5 of the Biodiversity Conservation Act 2016.*

10A. Native vegetation clearing set asides

Is the land, land that contains a set aside area under section 60ZC of the Local Land Services Act 2013?

Council has not been notified that the land contains a set aside area.

11. Bush fire prone land

Is the land bush fire prone land?

No.

***SPECIAL NOTE:** Bush fire prone land is defined in section 4 of the Environmental Planning and Assessment Act 1979 as meaning "land recorded for the time being as bushfire prone land on a bush fire prone land map for the area". The "area" is the local government area of Ku-ring-gai.*

12. Property vegetation plans

Is the land, land to which a property vegetation plan under Native Vegetation Act 2003 applies?

Council has not been notified that the land is subject to an approved property vegetation plan.

13. Orders under Trees (Disputes between Neighbours) Act 2006

Is the land, subject to an order under the Tree (Disputes between neighbours) Act 2006 to carry out work in relation to a tree on the land?

Council has not been notified that the land is subject to such an order.

14. Directions under Part 3A

Is the land, land subject to a direction under Part 3A Section 75P(2)(c1) of the Environmental Planning and Assessment Act 1979 No.203?

No.

15. Site Compatibility certificates and conditions for seniors housing

Is there a current site compatibility certificate (seniors housing), of which council is aware, in respect of proposed development on the land issued under clause 24 of State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004?

The land is not subject to such a current site compatibility certificate (seniors housing) of which Council is aware.

16. Site Compatibility certificates for infrastructure, schools or TAFE establishments

Is there a valid site compatibility certificate (infrastructure) or site compatibility certificate (schools and TAFE establishments), of which council is aware, in respect of proposed development on the land?

The land is not subject to such a valid site compatibility certificate (infrastructure) of which Council is aware.

17. Site Compatibility certificates and conditions for affordable rental housing

Is there a current site compatibility certificate (affordable rental housing), of which council is aware, in respect of proposed development on the land issued under clause 37 of State Environmental Planning Policy (Affordable Rental Housing) 2009?

The land is not subject to such a current site compatibility certificate (affordable rental housing) of which Council is aware.

18. Paper subdivision information

Is the land, land subject to a development plan adopted by a relevant authority, land proposed to be subject to a consent ballot or land subject to a subdivision order?

Not applicable.

SPECIAL NOTE: *Words and expressions used in this item have the same meaning as they have in Part 16C of the Environmental Planning and Assessment Regulation 2000.*

19. Site verification certificate

Is there a current site verification certificate, of which council is aware, in respect of the land issued under clause 17C of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007?

The land is not subject to a current site verification certificate of which Council is aware.

SPECIAL NOTE: *A site verification certificate sets out the Secretary's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land – see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.*

20. Loose-fill asbestos insulation

Does the land include any residential premises (within the meaning of Division 1A of Part 8 of the Home Building Act 1989) that are listed on the register that is required to be maintained under that Division?

NSW Fair Trading has not provided Council with written confirmation that this property is listed on the Loose-Fill Asbestos Insulation Register.

SPECIAL NOTE: *Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.*
You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

For further information about the Loos-fill asbestos Public Register contact NSW Fair Trading. Tel:13 32 20 or www.loosefillasbestos.nsw.gov.au.

21. Affected building notices and building product rectification orders

(1) Is there any affected building notice of which council is aware that is in force in respect of the land?

No.

(2) Is there any building product rectification order of which council is aware that is in force in respect of the land and has not been fully complied with?

No.

(3) Has any notice of intention to make a building product rectification order of which council is aware has been given in respect of the land and is outstanding?

No.

SPECIAL NOTE: *The terms "affected building notice" and "building product rectification order" have the same meaning as in the Building Products (Safety) Act 2017.*

The following matters are prescribed by Section 59(2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate.

(a) Is the land to which this certificate relates significantly contaminated land within the meaning of that Act?

No.

(b) Is the land to which this certificate relates subject to a management order within the meaning of that Act?

No.

(c) Is the land to which this certificate relates subject to an approved voluntary management proposal within the meaning of that Act?

No.

(d) Is the land to which this certificate relates subject to an ongoing maintenance order within the meaning of that Act?

No.

(e) Is the land of which this certificate relates subject to a site audit statement within the meaning of the Act?

No.

SPECIAL NOTE*: If you have any concerns about land contamination beyond the information described in this certificate, you should contact the NSW Environmental Protection Authority. Tel: 131 555 or email info@environment.nsw.gov.au.*

THE FOLLOWING INFORMATION IS ISSUED UNDER SECTION 10.7(5) OF THE ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

Land Slip or Subsidence:

Council records do not have sufficient information to indicate land slip or subsidence is likely to restrict development on this land. However, some lots in Ku-ring-gai Local Government Area contain filling and/or road batters which may be subject to settlement and require special consideration in the design of foundations.

Flooding:

Some properties in the Ku-ring-gai Local Government area contain or adjoin natural drainage paths, pipelines, watercourses and depressions. During major rainfall or blockage of the drainage system surface water may affect the site or restrict future development.

SPECIAL NOTE: *The Department of Planning and Environment and the Department of Commerce have not indicated any private property which may be affected by flooding of major rivers or creeks in the Ku-ring-gai Local Government Area.*

Loose-fill asbestos insulation:

Some residential homes located in the Ku-ring-gai Local Government Area have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

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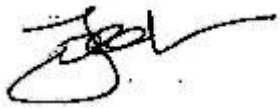
Council records do not have sufficient information relating to any previous uses of this land to confirm that the land has not been used for a purpose which would be likely to have contaminated the land. Parties should make their own enquiries as to whether the land may be contaminated.

Threatened species, populations and ecological communities:

This land may contain threatened species, populations and ecological communities listed under the *Biodiversity Conservation Act 2016 (NSW)* and or the *Environment Protection Biodiversity Conservation Act 1999* (Commonwealth). For more information contact NSW Office of Environment and Heritage Tel: 131 555 or the Australian Government Department of Environment and Energy Tel: 1800 803 772.



John McKee
General Manager

Appendix D

Results Summary Tables

Douglas Partners
Geotechnics | Environment | Groundwater

Table D3 - Groundwater Results (All results in µg/L unless otherwise stated)

Monitoring Well ID	Date Sampled	Metals								TRH		BTEX					PAH			Phenols	OCP							OPP
		Arsenic (Filtered)	Cadmium (Filtered)	Chromium (III+VI) (Filtered)	Copper (Filtered)	Lead (Filtered)	Mercury (Filtered)	Nickel (Filtered)	Zinc (Filtered)	C6-C10 less BTEX (F1)	>C10-C16 less NAPHTHALENE (F2)	Benzene	Toluene	Ethylbenzene	Xylene (m&p)	Xylene (o)	Benzo(a) pyrene	Naphthalene	Total PAH	Phenol (mg/L)	Aldrin + Dieldrin	Chlordance	Endosulfan	Endrin	Heptachlor	DDT	Chlorpyrifos
PQL		1	0.1	1	1	1	0.05	1	1	10	50	1	1	1	2	1	0.1	0.2	1	0.05	0.4	0.4	0.6	0.2	0.2	0.2	0.2
Site Assessment Criteria (SAC)																												
HSL A& B[1] , 2 m<4m, silt		-	-	-	-	-	-	-	-	6000	NL	4000	NL	NL	NL	NL	-	NL	-	-	-	-	-	-	-	-	-
GIL for slightly to moderately disturbed freshwater (95% species protection)[2]		24	0.2	1.0[C] (Cr VI)	1.4	3.4	-	11	8.0[C]	-	-	950	-	-	200 (p xylene)	350	-	16	-	0.32	-	-	-	-	-	-	0.01[D]
GIL for slightly to moderately disturbed freshwater (99% species protection)[2]		-	-	-	-	-	0.06[D]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03[D]	0.03[D]	0.01[D]	0.01[D]	0.006[D]	-
BH401 (MW401)	16/07/2019	<1	<0.1	<1	<1	<1	<0.05	5	10	<10	<50	<1	<1	<1	<2	<1	<0.1	<0.2	NIL (+)VE	<0.05	<0.4	<0.4	<0.6	<0.2	<0.2	<0.2	<0.2
BD20190716	16/07/2019	<1	<0.1	<1	<1	<1	<0.05	5	10	<10	<50	<1	<1	<1	<2	<1	<0.1	<0.2	NIL (+)VE	-	-	-	-	-	-	-	-
BH406 (MW406)	16/07/2019	8	<0.1	<1	<1	<1	<0.05	3	16	<10	<50	<1	<1	<1	<2	<1	<0.1	<0.2	NIL (+)VE	<0.05	<0.4	<0.4	<0.6	<0.2	<0.2	<0.2	<0.2

Notes

1 Table 1A(4) Groundwater HSLs for vapour intrusion from NEPC (2013)
2 Australian and New Zealand guidelines for fresh and marine water quality 2000 (ANZECC & ARMCANZ, 2000)
C Figure may not protect key species from chronic toxicity
D Chemical for which possible bioaccumulation and secondary poisoning effects should be considered

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Table D4 - Waste Classification Table (All results in mg/kg unless otherwise stated)

Borehole/ Sample ID[a]	Sampling Date	Strata	Metals							Total Petroleum Hydrocarbons								PAH			Phenols	OCP		OPP		PCB	Asbestos
			Arsenic	Cadmium	Chromium (VI)[b]	Lead	Lead TCLP (mg/L)	Mercury	Nickel	C6 - C9	C10 - C14	C15-C28	C29 - C36	Benzene	Toluene	Ethylbenzene	Xylenes	Benzo(a) Pyrene (BaP)	BaP TCLP (mg/L)	Total PAH	Phenol	Endosulfan	Total OCP *	Chlorpyrifos	Total OPP**	PCB ***	Asbestos
PQL			4	0.4	1	1	0.03	0.1	1	25	50	100	100	0.2	0.5	1	3	0.05	0.001	0.05	5	0.1	0.1	0.1	0.1	0.1	0.1g /kg
Published Background Values																											
Olszowy et al (1995) - Urban Soils (0-150mm)[1]			<5-40	<0.5-14	5-131	3-1465	-	<0.1-3.4	<5-160	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	NA
Berkman 4th Edition (2001) - Field Geologists Manual[2]			1- 50	1	5-1000	2-200	-	0.03	5-500	NA	NA	NA	NA	NA	NA	NA	NA	NA	-	NA	NA	NA	NA	NA	NA	NA	NA
Waste Classification Guidelines																											
NSW EPA (2014) CT1 (mg/kg) General Solid Waste			100	20	100	100	-	4	40	650	10 000			10	288	600	1000	0.8	-	200	288	60	<50	4	250	<50	NAD
NSW EPA (2014) SCC1 (mg/kg) TCLP1 (mg/L) General Solid Waste			500	100	1900	1500	5	50	1050	650	10 000			18	518	1080	1800	10	0.04	200	518	108	<50	7.5	-	<50	NAD
NSW EPA (2014) CT2 (mg/kg) Restricted Solid Waste			400	80	400	400	20	16	160	2600	40 000			40	1152	2400	4000	3.2	0.16	800	1152	240	<50	16	1000	<50	NAD
BH401/0.5	27/06/2019	fill	<4	<0.4	23	12	-	0.2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BD4 270619	27/06/2019	fill	<4	<0.4	19	14	-	<0.1	2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1	-	0.56	-	-	-	-	-	-	-
BD4 270619 - A	27/06/2019	fill	5.1	<0.4	29	17	-	<0.1	<5	<20	<20	<50	<50	<0.1	<0.1	<0.1	<0.3	<0.5	-	<0.5	-	-	-	-	-	-	-
BH401/1.0	27/06/2019	fill	4[b]	<0.4	25[b]	21[b]	-	0.1	4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.3[b]	-	2.4[b]	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH402/0.2	29/06/2019	fill	5	<0.4	21	71	-	0.1	4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.5	-	4.6	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH403/0.2	28/06/2019	fill	4	<0.4	9	56	-	<0.1	2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	0.2	-	-	-	-	-	-	NAD
BH403/0.5	28/06/2019	fill	8	<0.4	7	60	-	<0.1	3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.1	-	0.4	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH404/1.0	26/06/2019	fill	4	<0.4	24	9	-	0.1	3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	<0.05	-	-	-	-	-	-	NAD
BH405/0.2	26/06/2019	fill	<4	<0.4	8	28	-	<0.1	4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.08	-	0.5	-	-	-	-	-	-	NAD
BH406/0.3	27/06/2019	natural	6	<0.4	24	13	-	<0.1	1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	<0.05	-	-	-	-	-	-	NAD
BH407/0.5	28/06/2019	natural	<4	<0.4	4	9	-	<0.1	<1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	-	<0.05	-	-	-	-	-	-	NAD
BH408/0.2	28/06/2019	fill	90[b]	<0.4	18	140	<0.03	0.1	7	<25	<50	100	170	<0.2	<0.5	<1	<3	1.2	<0.001	11[b]	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD
BH408/0.5	28/06/2019	fill	30	<0.4	17	63	-	<0.1	3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.85	-	7.7	<5	<0.1	<0.1	<0.1	<0.1	<0.1	NAD

Notes

NSW EPA (2014)	Waste Classification Guidelines - Part 1: Classifying Waste
a	Duplicate and triplicate sample is listed below primary sample
b	Replicate / triplicate value adopted
NAD	No asbestos detected at the laboratory reporting limit of 0.1g/kg
-	Not tested
*	Total OCP includes chemicals listed as "Scheduled Chemicals" in NSW EPA (2014)
**	Total OPP includes chemicals listed as Moderately Harmful Pesticides in NSW EPA (2014)
***	PCBs must be managed in accordance with the EPA's PCB Chemical Control Order 1997
1	Olszowy, H., P. Torr, and P. Imray. 1995. Trace element concentrations in soil from rural and urban areas of Australia.
2	Average abundance of selected minor elements in the earth's crust (soils) - taken predominantly from Swaine D J, 1995, The trace element content of soils

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.15/08/2019 4:06:57 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Copper

General Statistics

Total Number of Observations	9	Number of Distinct Observations	9
		Number of Missing Observations	0
Minimum	1	Mean	34
Maximum	200	Median	14
SD	63.35	Std. Error of Mean	21.12
Coefficient of Variation	1.863	Skewness	2.813

Note: Sample size is small (e.g., <10), if data are collected using ISM approach, you should use guidance provided in ITRC Tech Reg Guide on ISM (ITRC, 2012) to compute statistics of interest. For example, you may want to use Chebyshev UCL to estimate EPC (ITRC, 2012). Chebyshev UCL can be computed using the Nonparametric and All UCL Options of ProUCL 5.1

Normal GOF Test

Shapiro Wilk Test Statistic	0.548	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.829	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.371	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.274	Data Not Normal at 5% Significance Level

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	73.27	95% Adjusted-CLT UCL (Chen-1995)	89.89
		95% Modified-t UCL (Johnson-1978)	76.57

Gamma GOF Test

A-D Test Statistic	0.562	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.765	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.257	**Kolmogorov-Smirnov Gamma GOF Test**
5% K-S Critical Value	0.293	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.578	k star (bias corrected MLE)	0.46
Theta hat (MLE)	58.81	Theta star (bias corrected MLE)	73.99
nu hat (MLE)	10.41	nu star (bias corrected)	8.271
MLE Mean (bias corrected)	34	MLE Sd (bias corrected)	50.16
		Approximate Chi Square Value (0.05)	2.893
Adjusted Level of Significance	0.0231	Adjusted Chi Square Value	2.266

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50)	97.2	95% Adjusted Gamma UCL (use when n<50)	124.1

	A	B	C	D	E	F	G	H	I	J	K	L
56	**Lognormal GOF Test**											
57					Shapiro Wilk Test Statistic	0.977	**Shapiro Wilk Lognormal GOF Test**					
58					5% Shapiro Wilk Critical Value	0.829	Data appear Lognormal at 5% Significance Level					
59					Lilliefors Test Statistic	0.152	**Lilliefors Lognormal GOF Test**					
60					5% Lilliefors Critical Value	0.274	Data appear Lognormal at 5% Significance Level					
61	**Data appear Lognormal at 5% Significance Level**											
62												
63	**Lognormal Statistics**											
64					Minimum of Logged Data	0			Mean of logged Data			2.452
65					Maximum of Logged Data	5.298			SD of logged Data			1.54
66												
67	**Assuming Lognormal Distribution**											
68					95% H-UCL	451.1			90% Chebyshev (MVUE) UCL			78.73
69					95% Chebyshev (MVUE) UCL	100.6			97.5% Chebyshev (MVUE) UCL			131
70					99% Chebyshev (MVUE) UCL	190.6						
71												
72	**Nonparametric Distribution Free UCL Statistics**											
73	**Data appear to follow a Discernible Distribution at 5% Significance Level**											
74												
75	**Nonparametric Distribution Free UCLs**											
76					95% CLT UCL	68.73			95% Jackknife UCL			73.27
77					95% Standard Bootstrap UCL	67.05			95% Bootstrap-t UCL			283.9
78					95% Hall's Bootstrap UCL	249.6			95% Percentile Bootstrap UCL			73.56
79					95% BCA Bootstrap UCL	94.33						
80					90% Chebyshev(Mean, Sd) UCL	97.35			95% Chebyshev(Mean, Sd) UCL			126
81					97.5% Chebyshev(Mean, Sd) UCL	165.9			99% Chebyshev(Mean, Sd) UCL			244.1
82												
83	**Suggested UCL to Use**											
84					95% Adjusted Gamma UCL	124.1						
85												
86	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
87	Recommendations are based upon data size, data distribution, and skewness.											
88	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
89	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
90												

Appendix E

Borehole Log Results

Descriptive Notes

Sampling Methods

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Sampling

Sampling is carried out during drilling or test pitting to allow engineering examination (and laboratory testing where required) of the soil or rock.

Disturbed samples taken during drilling provide information on colour, type, inclusions and, depending upon the degree of disturbance, some information on strength and structure.

Undisturbed samples are taken by pushing a thin-walled sample tube into the soil and withdrawing it to obtain a sample of the soil in a relatively undisturbed state. Such samples yield information on structure and strength, and are necessary for laboratory determination of shear strength and compressibility. Undisturbed sampling is generally effective only in cohesive soils.

Test Pits

Test pits are usually excavated with a backhoe or an excavator, allowing close examination of the in-situ soil if it is safe to enter into the pit. The depth of excavation is limited to about 3 m for a backhoe and up to 6 m for a large excavator. A potential disadvantage of this investigation method is the larger area of disturbance to the site.

Large Diameter Augers

Boreholes can be drilled using a rotating plate or short spiral auger, generally 300 mm or larger in diameter commonly mounted on a standard piling rig. The cuttings are returned to the surface at intervals (generally not more than 0.5 m) and are disturbed but usually unchanged in moisture content. Identification of soil strata is generally much more reliable than with continuous spiral flight augers, and is usually supplemented by occasional undisturbed tube samples.

Continuous Spiral Flight Augers

The borehole is advanced using 90-115 mm diameter continuous spiral flight augers which are withdrawn at intervals to allow sampling or in-situ testing. This is a relatively economical means of drilling in clays and sands above the water table. Samples are returned to the surface, or may be collected after withdrawal of the auger flights, but they are disturbed and may be mixed with soils from the sides of the hole. Information from the drilling (as distinct from specific sampling by SPTs or undisturbed samples) is of relatively low reliability, due to the remoulding, possible mixing or softening of samples by groundwater.

Non-core Rotary Drilling

The borehole is advanced using a rotary bit, with water or drilling mud being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be determined from the cuttings, together with some information from the rate of penetration. Where drilling mud is used this can mask the cuttings and reliable identification is only possible from separate sampling such as SPTs.

Continuous Core Drilling

A continuous core sample can be obtained using a diamond tipped core barrel, usually with a 50 mm internal diameter. Provided full core recovery is achieved (which is not always possible in weak rocks and granular soils), this technique provides a very reliable method of investigation.

Standard Penetration Tests

Standard penetration tests (SPT) are used as a means of estimating the density or strength of soils and also of obtaining a relatively undisturbed sample. The test procedure is described in Australian Standard 1289, Methods of Testing Soils for Engineering Purposes - Test 6.3.1.

The test is carried out in a borehole by driving a 50 mm diameter split sample tube under the impact of a 63 kg hammer with a free fall of 760 mm. It is normal for the tube to be driven in three successive 150 mm increments and the 'N' value is taken as the number of blows for the last 300 mm. In dense sands, very hard clays or weak rock, the full 450 mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form.

- In the case where full penetration is obtained with successive blow counts for each 150 mm of, say, 4, 6 and 7 as:

  4,6,7
  N=13

- In the case where the test is discontinued before the full penetration depth, say after 15 blows for the first 150 mm and 30 blows for the next 40 mm as:

  15, 30/40 mm

The results of the SPT tests can be related empirically to the engineering properties of the soils.

Dynamic Cone Penetrometer Tests / Perth Sand Penetrometer Tests

Dynamic penetrometer tests (DCP or PSP) are carried out by driving a steel rod into the ground using a standard weight of hammer falling a specified distance. As the rod penetrates the soil the number of blows required to penetrate each successive 150 mm depth are recorded. Normally there is a depth limitation of 1.2 m, but this may be extended in certain conditions by the use of extension rods. Two types of penetrometer are commonly used.

- Perth sand penetrometer - a 16 mm diameter flat ended rod is driven using a 9 kg hammer dropping 600 mm (AS 1289, Test 6.3.3). This test was developed for testing the density of sands and is mainly used in granular soils and filling.
- Cone penetrometer - a 16 mm diameter rod with a 20 mm diameter cone end is driven using a 9 kg hammer dropping 510 mm (AS 1289, Test 6.3.2). This test was developed initially for pavement subgrade investigations, and correlations of the test results with California Bearing Ratio have been published by various road authorities.

BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.1 m AHD
EASTING: 331778
NORTHING: 6260361
DIP/AZIMUTH: 90°/--

BORE No: BH401
PROJECT No: 85310.01
DATE: 27.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering	Graphic Log	Rock Strength	Water	Fracture Spacing (m)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
82	0.1	FILLING: red-brown sandy gravel filling, humid							D/E			PID=2.7
		FILLING: brown and grey silty clay filling trace ironstone gravels, rootlets, sand and ceramic fragments, moist							D/E			PID<1 BD4270619(x2)
81	1								D/E			PID<1
	1.2	SANDY CLAY: firm to stiff, pale grey fine sandy clay, moist							S			6,2,3 N = 5
									D/E			PID<1
80	2											
	2.0	SANDSTONE: extremely low strength, pale grey, fine to medium grained sandstone							S			4,25/50 refusal
	2.6	SANDSTONE: medium strength, highly to moderately weathered, slightly fractured to unbroken, red-brown, medium grained sandstone										
79	3								C	100	100	PL(A) = 0.33
						16-07-19		3.72m: B, 0-10°, pl, ro, fe co				PL(A) = 0.85
78	4											
	4.3	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey and pale brown medium grained sandstone						4.77m: B, 0-10°, pl, ro, cly 10mm				PL(A) = 0.92
77	5							5.21m: B, 0-10°, pl, ro, cly vn				
									C	100	100	PL(A) = 0.64
76	6							5.96m: B, 0-10°, pl, ro, cly vn				
								6.22m: B, 0-10°, pl, ro, cly co				
	6.9	SANDSTONE: high strength, fresh, unbroken, pale grey, medium grained sandstone										PL(A) = 1.3
75	7											
								7.68m: B, 0-10°, pl, ro, cly vn				PL(A) = 1
74	8											
								8.67m: B, 0-10°, pl, ro, cly vn	C	100	100	PL(A) = 1.4
73	9											
								9.8m: B, 0-10°,pl, ro,cly vn				PL(A) = 1.2
72	10 10.0	Bore discontinued at 10.0m										

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** HW to 2.7m

TYPE OF BORING: Hand auger to 1.5m, Pushtube to 2.7m, NMLC to 10.00m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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WELL LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.1 m AHD
EASTING: 331778
NORTHING: 6260361
DIP/AZIMUTH: 90°/--

BORE No: BH401
PROJECT No: 85310.01
DATE: 27/6/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
82	0.1	FILLING: red-brown sandy gravel filling, humid		D/E	0.1				Backfill
		FILLING: brown and grey silty clay filling trace ironstone gravels, rootlets, sand and ceramic fragments, moist		D/E	0.2 0.4		BD4270619(x2)		
81	1			D/E	0.5 0.9				
	1.2	SANDY CLAY: firm to stiff, pale grey fine sandy clay, moist		S	1.0		6,2,3 N = 5		
				D/E	1.45 1.5				
80	2				1.6				Bentonite Blank PVC
	2.0	SANDSTONE: extremely low strength, pale grey, fine to medium grained sandstone		S	2.4		4,25/50 refusal		
	2.6	SANDSTONE: medium strength, highly to moderately weathered, slightly fractured to unbroken, red-brown, medium grained sandstone			2.6				
79	3			C	2.95		PL(A) = 0.33		
78	4				3.95		PL(A) = 0.85	16-07-19	
	4.3	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey and pale brown medium grained sandstone			4.5				
77	5				4.95		PL(A) = 0.92		
76	6			C	5.9		PL(A) = 0.64		
	6.9	SANDSTONE: high strength, fresh, unbroken, pale grey, medium grained sandstone			6.9		PL(A) = 1.3		Gravel
75	7				7.3				Machine slotted PVC screen
74	8				7.9		PL(A) = 1		
				C					
73	9				8.95		PL(A) = 1.4		
	10 10.0				9.95		PL(A) = 1.2		End cap
72		Bore discontinued at 10.0m			10.0				

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** HW to 2.7m

TYPE OF BORING: Hand auger to 1.5m, Pushtube to 2.7m, NMLC to 10.00m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 83.0 m AHD
EASTING: 331787
NORTHING: 6260343
DIP/AZIMUTH: 90°/--

BORE No: BH402
PROJECT No: 85310.01
DATE: 27.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
83	0	FILLING: dark grey clayey silt filling (topsoil), trace rootlets		D/E	0.1		PID<1		
	0.25	FILLING: brown silty clay filling, with fine gravel trace sand, damp		D/E	0.2 0.4		PID<1		
	0.8	CLAY: very stiff, red-brown and pale grey-brown clay, with some ironstone bands, moist		D/E	0.5 0.9		PID<1		
82	1				1.0				1
				S	1.2		25,18,6 N = 24		
					1.65				
	1.8	SANDSTONE: extremely low strength, pale grey and red-brown fine grained sandstone		D/E	1.9		PID<1		
81	2				2.0				2
				S	2.2		4,4,9 N = 13		
		Below 2.5m: grading to pale grey			2.65				
				D/E	2.9		PID<1		
80	3			S	3.0		30,B refusal		3
	3.15	Bore discontinued at 3.15m Refusal of pushtube/SPT within extremely low strength sandstone			3.15				
79	4								4

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** uncased
TYPE OF BORING: Pushtube to 3.15m
WATER OBSERVATIONS: No free groundwater observed whilst pushtubing
REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 83.3 m AHD
EASTING: 331801
NORTHING: 6260316
DIP/AZIMUTH: 90°/--

BORE No: BH403
PROJECT No: 85310.01
DATE: 28.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
83	0.25	FILLING: dark grey, silty sand filling (topsoil) trace of rootlets		D/E	0.1 0.2		PID<1		
		FILLING: dark brown to dark grey silty clay filling with some medium sand, trace ironstone gravel, ceramics and plastic, moist to damp		D/E	0.4 0.5		PID<1		
	0.8	CLAY: stiff, brown to dark brown clay, trace silt and ironstone gravel, moist to damp		D/E	0.9 1.0		PID<1		
	1.1	Bore discontinued at 1.1m Refusal on ironstone band							

RIG: Hand tools **DRILLER:** AT **LOGGED:** AT **CASING:** uncased

TYPE OF BORING: Hand Auger to 1.1m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

Douglas Partners
Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 84.7 m AHD
EASTING: 331757
NORTHING: 6260346
DIP/AZIMUTH: 90°/--

BORE No: BH404
PROJECT No: 85310.01
DATE: 26.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
84	0.0	FILLING: dark grey silty clay filling (topsoil), with some fine sand and rootlets, humid		D/E	0.1 0.2		PID<1 BD2260619		
	0.4	FILLING: brown to orange-brown, clay filling, with some concrete gravel, moist to damp		D/E	0.4 0.5		PID<1		
	1			D/E	0.9 1.0		PID<1		1
	1.1	CLAY: stiff to very stiff, orange-brown, clay, trace silt, moist			1.2				
				S D/E	1.4 1.5		2,7,6 N = 13 PID<1		
83	1.6	SANDSTONE: extremely low strength, red-brown and pale grey, fine grained sandstone			1.65				
	2			D/E	1.9 2.0		PID<1		2
	2.2	SANDSTONE: extremely low strength, pale grey, fine grained sandstone with some red-brown ironstone bands		S	2.2		25,B refusal		
82	2.35	Bore discontinued at 2.35m Refusal of pushtube/SPT within extremely low strength sandstone			2.35				
	3								3
81	4								4
80									

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** uncased
TYPE OF BORING: Pushtube to 2.35m
WATER OBSERVATIONS: No free groundwater observed whilst pushtubing
REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Geotechnics / Environment / Groundwater

BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 85.6 m AHD
EASTING: 331733
NORTHING: 6260336
DIP/AZIMUTH: 90°/--

BORE No: BH405
PROJECT No: 85310.01
DATE: 26.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low / Very Low / Low / Medium / High / Very High / Ex High)	Water	Fracture Spacing (m) (0.01 / 0.05 / 0.10 / 0.50 / 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
85	0.2	FILLING: dark grey-brown silty sand filling (topsoil), trace rootlets, damp							D/E			PID<1
		CLAY: stiff to very stiff, grey-brown clay, trace silt and sand, damp (possibly fill)							D/E			PID<1
	0.7	CLAY: very stiff, orange-brown mottled pale grey clay, trace ironstone gravel, moist							B			
	1								D/E			PID<1
	1.3	CLAY: very stiff, red-brown clay, with ironstone gravel and trace silt, humid to moist							S			4,8,11 N = 19
84	2								D/E			PID<1 BD1260619
	2.2	SANDSTONE: extremely low strength, pale grey, fine to medium grained sandstone, with some ironstone bands							S			5,10,10 N = 20
83	3								D/E			PID<1
82	3.7							3.7m: CORE LOSS: 60mm				
	3.76	SANDSTONE: medium strength, highly weathered, fractured to slightly fractured, brown to red-brown, medium grained sandstone							C	100	100	PL(A) = 0.84
81	4.55	SANDSTONE: medium strength, slightly weathered, slightly fractured to unbroken, pale grey to pale brown, medium grained sandstone with some extremely low strength clay seams										PL(A) = 1.1
	5							5.14m: partial void 10mm 5.2m: Cs, 200mm 5.53m: B, 0-10°, pl, ro, cly co 5.75m: B, 80-90°, un, ro, cln	C	100	100	PL(A) = 0.89
80	6											
79	6.8	SANDSTONE: high strength, fresh, slightly fractured to unbroken, pale grey to pale brown medium grained sandstone						6.79m: B, 0-10°, pl, ro, cbs co 7.04m: B, 0-10°, pl, ro, cbs co				PL(A) = 0.86
	7							7.62m: B, 0-10°, pl, ro, cbs co				
78	8											PL(A) = 2.2
77	9							8.9m: B, 0-10°, pl, ro, cly co	C	100	100	PL(A) = 1.6
76	10.0											PL(A) = 1.1

Bore discontinued at 10.0m

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** HW to 3.7m

TYPE OF BORING: Pushtube to 3.7m, NMLC to 10.00m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 86.4 m AHD
EASTING: 331742
NORTHING: 6260305
DIP/AZIMUTH: 90°/--

BORE No: BH406
PROJECT No: 85310.01
DATE: 27.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Degree of Weathering (EW HW MW SW FS FR)	Graphic Log	Rock Strength (Ex Low, Very Low, Low, Medium, High, Very High, Ex High)	Water	Fracture Spacing (m) (0.01, 0.05, 0.10, 0.50, 1.00)	Discontinuities (B - Bedding J - Joint S - Shear F - Fault)	Type	Core Rec. %	RQD %	Test Results & Comments
86	0.05	ASPHALTIC CONCRETE										
	0.2	CONCRETE SLAB: 150mm thick										
	0.4	SILTY CLAY: firm, grey to pale brown clay, moist to damp (possibly filling)							D/E			PID<1
									D/E			PID<1
	1	CLAY: firm to stiff, pale grey mottled orange brown clay, with trace silt, moist										
85		from 1.5m: grading to pale grey							S			3,4,7 N = 11
	1.8	CLAY: very stiff, pale grey clay, trace of ironstone gravel, humid to moist							D/E			PID<1 BD3270619
	2											
84	2.5	SANDSTONE: extremely low strength, pale grey, fine grained sandstone with some ironstone bands							S			9,9,13 N = 22
	3								D/E			PID<1
83						16-07-19			S			14,18,25/100 refusal
	4											
82	4.66	SANDSTONE: medium strength, highly to moderately weathered, fractured, red-brown and brown, medium grained sandstone with some extremely low strength clay seams						4.74m: B, 0-10°, pl, ro, cly co				PL(A) = 0.32
	5											
81	5.53	SANDSTONE: medium strength, moderately weathered to fresh stained, fractured, pale grey and pale brown, medium grained sandstone with some extremely low strength clay seams						5.43m: B, 0-10°, pl, ro, fe, stn 5.48m: Cs, 50mm 5.74m: B, 0-10°, pl, ro cly, co 5.91m: Cs, 50mm 6.3m: Cs, 60mm 6.45m: Cs, 100mm	C	100	79	PL(A) = 0.35
	6											
80								6.78m: B, 0-10°, pl, ro, fe vn				PL(A) = 0.43
	7											
79	7.2	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey medium grained sandstone						7.35m: B, 0-10°, pl, ro, cly vn 7.54m: B, 0-10°, pl, ro, cly co	C	100	97	PL(A) = 0.71
	8											
78								8.27m: B, 0-10°, pl, ro, cly co				PL(A) = 0.9
	9											
77									C	100	100	
	9.9	Bore discontinued at 9.9m										PL(A) = 1

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** HW to 4.5m

TYPE OF BORING: Pushtube to 4.5m, NMLC to 9.9m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 86.4 m AHD
EASTING: 331742
NORTHING: 6260305
DIP/AZIMUTH: 90°/--

BORE No: BH406
PROJECT No: 85310.01
DATE: 27/6/2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Well Construction Details
86	0.05	ASPHALTIC CONCRETE							Backfill
	0.2	CONCRETE SLAB: 150mm thick		D/E	0.2		PID<1		
	0.4	SILTY CLAY: firm, grey to pale brown clay, moist to damp (possibly filling)		D/E	0.3 0.4 0.5				
	1	CLAY: firm to stiff, pale grey mottled orange brown clay, with trace silt, moist							1
85				S	1.2		3,4,7 N = 11		
		from 1.5m: grading to pale grey			1.65				
	1.8	CLAY: very stiff, pale grey clay, trace of ironstone gravel, humid to moist		D/E	1.9 2.0		BD3270619		Bentonite Blank PVC
84	2				2.2				2
	2.5	SANDSTONE: extremely low strength, pale grey, fine grained sandstone with some ironstone bands		S			9,9,13 N = 22		
					2.65				
	3			D/E	2.9 3.0				3
83				S	3.2		14,18,25/100 refusal	▼ 16-07-19	
					3.6				
	4								4
82					4.5				
	4.66	SANDSTONE: medium strength, highly to moderately weathered, fractured, red-brown and brown, medium grained sandstone with some extremely low strength clay seams			4.9		PL(A) = 0.32		
	5								5
81	5.53	SANDSTONE: medium strength, moderately weathered to fresh stained, fractured, pale grey and pale brown, medium grained sandstone with some extremely low strength clay seams		C	5.8		PL(A) = 0.35		
	6								6
80					6.6				Gravel
					6.85		PL(A) = 0.43		
	7								7 Machine slotted PVC screen
	7.2	SANDSTONE: medium strength, fresh, slightly fractured to unbroken, pale grey medium grained sandstone							
79				C	7.9		PL(A) = 0.71		
	8								8
78					8.94		PL(A) = 0.9		
	9				9.1				9
77				C					
	9.9	Bore discontinued at 9.9m			9.85		PL(A) = 1		End cap

RIG: Geoprobe 4x4 **DRILLER:** Terratest **LOGGED:** AT **CASING:** HW to 4.5m

TYPE OF BORING: Pushtube to 4.5m, NMLC to 9.9m

WATER OBSERVATIONS: No free groundwater observed whilst pushtubing

REMARKS: Location coordinates are in MGA94 Zone 56. Groundwater well installed, refer to well construction diagram for well construction details.

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.2 m AHD
EASTING: 331794
NORTHING: 6260283
DIP/AZIMUTH: 90°/--

BORE No: BH407
PROJECT No: 85310.01
DATE: 28.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
82	0.15	CONCRETE KERB							
	0.3	ROADBASE GRAVEL: 15-20mm aggregates in a medium sand matrix		D/E	0.2		PID<1		
		CLAY: firm to stiff, brown mottled red-brown clay, trace silt, moist		B	0.3		Bulk sample: 0.3-0.8m		
				D/E	0.4		PID<1		
	0.8				0.5				
81	1	CLAY: very stiff to hard, red-brown clay trace of ironstone gravel, moist		D/E	0.9 1.0		PID<1		
	1.4	Bore discontinued at 1.4m Refusal on ironstone band							
80	2								
79	3								
78	4								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Hand tools **DRILLER:** AT **LOGGED:** AT **CASING:** uncased

TYPE OF BORING: Hand auger to 1.4m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56. Augered adjacent to road's concrete kerb

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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BOREHOLE LOG

CLIENT: Anglican Schools Corporation
PROJECT: Proposed Roseville College SWELL Centre
LOCATION: 29 & 37 Bancroft Avenue, Roseville

SURFACE LEVEL: 82.0 m AHD
EASTING: 331803
NORTHING: 6260263
DIP/AZIMUTH: 90°/--

BORE No: BH408
PROJECT No: 85310.01
DATE: 28.6.2019
SHEET 1 OF 1

RL	Depth (m)	Description of Strata	Graphic Log	Sampling & In Situ Testing: Type	Depth	Sample	Results & Comments	Water	Dynamic Penetrometer Test (blows per 150mm)
82	0.25	FILLING: dark grey, sandy silt fill (topsoil) trace of rootlets		D/E	0.1 0.2		PID<1		
	0.6	FILLING: red-brown to dark brown clay, with silt and ironstone gravels, damp		D/E	0.4 0.5		PID<1		
81	1	CLAY: stiff to very stiff, red-brown mottled pale grey clay, trace silt and ironstone gravels, moist		D/E	0.9 1.0		PID<1		
	1.6	Bore discontinued at 1.6m Refusal on ironstone band							
80	2								
79	3								
78	4								

Dynamic Penetrometer Test (blows per 150mm): 5, 10, 15, 20

RIG: Hand tools **DRILLER:** AT **LOGGED:** AT **CASING:** uncased

TYPE OF BORING: Hand auger to 1.6m

WATER OBSERVATIONS: No free groundwater observed whilst augering

REMARKS: Location coordinates are in MGA94 Zone 56.

☐ Sand Penetrometer AS1289.6.3.3
☒ Cone Penetrometer AS1289.6.3.2

SAMPLING & IN SITU TESTING LEGEND

A	Auger sample	G	Gas sample	PID	Photo ionisation detector (ppm)
B	Bulk sample	P	Piston sample	PL(A)	Point load axial test Is(50) (MPa)
BLK	Block sample	U_x	Tube sample (x mm dia.)	PL(D)	Point load diametral test Is(50) (MPa)
C	Core drilling	W	Water sample	pp	Pocket penetrometer (kPa)
D	Disturbed sample	▷	Water seep	S	Standard penetration test
E	Environmental sample	▼	Water level	V	Shear vane (kPa)

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Appendix F

Data Quality Objectives

DATA QUALITY ASSESSMENT

Q1. Data Quality Objectives

The detailed site investigation was prepared with reference to the seven step data quality objective (DQO) process which is provided in Appendix B, Schedule B2 of the *National Environment Protection (Assessment of Site Contamination) Measure* 1999 as amended 2013 (NEPC, 2013). The DQO process is outlined as follows:

- Stating the Problem;
- Identifying the Decision;
- Identifying Inputs to the Decision;
- Defining the Boundary of the Assessment;
- Developing a Decision Rule;
- Specifying Acceptable Limits on Decision Errors; and
- Optimising the Design for Obtaining Data.

The DQOs that have been addressed within the report are shown in Table Q1.

Table Q1: Data Quality Objectives

Data Quality Objective	Report Section where Addressed
State the Problem	S1 Introduction
Identify the Decision	S13 Conclusions and Recommendations
Identify Inputs to the Decision	S1 Introduction S2 Scope of Works S3 Site Description S5 Proposed Development S6 Site History S7 Conceptual Site Model S10 Fieldwork Results S11 Laboratory Analytical Results
Define the Boundary of the Assessment	S3 Site Description S8 Fieldwork (vertical extent of investigation) Drawing 1 (Appendix A)
Develop a Decision Rule	S9 Site Assessment Criteria
Specify Acceptable Limits on Decision Errors	S9 Site Assessment Criteria Data Quality Assessment – Sections Q2, Q3
Optimise the Design for Obtaining Data	S2 Scope of Works S8 Fieldwork Data Quality Assessment – Sections Q2, Q3

Q2. FIELD AND LABORATORY QUALITY CONTROL

The field and laboratory quality control (QC) procedures and results are summarised in Tables Q2 and Q3. Reference should be made to the data quality indicators in Table Q5 and the laboratory results certificates in Appendix G for further details.

Table Q2: Field QC

Item	Frequency	Acceptance Criteria	Achievement
Intra-laboratory replicates	10% primary samples	RPD <30% (inorganics), <50% (organics)	yes[1]

Note: 1 qualitative assessment of RPD results overall; refer Section Q2.1

Table Q3: Laboratory QC

Item	Frequency	Acceptance Criteria	Achievement
Analytical laboratories used	n/a	NATA accreditation	yes
Holding times	n/a	In accordance with NEPC (2013) which references various Australian and international standards	Partial*
Laboratory / Reagent Blanks	1 per lab batch	<PQL	yes
Laboratory duplicates	10% primary samples	Laboratory specific	yes
Matrix Spikes	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes
Surrogate Spikes	organics by GC	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes
Control Samples	1 per lab batch	70-130% recovery (inorganics); 60-140% (organics); 10-140% (SVOC, speciated phenols)	yes

*It is noted that PAHs in TCLP analysis was performed outside of recommended holding times.

A 10% intra-laboratory analysis frequency was achieved for soil and groundwater samples. A 10% inter-laboratory analysis frequency was achieved for soil samples.
In summary, the QC data is considered to be of sufficient quality to be acceptable for the assessment.

Q2.1 Intra-Laboratory Replicates

Q2.1.1 Soil

Intra-laboratory replicates were analysed as an internal check of the reproducibility within the primary laboratory Envirolab Services Pty Ltd (ELS) and as a measure of consistency of sampling techniques. The comparative results of analysis between original and intra-laboratory replicate samples are summarised in Table Q4.1.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

The calculated RPD values for the duplicate and primary sample were within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics, with the exception of those in **bold**. However, this is not considered to be significant because:

- The typically low actual differences in the concentrations of the replicate pairs where some RPD exceedances occurred. High RPD values reflect the small differences between two small numbers;
- The number of replicate pairs being collected from fill soils which were heterogeneous in nature;
- Soil replicates, rather than homogenised soil duplicates, were used to minimise the risk of possible volatile loss, hence greater variability can be expected;
- Most of the recorded concentrations being relatively close to the LOR/PQL. High RPD values reflect the low concentrations;
- The majority of RPDs within a replicate pair being within the acceptable limits; and
- All other QA/QC parameters met the DQIs.

Overall, the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q2.1.2 Groundwater

The calculated RPD values for the duplicate and primary groundwater samples were within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics (0% RPD was achieved for all samples), therefore the intra-laboratory replicate comparisons indicate that the sampling techniques were generally consistent and repeatable.

Q2.2 Inter-Laboratory Replicates

Inter-laboratory replicates were conducted as a check of the reproducibility of results between the primary laboratory ELS and the secondary laboratory Eurofins, as a measure of consistency of sampling techniques.

The comparative results of analysis between the intra-laboratory and inter-laboratory replicate samples are summarized in Table Q4.2.

Note that, where both samples are below LOR/PQL the difference and RPD has been given as zero. Where one sample is reported below LOR/PQL, but a concentration is reported for the other, the LOR/PQL value has been used for calculation of the RPD for the less than LOR/PQL sample.

The calculated RPD values for the inter and intra laboratory duplicate were within the acceptable range of ± 30 for inorganic analytes and ± 50% for organics, with the exception of those in **bold**. However, this is not considered to be significant because:

- The typically low actual differences in the concentrations of the replicate pairs where some RPD exceedances occurred. High RPD values reflect the small differences between two small numbers;
- The number of replicate pairs being collected from fill soils which were heterogeneous in nature;
- Soil replicates, rather than homogenised duplicates, were used to minimise the risk of volatile loss, hence greater variability can be expected;
- Most of the recorded concentrations being relatively close to the LOR/PQL. High RPD values reflect the low concentrations;
- The majority of RPDs within a replicate pair being within the acceptable limits; and
- All other QA/QC parameters met the DQIs.

The overall inter-laboratory replicate comparisons indicate that the sampling technique was generally consistent and repeatable and the two laboratory sampling handling and analytical methods are comparable.

Field Instrument Calibration

The photoionisation detector (PID) fitted with a [11.7 volt lamp] was calibrated and serviced prior to use on the field.

Table Q4.1: Relative Percentage Difference Results Intra-laboratory Replicates (Soil)

			Metals							
			Arsenic	Cadmium	Chromium (VI)	Copper	Lead	Mercury (inorganic)	Nickel	Zinc
Sample ID	Depth	Sampled Date	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
BD4 270619	0.5	27/06/2019	<4	<0.4	19	8	14	<0.1	2	9
BH401	0.5	27/06/2019	<4	<0.4	23	3	12	0.2	2	6
		Difference	0	0	4	5	2	0.1	0	3
		RPD	0%	0%	19%	91%	15%	67%	0%	40%

Table Q4.2: Relative Percentage Difference Results Inter-laboratory Replicates (Soil)

				Metals								PAH			
Lab	Sample ID	Date Sampled	Units	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	Naphthalene	Benzo(a)pyrene	Benzo(a)pyrene TEQ	Total PAH
ELS	BD4 270619	27/06/2019	mg/kg	<4	<0.4	19	8	14	<0.1	2	9	<1	0.1	<0.5	0.56
Eurofins	BD4 270619 - A	27/06/2019	mg/kg	5.1	<0.4	29	8.7	17	<0.1	<5	15	<0.5	<0.5	1.2	<0.5
Difference			mg/kg	1.1	0.0	10.0	0.7	3.0	0.0	3.0	6.0	0.0	0.4	0.7	0.1
RPD			%	24	0.0	42	8	19	0.0	**86**	**50**	0.0	**133**	**82**	11

Note: 0% RPD achieved for TRH and BTEX

Q3. Data Quality Indicators

The reliability of field procedures and analytical results was assessed against the following data quality indicators (DQIs):

- Completeness – a measure of the amount of usable data from a data collection activity;
- Comparability – the confidence (qualitative) that data may be considered to be equivalent for each sampling and analytical event;
- Representativeness – the confidence (qualitative) of data representativeness of media present on-site;
- Precision – a measure of variability or reproducibility of data; and
- Accuracy – a measure of closeness of the data to the 'true' value.

The DQIs were assessed as outlined in the following Table Q5.

Table Q5: Data Quality Indicators

Data Quality Indicator	Method(s) of Achievement
Completeness	Preparation of field logs, sample location plan and chain of custody (COC) records; Laboratory sample receipt information received confirming receipt of samples intact and appropriateness of the chain of custody; Samples analysed for the primary contaminants of potential concern (COPC) identified in the Conceptual Site Model (CSM); NATA endorsed laboratory certificates provided by the laboratory; Satisfactory frequency and results for field and laboratory QC samples as discussed in Section Q2.
Comparability	Using appropriate techniques for sample recovery, storage and transportation, which were the same for the duration of the project; Works undertaken by appropriately experienced and trained DP field staff; Use of NATA registered laboratories; Satisfactory results for field and laboratory QC samples.
Representativeness	Samples were extracted and generally analysed within holding times; Samples were analysed in accordance with the analysis request; It is noted that a report comment is made by ELS with respect to sub-sampled asbestos from soil jars. This is expected and acceptable for analytical requirements.

Data Quality Indicator	Method(s) of Achievement
Precision	Acceptable RPD between original samples and replicates. Overall, satisfactory results were achieved for all other field and laboratory QC samples.
Accuracy	Satisfactory results for all field and laboratory QC samples.

Based on the above, it is considered that the DQIs have been complied with. As such, it is concluded that the field and laboratory test data obtained are reliable and useable for this assessment.

Appendix G

Laboratory Certificates

Chain of Custody 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 220713

Client Details

Client	Douglas Partners Pty Ltd
Attention	Wen-Fei Yuan
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**85310.02, Roseville**
Number of Samples	16 SOIL
Date samples received	01/07/2019
Date completed instructions received	01/07/2019

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	08/07/2019
Date of Issue	08/07/2019

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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 Identifier: Aida Marner
Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Diego Bigolin, Team Leader, Inorganics
Giovanni Agosti, Group Technical Manager
Jaimie Loa-Kum-Cheung, Metals Supervisor
Lucy Zhu, Senior Asbestos Analyst
Nick Sarlamis, Inorganics Supervisor
Steven Luong, Organics Supervisor

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019	06/07/2019	06/07/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	34	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	34	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	127	124	128	119	125

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019	06/07/2019	06/07/2019
TRH C_6 - C_9	mg/kg	<25	<25	<25	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25	<25	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	120	134	120	128	131

vTRH(C6-C10)/BTEXN in Soil				
Our Reference		220713-14	220713-15	220713-16
Your Reference	UNITS	BD4 270619	TS	TB
Date Sampled		27/06/2019	27/06/2019	27/06/2019
Type of sample		SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	06/07/2019	06/07/2019	06/07/2019
TRH C_6 - C_9	mg/kg	<25	[NA]	<25
TRH C_6 - C_{10}	mg/kg	<25	[NA]	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	[NA]	<25
Benzene	mg/kg	<0.2	88%	<0.2
Toluene	mg/kg	<0.5	90%	<0.5
Ethylbenzene	mg/kg	<1	88%	<1
m+p-xylene	mg/kg	<2	89%	<2
o-Xylene	mg/kg	<1	88%	<1
naphthalene	mg/kg	<1	[NA]	<1
Total +ve Xylenes	mg/kg	<3	[NA]	<3
Surrogate aaa-Trifluorotoluene	%	121	108	93

svTRH (C10-C40) in Soil						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	86	85	87	86	86

svTRH (C10-C40) in Soil						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100	<100	100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	170	<100
TRH >C_{10} -C_{16}	mg/kg	<50	<50	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100	<100	220	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	170	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	390	<50
Surrogate o-Terphenyl	%	86	88	86	96	88

svTRH (C10-C40) in Soil		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date extracted	-	03/07/2019
Date analysed	-	05/07/2019
TRH C_{10} - C_{14}	mg/kg	<50
TRH C_{15} - C_{28}	mg/kg	<100
TRH C_{29} - C_{36}	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	<50
Surrogate o-Terphenyl	%	89

PAHs in Soil						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	0.7	0.1	0.2	<0.1
Pyrene	mg/kg	0.1	0.8	0.1	0.2	<0.1
Benzo(a)anthracene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	0.7	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.09	0.5	<0.05	0.1	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	0.3	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	0.1	0.4	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.4	4.6	0.2	0.4	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	0.7	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	0.7	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	98	96	95	90	94

PAHs in Soil						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	05/07/2019	05/07/2019	05/07/2019	05/07/2019	05/07/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	0.2	0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	0.4	0.4
Anthracene	mg/kg	<0.1	<0.1	<0.1	0.2	0.2
Fluoranthene	mg/kg	0.2	<0.1	<0.1	1.2	1.1
Pyrene	mg/kg	0.2	<0.1	<0.1	1.4	1.2
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.7	0.7
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.8	0.8
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	2	1
Benzo(a)pyrene	mg/kg	0.08	<0.05	<0.05	1.2	0.85
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	0.8	0.5
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	1.3	0.6
Total +ve PAH's	mg/kg	0.50	<0.05	<0.05	10	7.7
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	1.7	1.1
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	1.7	1.2
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	1.7	1.2
Surrogate p-Terphenyl-d14	%	92	95	93	94	93

PAHs in Soil		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date extracted	-	03/07/2019
Date analysed	-	05/07/2019
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	0.2
Pyrene	mg/kg	0.2
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	0.1
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	0.56
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	%	92

Organochlorine Pesticides in soil						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-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
beta-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
pp-DDD	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-DDT	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
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
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	74	99	109	90	99

Organophosphorus Pesticides						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Azinphos-methyl (Guthion)	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
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	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
Dichlorvos	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
Ethion	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
Parathion	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
Surrogate TCMX	%	74	99	109	90	99

PCBs in Soil						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date extracted	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	74	99	109	90	99

Acid Extractable metals in soil						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Arsenic	mg/kg	<4	5	4	8	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	24	21	9	7	24
Copper	mg/kg	4	10	14	15	<1
Lead	mg/kg	18	71	56	60	9
Mercury	mg/kg	0.1	0.1	<0.1	<0.1	0.1
Nickel	mg/kg	4	4	2	3	3
Zinc	mg/kg	18	72	57	96	2

Acid Extractable metals in soil						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Arsenic	mg/kg	<4	6	<4	83	30
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	24	4	18	17
Copper	mg/kg	200	<1	1	40	19
Lead	mg/kg	28	13	9	140	63
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	4	1	<1	7	3
Zinc	mg/kg	29	6	3	120	41

Acid Extractable metals in soil		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date prepared	-	03/07/2019
Date analysed	-	04/07/2019
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	19
Copper	mg/kg	8
Lead	mg/kg	14
Mercury	mg/kg	<0.1
Nickel	mg/kg	2
Zinc	mg/kg	9

Misc Soil - Inorg						
Our Reference		220713-1	220713-2	220713-5	220713-12	220713-13
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.5	BH408/0.2	BH408/0.5
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5	<5

Moisture						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Moisture	%	14	14	12	15	16

Moisture						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019	04/07/2019	04/07/2019
Moisture	%	14	20	15	16	19

Moisture		
Our Reference		220713-14
Your Reference	UNITS	BD4 270619
Date Sampled		27/06/2019
Type of sample		SOIL
Date prepared	-	03/07/2019
Date analysed	-	04/07/2019
Moisture	%	11

Asbestos ID - soils						
Our Reference		220713-1	220713-2	220713-4	220713-5	220713-6
Your Reference	UNITS	BH401/1.0	BH402/0.2	BH403/0.2	BH403/0.5	BH404/1.0
Date Sampled		27/06/2019	29/06/2019	28/06/2019	28/06/2019	26/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Sample mass tested	g	Approx. 30g	Approx. 20g	Approx. 20g	Approx. 50g	Approx. 25g
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Brown sandy soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Asbestos ID - soils						
Our Reference		220713-7	220713-9	220713-11	220713-12	220713-13
Your Reference	UNITS	BH405/0.2	BH406/0.3	BH407/0.5	BH408/0.2	BH408/0.5
Date Sampled		26/06/2019	27/06/2019	28/06/2019	28/06/2019	28/06/2019
Type of sample		SOIL	SOIL	SOIL	SOIL	SOIL
Date analysed	-	03/07/2019	03/07/2019	03/07/2019	03/07/2019	03/07/2019
Sample mass tested	g	Approx. 20g	Approx. 25g	Approx. 45g	Approx. 60g	Approx. 40g
Sample Description	-	Brown clayey soil & rocks	Brown clayey soil & rocks	Peach clayey soil & rocks	Brown clayey soil & rocks	Brown clayey soil & rocks
Asbestos ID in soil	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

Misc Inorg - Soil				
Our Reference	UNITS	220713-3	220713-8	220713-10
Your Reference		BH402/1.0	BH405/1.0	BH406/2.0
Date Sampled		29/06/2019	27/06/2019	27/06/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	03/07/2019	03/07/2019	03/07/2019
Date analysed	-	03/07/2019	03/07/2019	03/07/2019
pH 1:5 soil:water	pH Units	5.4	4.9	5.2

CEC				
Our Reference		220713-3	220713-8	220713-10
Your Reference	UNITS	BH402/1.0	BH405/1.0	BH406/2.0
Date Sampled		29/06/2019	27/06/2019	27/06/2019
Type of sample		SOIL	SOIL	SOIL
Date prepared	-	04/07/2019	04/07/2019	04/07/2019
Date analysed	-	04/07/2019	04/07/2019	04/07/2019
Exchangeable Ca	meq/100g	2.0	1.3	1.2
Exchangeable K	meq/100g	0.2	<0.1	0.1
Exchangeable Mg	meq/100g	0.86	2.7	2.2
Exchangeable Na	meq/100g	0.38	<0.1	0.24
Cation Exchange Capacity	meq/100g	3.4	4.1	3.8

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 in accordance with APHA latest edition, 4500-H+. 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.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-009	Determination of exchangeable cations and cation exchange capacity in soils using 1M Ammonium Chloride exchange and ICP-AES analytical finish.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-003	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-003	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. 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-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. 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-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.

Method ID	Methodology Summary
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-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-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-016	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-016	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-3	220713-4
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			06/07/2019	1	06/07/2019	06/07/2019		06/07/2019	06/07/2019
TRH C_6 - C_9	mg/kg	25	Org-016	<25	1	<25	<25	0	97	105
TRH C_6 - C_{10}	mg/kg	25	Org-016	<25	1	<25	<25	0	97	105
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	82	91
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	96	106
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	97	105
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	104	112
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	99	108
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	135	1	127	121	5	102	110

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	06/07/2019	06/07/2019		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-016	[NT]	12	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-016	[NT]	12	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-016	[NT]	12	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-016	[NT]	12	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-016	[NT]	12	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-014	[NT]	12	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	[NT]	12	128	128	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-4
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			05/07/2019	1	05/07/2019	05/07/2019		05/07/2019	05/07/2019
TRH C_{10} - C_{14}	mg/kg	50	Org-003	<50	1	<50	<50	0	90	122
TRH C_{15} - C_{28}	mg/kg	100	Org-003	<100	1	<100	<100	0	90	122
TRH C_{29} - C_{36}	mg/kg	100	Org-003	<100	1	<100	<100	0	86	112
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	<50	1	<50	<50	0	90	122
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	<100	1	<100	<100	0	90	122
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	<100	1	<100	<100	0	86	112
Surrogate o-Terphenyl	%		Org-003	90	1	86	87	1	98	98

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	05/07/2019	05/07/2019		[NT]	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-003	[NT]	12	100	110	10	[NT]	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-003	[NT]	12	170	180	6	[NT]	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-003	[NT]	12	<50	<50	0	[NT]	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-003	[NT]	12	220	220	0	[NT]	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-003	[NT]	12	170	180	6	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-003	[NT]	12	96	99	3	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-2
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			05/07/2019	1	05/07/2019	05/07/2019		05/07/2019	05/07/2019
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	112	97
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	106	97
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	104	124
Anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.3	100	98	89
Pyrene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.5	133	100	90
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	0.2	67	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	0.3	100	100	130
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	0.5	86	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	0.09	0.3	108	100	121
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	0.2	67	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	1	0.1	0.2	67	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	97	1	98	103	5	128	93

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	05/07/2019	05/07/2019		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-012	[NT]	12	0.2	0.2	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-012	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-012	[NT]	12	0.4	0.4	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-012	[NT]	12	0.2	0.3	40	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-012	[NT]	12	1.2	1.4	15	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-012	[NT]	12	1.4	1.6	13	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-012	[NT]	12	0.7	0.8	13	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	[NT]	12	0.8	0.9	12	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	[NT]	12	2	2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	[NT]	12	1.2	1.2	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	[NT]	12	0.8	0.9	12	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	[NT]	12	0.1	0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	[NT]	12	1.3	1.1	17	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	[NT]	12	94	92	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	[NT]
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	[NT]
HCB	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	[NT]
gamma-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	[NT]
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	90	[NT]
delta-BHC	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	95	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	97	[NT]
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	111	[NT]
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	94	[NT]
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	91	[NT]
Endosulfan II	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	107	[NT]
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	98	1	74	81	9	124	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[NT]	[NT]
HCB	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-005	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	[NT]	12	90	86	5	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	[NT]
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	98	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	87	[NT]
Dimethoate	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	116	[NT]
Fenitrothion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	104	[NT]
Malathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	108	[NT]
Parathion	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	106	[NT]
Ronnel	mg/kg	0.1	Org-008	<0.1	1	<0.1	<0.1	0	93	[NT]
Surrogate TCMX	%		Org-008	98	1	74	81	9	87	[NT]

QUALITY CONTROL: Organophosphorus Pesticides						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-008	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-008	[NT]	12	90	86	5	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	[NT]
Date extracted	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	[NT]
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	106	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	98	1	74	81	9	87	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-006	[NT]	12	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	[NT]	12	90	86	5	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-3	220713-4
Date prepared	-			03/07/2019	1	03/07/2019	03/07/2019		03/07/2019	03/07/2019
Date analysed	-			04/07/2019	1	04/07/2019	04/07/2019		04/07/2019	04/07/2019
Arsenic	mg/kg	4	Metals-020	<4	1	<4	4	0	104	104
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	106	102
Chromium	mg/kg	1	Metals-020	<1	1	24	25	4	101	96
Copper	mg/kg	1	Metals-020	<1	1	4	5	22	102	106
Lead	mg/kg	1	Metals-020	<1	1	18	21	15	108	94
Mercury	mg/kg	0.1	Metals-021	<0.1	1	0.1	<0.1	0	98	108
Nickel	mg/kg	1	Metals-020	<1	1	4	3	29	103	101
Zinc	mg/kg	1	Metals-020	<1	1	18	20	11	108	115

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	12	03/07/2019	03/07/2019		[NT]	[NT]
Date analysed	-			[NT]	12	04/07/2019	04/07/2019		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	12	83	90	8	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	12	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	12	18	18	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	12	40	41	2	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	12	140	130	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	12	0.1	0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	12	7	7	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	12	120	120	0	[NT]	[NT]

QUALITY CONTROL: Misc Soil - Inorg					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
Date analysed	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	[NT]	[NT]	101	[NT]

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
Date analysed	-			03/07/2019	[NT]	[NT]	[NT]	[NT]	03/07/2019	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: CEC						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			04/07/2019	10	04/07/2019	04/07/2019		04/07/2019	[NT]
Date analysed	-			04/07/2019	10	04/07/2019	04/07/2019		04/07/2019	[NT]
Exchangeable Ca	meq/100g	0.1	Metals-009	<0.1	10	1.2	0.8	40	97	[NT]
Exchangeable K	meq/100g	0.1	Metals-009	<0.1	10	0.1	0.1	0	106	[NT]
Exchangeable Mg	meq/100g	0.1	Metals-009	<0.1	10	2.2	2.0	10	101	[NT]
Exchangeable Na	meq/100g	0.1	Metals-009	<0.1	10	0.24	0.24	0	102	[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.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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; 60-140% for organics (+/-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.

Report Comments

Asbestos: Excessive sample volumes were provided for asbestos analysis.
A portion of the supplied samples were sub-sampled according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples requested for asbestos testing were sub-sampled from bags provided by the client.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	85310.02	**Suburb:** Roseville	**To:** Envirolab Services
Project Name:	Proposed Roseville College SWELL Centre	**Order Number**	
Project Manager	WFY	**Sampler:** WFY	**Attn:** Aileen Hie
Emails:	wenfei.yuan@douglaspartners.com.au		**Phone:**
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐		**Email:**
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo8A	Combo3A	pH, CEC						Notes:
BH401/1.0	1	27.06.19	S	G/P	X								Please send
BH402/0.2	2	29.06.19	S	G/P	X								BD4270619 (intra-lab replicate) to Eurofins Myt.
BH402/1.0	3	29.06.19	S	P			X						
BH403/0.2	4	28.06.19	S	G/P		X							
BH403/0.5	5	28.06.19	S	G/P	X								
BH404/1.0	6	26.06.19	S	G/P		X							
BH405/0.2	7	26.06.19	S	G/P		X							
BH405/1.0	8	27.06.19	S	G/P			X						
BH406/0.3	9	27.06.19	S	G/P		X							
BH406/2.0	10	27.06.19	S	G/P			X						
BH407/0.5	11	28.06.19	S	G/P		X							
BH408/0.2	12	28.06.19	S	G/P	X								
BH408/0.5	13				X								
PQL (S) mg/kg													

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

Job No: 220718
Date Received: 01/07/19
Time Received: 15:30
Received by:
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

Total number of samples in container: **Relinquished by:** WFY **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** 96 Hermitage Road, West Ryde **Phone:** 9809 0999

Signed: **Received by:** T. Nguyen **Date & Time:** 01/07/19 15:30

Add: 14 BD4270619 (intra-lab replicate)
15 TS
16 TB

X - combo3

Inter-lab Replicate

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No: 85310.02	**Suburb:** Roseville	**To:** Eurofins Mgt.	
Project Name: Proposed Roseville College SWELL Centre	**Order Number**		
Project Manager WFY	**Sampler:** WFY	**Attn:** Asim Khan	
Emails: wenfei.yuan@douglaspartners.com.au		**Phone:** 9900 8432.	
Date Required: Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐		**Email:** AsimKhan@eurofins.com	
Prior Storage: ☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes									
					Combo8A	Combo3	pH, CEC							
BD4270619		27/06/19	S.	P.		✓								
PQL (S) mg/kg														

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container: **Relinquished by:** WFY **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** 96 Hermitage Road, West Ryde **Phone:** 9809 0999

Signed: **Received by:** **Date & Time:**

01/07/19.

220713

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 220713-A

Client Details

Client	Douglas Partners Pty Ltd
Attention	Chamali Nagodavithane
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**85310.02, Roseville**
Number of Samples	16 SOIL
Date samples received	01/07/2019
Date completed instructions received	22/07/2019

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

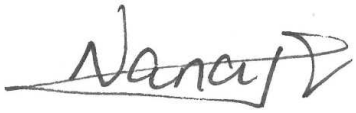
Date results requested by	29/07/2019
Date of Issue	24/07/2019

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
Jeremy Faircloth, Operations Manager, Sydney
Loren Bardwell, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

Metals in TCLP USEPA1311		
Our Reference		220713-A-12
Your Reference	UNITS	BH408/0.2
Date Sampled		28/06/2019
Type of sample		SOIL
Date extracted	-	23/07/2019
Date analysed	-	23/07/2019
pH of soil for fluid# determ.	pH units	7.8
pH of soil TCLP (after HCl)	pH units	1.5
Extraction fluid used	-	1
pH of final Leachate	pH units	5.0
Lead in TCLP	mg/L	<0.03

PAHs in TCLP (USEPA 1311)		
Our Reference		220713-A-12
Your Reference	UNITS	BH408/0.2
Date Sampled		28/06/2019
Type of sample		SOIL
Date extracted	-	23/07/2019
Date analysed	-	24/07/2019
Naphthalene in TCLP	mg/L	<0.001
Acenaphthylene in TCLP	mg/L	<0.001
Acenaphthene in TCLP	mg/L	<0.001
Fluorene in TCLP	mg/L	<0.001
Phenanthrene in TCLP	mg/L	<0.001
Anthracene in TCLP	mg/L	<0.001
Fluoranthene in TCLP	mg/L	<0.001
Pyrene in TCLP	mg/L	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001
Chrysene in TCLP	mg/L	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001
Total +ve PAH's	mg/L	NIL (+)VE
Surrogate p-Terphenyl-d14	%	75

Method ID	Methodology Summary
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-012	Leachates are extracted with Dichloromethane and analysed by GC-MS.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.

QUALITY CONTROL: Metals in TCLP USEPA1311					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Date analysed	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	91	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			23/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Date analysed	-			24/07/2019	[NT]	[NT]	[NT]	[NT]	23/07/2019	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	86	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	71	[NT]
Anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-012	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-012	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	122	[NT]	[NT]	[NT]	[NT]	70	[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.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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; 60-140% for organics (+/-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.

Report Comments

PAHs in TCLP USEPA 1311 - All organic analyses has been performed outside of recommended holding time.

Andrew Fitzsimons

From: Simon Song
Sent: Monday, 22 July 2019 4:49 PM
To: Chamali Nagodavithane; Andrew Fitzsimons
Cc: Wen-Fei Yuan
Subject: RE: Additional Analysis

Follow Up Flag: Follow up
Flag Status: Flagged

Ref: 220713-A
TAT: Std
Due: 29/7/19

No problem

Regards,

Simon Song | Customer Service | Envirolab Services Pty Ltd

Great Science, Great Service.

12 Ashley Street Chatswood NSW 2067
T 612 9910 6200 F 612 9910 6201
E ssong@envirolab.com.au | W www.envirolab.com.au

New sampling bottle provision now available for PFAS and SVOCs in water samples

Please note that all samples submitted to the Envirolab Group laboratories will be analysed under the Envirolab Group Terms and Conditions. The Terms and Conditions are accessible by clicking this link

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From: Chamali Nagodavithane [mailto:Chamali.Nagodavithane@douglaspartners.com.au]
Sent: Monday, 22 July 2019 4:41 PM
To: Simon Song <SSong@envirolab.com.au>
Cc: Wen-Fei Yuan <WenFei.Yuan@douglaspartners.com.au>
Subject: Additional Analysis

Hi Simon,

Can we please request the following additional analysis:

DP job number: 85310.02
ELS job number: 220713
Samples: BH408/0.2 — 12
Analysis required: Lead and BaP TCLP
TAT: standard

Douglas Partners (Syd)
96 Hermitage Road
West Ryde
NSW 2114

NATA Accredited
Accreditation Number 1261
Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention: **Wen-Fei Yuan**

Report **663873-S**
Project name PROPOSED ROSEVILLE COLLEGE SWELL CENTRE
Project ID 85310.02
Received Date Jul 02, 2019

Client Sample ID			**BD4270619**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S19-Jl04509**
Date Sampled			**Jun 27, 2019**
Test/Reference	LOR	Unit	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			
TRH C6-C9	20	mg/kg	< 20
TRH C10-C14	20	mg/kg	< 20
TRH C15-C28	50	mg/kg	< 50
TRH C29-C36	50	mg/kg	< 50
TRH C10-36 (Total)	50	mg/kg	< 50
BTEX			
Benzene	0.1	mg/kg	< 0.1
Toluene	0.1	mg/kg	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2
o-Xylene	0.1	mg/kg	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3
4-Bromofluorobenzene (surr.)	1	%	86
Total Recoverable Hydrocarbons - 2013 NEPM Fractions			
Naphthalene[N02]	0.5	mg/kg	< 0.5
TRH C6-C10	20	mg/kg	< 20
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20
TRH >C10-C16	50	mg/kg	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50
TRH >C16-C34	100	mg/kg	< 100
TRH >C34-C40	100	mg/kg	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100
Polycyclic Aromatic Hydrocarbons			
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2
Acenaphthene	0.5	mg/kg	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5
Anthracene	0.5	mg/kg	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5
Chrysene	0.5	mg/kg	< 0.5

Client Sample ID			BD4270619
Sample Matrix			Soil
Eurofins | mgt Sample No.			S19-Jl04509
Date Sampled			Jun 27, 2019
Test/Reference	LOR	Unit	
Polycyclic Aromatic Hydrocarbons			
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5
Fluorene	0.5	mg/kg	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5
Naphthalene	0.5	mg/kg	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5
Pyrene	0.5	mg/kg	< 0.5
Total PAH*	0.5	mg/kg	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108
p-Terphenyl-d14 (surr.)	1	%	100
Heavy Metals			
Arsenic	2	mg/kg	5.1
Cadmium	0.4	mg/kg	< 0.4
Chromium	5	mg/kg	29
Copper	5	mg/kg	8.7
Lead	5	mg/kg	17
Mercury	0.1	mg/kg	< 0.1
Nickel	5	mg/kg	< 5
Zinc	5	mg/kg	15
% Moisture	1	%	13

Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported.
A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Jul 05, 2019	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
BTEX	Sydney	Jul 05, 2019	14 Days
- Method: LTM-ORG-2150 VOCs in Soils Liquid and other Aqueous Matrices			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jul 05, 2019	14 Days
- Method: LTM-ORG-2010 TRH C6-C40			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Jul 05, 2019	
- Method: LTM-ORG-2010 TRH C6-C40			
Polycyclic Aromatic Hydrocarbons	Sydney	Jul 05, 2019	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Jul 05, 2019	180 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Jul 03, 2019	14 Days
- Method: LTM-GEN-7080 Moisture			

ABN – 50 005 085 521
e.mail : EnviroSales@eurofins.com
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NATA # 1261 Site # 20794

Perth
2/91 Leach Highway
Kewdale WA 6105
Phone : +61 8 9251 9600
NATA # 1261
Site # 23736

Company Name:	Douglas Partners (Syd)	**Order No.:**		**Received:**	Jul 2, 2019 2:22 PM
Address:	96 Hermitage Road West Ryde NSW 2114	**Report #:** **Phone:** **Fax:**	663873 02 9809 0666	**Due:** **Priority:** **Contact Name:**	Jul 9, 2019 5 Day Wen-Fei Yuan
Project Name:	PROPOSED ROSEVILLE COLLEGE SWELL CENTRE				
Project ID:	85310.02				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Perth Laboratory - NATA Site # 23736							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	BD4270619	Jun 27, 2019		Soil	S19-Jl04509	X	X
Test Counts						1	1

Internal Quality Control Review and Glossary

General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
2. All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
7. Samples were analysed on an 'as received' basis.
8. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
9. This report replaces any interim results previously issued.

Holding Times

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

****NOTE:** pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per kilogram

mg/L: milligrams per litre

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100mL: Organisms per 100 millilitres

NTU: Nephelometric Turbidity Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	US Department of Defense Quality Systems Manual Version 5.3
CP	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

QC - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6:2 FTSA, 8:2 FTSA

QC Data General Comments

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
3. Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	83			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14	%	88			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	91			70-130	Pass	
Toluene	%	92			70-130	Pass	
Ethylbenzene	%	93			70-130	Pass	
m&p-Xylenes	%	96			70-130	Pass	
o-Xylene	%	95			70-130	Pass	
Xylenes - Total	%	95			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	100			70-130	Pass	
TRH C6-C10	%	79			70-130	Pass	
TRH >C10-C16	%	83			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	115			70-130	Pass	
Acenaphthylene	%	115			70-130	Pass	
Anthracene	%	114			70-130	Pass	
Benz(a)anthracene	%	106			70-130	Pass	
Benzo(a)pyrene	%	113			70-130	Pass	
Benzo(b&j)fluoranthene	%	106			70-130	Pass	
Benzo(g.h.i)perylene	%	76			70-130	Pass	
Benzo(k)fluoranthene	%	119			70-130	Pass	
Chrysene	%	121			70-130	Pass	
Dibenz(a.h)anthracene	%	89			70-130	Pass	
Fluoranthene	%	115			70-130	Pass	
Fluorene	%	117			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	80			70-130	Pass	
Naphthalene	%	119			70-130	Pass	
Phenanthrene	%	119			70-130	Pass	
Pyrene	%	118			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	116			70-130	Pass	
Cadmium	%	113			70-130	Pass	
Chromium	%	114			70-130	Pass	
Copper	%	111			70-130	Pass	
Lead	%	113			70-130	Pass	
Mercury	%	120			70-130	Pass	
Nickel	%	112			70-130	Pass	
Zinc	%	113			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S19-Jl07364	NCP	%	93			70-130	Pass	
TRH C10-C14	S19-Jl04510	NCP	%	74			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S19-Jl07364	NCP	%	85			70-130	Pass	
Toluene	S19-Jl07364	NCP	%	85			70-130	Pass	
Ethylbenzene	S19-Jl07364	NCP	%	86			70-130	Pass	
m&p-Xylenes	S19-Jl07364	NCP	%	90			70-130	Pass	
o-Xylene	S19-Jl07364	NCP	%	87			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S19-Jl07364	NCP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S19-Jl07364	NCP	%	103			70-130	Pass	
TRH C6-C10	S19-Jl07364	NCP	%	88			70-130	Pass	
TRH >C10-C16	S19-Jl04510	NCP	%	67			70-130	Fail	Q08
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S19-Jl07557	NCP	%	122			70-130	Pass	
Acenaphthylene	S19-Jl07557	NCP	%	118			70-130	Pass	
Anthracene	S19-Jl07557	NCP	%	117			70-130	Pass	
Benz(a)anthracene	S19-Jl07557	NCP	%	113			70-130	Pass	
Benzo(a)pyrene	S19-Jl07557	NCP	%	109			70-130	Pass	
Benzo(b&j)fluoranthene	S19-Jl07557	NCP	%	105			70-130	Pass	
Benzo(g.h.i)perylene	S19-Jl07557	NCP	%	124			70-130	Pass	
Benzo(k)fluoranthene	S19-Jl07557	NCP	%	118			70-130	Pass	
Chrysene	S19-Jl07557	NCP	%	122			70-130	Pass	
Dibenz(a.h)anthracene	S19-Jl07557	NCP	%	117			70-130	Pass	
Fluoranthene	S19-Jl07557	NCP	%	125			70-130	Pass	
Fluorene	S19-Jl07557	NCP	%	118			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S19-Jl07557	NCP	%	126			70-130	Pass	
Naphthalene	S19-Jl07557	NCP	%	124			70-130	Pass	
Phenanthrene	S19-Jl07557	NCP	%	124			70-130	Pass	
Pyrene	S19-Jl07557	NCP	%	125			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S19-Jl03516	NCP	%	107			70-130	Pass	
Cadmium	S19-Jl03516	NCP	%	105			70-130	Pass	
Chromium	S19-Jl03516	NCP	%	97			70-130	Pass	
Copper	S19-Jl03516	NCP	%	82			70-130	Pass	
Lead	S19-Jl03516	NCP	%	95			70-130	Pass	
Mercury	S19-Jl03516	NCP	%	107			70-130	Pass	
Nickel	S19-Jl03516	NCP	%	105			70-130	Pass	
Zinc	S19-Jl06275	NCP	%	97			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S19-Jl04509	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S19-Jl07363	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S19-Jl07363	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S19-Jl07363	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S19-Jl04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S19-Jl04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S19-Jl04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S19-Jl04509	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S19-Jl04509	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S19-Jl04509	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S19-Jl04509	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S19-Jl04509	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S19-Jl07363	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S19-Jl07363	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S19-Jl07363	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S19-Jl07575	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S19-Jl03515	NCP	mg/kg	< 2	2.3	15	30%	Pass	
Cadmium	S19-Jl03515	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S19-Jl03515	NCP	mg/kg	16	17	9.0	30%	Pass	
Copper	S19-Jl03515	NCP	mg/kg	20	18	11	30%	Pass	
Lead	S19-Jl03515	NCP	mg/kg	12	14	14	30%	Pass	
Mercury	S19-Jl03515	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	S19-Jl03515	NCP	mg/kg	19	16	13	30%	Pass	
Zinc	S19-Jl03515	NCP	mg/kg	69	76	10	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S19-Jl04509	CP	%	13	11	13	30%	Pass	

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Authorised By

Nibha Vaidya	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
Gabriele Cordero	Senior Analyst-Metal (NSW)

Glenn Jackson

General Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Inter-lab Replicate

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	85310.02	**Suburb:** Roseville	**To:** Eurofins Mgt
Project Name:	Proposed Roseville College SWELL Centre	**Order Number**	
Project Manager	WFY	**Sampler:** WFY	**Attn:** Asim Khan
Emails:	wenfei.yuan@douglaspartners.com.au		**Phone:** 9900 8432
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐		**Email:** AsimKhan@eurofins.com
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo8A	Combo3A	pH, CEC							
BD270619		27/6/18	S.	P.		✓								
PQL (S) mg/kg														

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:

Relinquished by: WFY

Transported to laboratory by:

Send Results to: Douglas Partners Pty Ltd **Address:** 96 Hermitage Road, West Ryde **Phone:** 9809 0999

Signed: **Received by:** Luna P. Eurofins MGT 02/07/19 2:22 PM 10.3°C **Date & Time:**

Relinquished: Tony Doherty
02/07/2019
11:45

663873

01/07/19.
220713

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NATA # 1261 Site # 23736

ABN – 50 005 085 521 e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

Sample Receipt Advice

Company name:	**Douglas Partners (Syd)**
Contact name:	Wen-Fei Yuan
Project name:	PROPOSED ROSEVILLE COLLEGE SWELL CENTRE
Project ID:	85310.02
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Jul 2, 2019 2:22 PM
Eurofins | mgt reference:	**663873**

Sample information

☑ A detailed list of analytes logged into our LIMS, is included in the attached summary table.

☑ All samples have been received as described on the above COC.

☑ COC has been completed correctly.

☑ Attempt to chill was evident.

☑ Appropriately preserved sample containers have been used.

☑ All samples were received in good condition.

☑ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8415 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Wen-Fei Yuan - wenfei.yuan@douglaspartners.com.au.

Envirolab Services Pty Ltd
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12 Ashley St Chatswood NSW 2067
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customerservice@envirolab.com.au
www.envirolab.com.au

CERTIFICATE OF ANALYSIS 222744

Client Details

Client	Douglas Partners Pty Ltd
Attention	Wen-Fei Yuan
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**85310.02, Roseville**
Number of Samples	1 soil
Date samples received	30/07/2019
Date completed instructions received	30/07/2019

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	02/08/2019
Date of Issue	05/08/2019
Reissue Details	This report replaces R00 created on 01/08/2019 due to: Sample ID Amended (Client Request)

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

Results Approved By
Loren Bardwell, Senior Chemist

Authorised By

Nancy Zhang, Laboratory Manager

Acid Extractable metals in soil		
Our Reference		222744-1
Your Reference	UNITS	BH401
Depth		0.5
Date Sampled		27/06/2019
Type of sample		soil
Date prepared	-	31/07/2019
Date analysed	-	31/07/2019
Arsenic	mg/kg	<4
Cadmium	mg/kg	<0.4
Chromium	mg/kg	23
Copper	mg/kg	3
Lead	mg/kg	12
Mercury	mg/kg	0.2
Nickel	mg/kg	2
Zinc	mg/kg	6

Moisture		
Our Reference		222744-1
Your Reference	UNITS	BH401
Depth		0.5
Date Sampled		27/06/2019
Type of sample		soil
Date prepared	-	31/07/2019
Date analysed	-	01/08/2019
Moisture	%	12

Method ID	Methodology Summary
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.
Metals-021	Determination of Mercury by Cold Vapour AAS.

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	[NT]
Date prepared	-			31/07/2019	[NT]	[NT]	[NT]	[NT]	31/07/2019	[NT]
Date analysed	-			31/07/2019	[NT]	[NT]	[NT]	[NT]	31/07/2019	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	98	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	81	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	111	[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.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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; 60-140% for organics (+/-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.

Douglas Partners
Geotechnics | Environment | Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	85310.02	**Suburb:** Roseville	**To:** Envirolab Services
Project Name:	Proposed Roseville College SWELL Centre	**Order Number**	
Project Manager	WFY	**Sampler:** WFY	**Attn:** Aileen Hie
Emails:	wenfei.yuan@douglaspartners.com.au		**Phone:**
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☐		**Email:**
Prior Storage:	☐ Esky ☐ Fridge ☐ Shelved	Do samples contain 'potential' HBM? Yes ☐ No ☐ (If YES, then handle, transport and store in accordance with FPM HAZID)	

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: HM									
BH401/1.0	1	27.06.19	S	G	X									
BH408/0.5					X									
PQL (S) mg/kg														

ENVIROLAB
Envirolab S...
12 Ashley St
Ch...swood NSW 2067
Ph: (02) 9910 6200

Job No: 222744
Date Received: 30/07/2019
Time Received: 14:15
Received by: [illegible]
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Metals to Analyse: 8HM unless specified here:

Lab Report/Reference No:

Total number of samples in container:	**Relinquished by:** WFY	**Transported to laboratory by:**	
Send Results to: Douglas Partners Pty Ltd	**Address:** 96 Hermitage Road, West Ryde		**Phone:** 9809 0999
Signed:	**Received by:** Tanya Doherty		**Date & Time:** 30/07/2019 14:15

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 221807

Client Details

Client	Douglas Partners Pty Ltd
Attention	Wen-Fei Yuan
Address	96 Hermitage Rd, West Ryde, NSW, 2114

Sample Details

Your Reference	**85310.01, Roseville**
Number of Samples	5 Water
Date samples received	17/07/2019
Date completed instructions received	17/07/2019

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	24/07/2019
Date of Issue	24/07/2019

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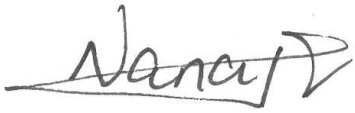
Accredited for compliance with ISO/IEC 17025 - Testing. **Tests not covered by NATA are denoted with ***

Results Approved By
Jaimie Loa-Kum-Cheung, Metals Supervisor
Nick Sarlamis, Inorganics Supervisor
Steven Luong, Organics Supervisor

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water						
Our Reference	UNITS	221807-1	221807-2	221807-3	221807-4	221807-5
Your Reference		BH401	BH406	BD20190716	TS	TB
Date Sampled		16/07/2019	16/07/2019	16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	19/07/2019	19/07/2019	19/07/2019	19/07/2019	19/07/2019
Date analysed	-	22/07/2019	22/07/2019	22/07/2019	22/07/2019	22/07/2019
TRH C_6 - C_9	µg/L	<10	<10	<10	[NA]	<10
TRH C_6 - C_{10}	µg/L	<10	<10	<10	[NA]	<10
TRH C_6 - C_{10} less BTEX (F1)	µg/L	<10	<10	<10	[NA]	<10
Benzene	µg/L	<1	<1	<1	82%	<1
Toluene	µg/L	<1	<1	<1	80%	<1
Ethylbenzene	µg/L	<1	<1	<1	78%	<1
m+p-xylene	µg/L	<2	<2	<2	75%	<2
o-xylene	µg/L	<1	<1	<1	78%	<1
Naphthalene	µg/L	<1	<1	<1	[NA]	<1
Surrogate Dibromofluoromethane	%	98	99	120	99	101
Surrogate toluene-d8	%	98	96	99	99	100
Surrogate 4-BFB	%	99	97	100	96	97

svTRH (C10-C40) in Water				
Our Reference		221807-1	221807-2	221807-3
Your Reference	UNITS	BH401	BH406	BD20190716
Date Sampled		16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water
Date extracted	-	18/07/2019	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019	19/07/2019
TRH C_{10} - C_{14}	µg/L	<50	<50	<50
TRH C_{15} - C_{28}	µg/L	<100	<100	<100
TRH C_{29} - C_{36}	µg/L	<100	<100	<100
TRH >C_{10} - C_{16}	µg/L	<50	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	µg/L	<50	<50	<50
TRH >C_{16} - C_{34}	µg/L	<100	<100	<100
TRH >C_{34} - C_{40}	µg/L	<100	<100	<100
Surrogate o-Terphenyl	%	127	102	100

PAHs in Water - Low Level				
Our Reference	UNITS	221807-1	221807-2	221807-3
Your Reference		BH401	BH406	BD20190716
Date Sampled		16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water
Date extracted	-	18/07/2019	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019	19/07/2019
Naphthalene	µg/L	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	79	77	77

OCP in water			
Our Reference		221807-1	221807-2
Your Reference	UNITS	BH401	BH406
Date Sampled		16/07/2019	16/07/2019
Type of sample		Water	Water
Date extracted	-	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019
HCB	µg/L	<0.2	<0.2
alpha-BHC	µg/L	<0.2	<0.2
gamma-BHC	µg/L	<0.2	<0.2
beta-BHC	µg/L	<0.2	<0.2
Heptachlor	µg/L	<0.2	<0.2
delta-BHC	µg/L	<0.2	<0.2
Aldrin	µg/L	<0.2	<0.2
Heptachlor Epoxide	µg/L	<0.2	<0.2
gamma-Chlordane	µg/L	<0.2	<0.2
alpha-Chlordane	µg/L	<0.2	<0.2
Endosulfan I	µg/L	<0.2	<0.2
pp-DDE	µg/L	<0.2	<0.2
Dieldrin	µg/L	<0.2	<0.2
Endrin	µg/L	<0.2	<0.2
pp-DDD	µg/L	<0.2	<0.2
Endosulfan II	µg/L	<0.2	<0.2
pp-DDT	µg/L	<0.2	<0.2
Endrin Aldehyde	µg/L	<0.2	<0.2
Endosulfan Sulphate	µg/L	<0.2	<0.2
Methoxychlor	µg/L	<0.2	<0.2
Surrogate TCMX	%	117	70

OP Pesticides in water			
Our Reference	UNITS	221807-1	221807-2
Your Reference		BH401	BH406
Date Sampled		16/07/2019	16/07/2019
Type of sample		Water	Water
Date extracted	-	18/07/2019	18/07/2019
Date analysed	-	19/07/2019	19/07/2019
Azinphos-methyl (Guthion)	µg/L	<0.2	<0.2
Bromophos ethyl	µg/L	<0.2	<0.2
Chlorpyriphos	µg/L	<0.2	<0.2
Chlorpyriphos-methyl	µg/L	<0.2	<0.2
Diazinon	µg/L	<0.2	<0.2
Dichlorvos	µg/L	<0.2	<0.2
Dimethoate	µg/L	<0.2	<0.2
Ethion	µg/L	<0.2	<0.2
Fenitrothion	µg/L	<0.2	<0.2
Malathion	µg/L	<0.2	<0.2
Parathion	µg/L	<0.2	<0.2
Ronnel	µg/L	<0.2	<0.2
Surrogate TCMX	%	117	70

HM in water - dissolved				
Our Reference		221807-1	221807-2	221807-3
Your Reference	UNITS	BH401	BH406	BD20190716
Date Sampled		16/07/2019	16/07/2019	16/07/2019
Type of sample		Water	Water	Water
Date prepared	-	18/07/2019	18/07/2019	18/07/2019
Date analysed	-	18/07/2019	18/07/2019	18/07/2019
Arsenic-Dissolved	µg/L	<1	8	<1
Cadmium-Dissolved	µg/L	<0.1	<0.1	<0.1
Chromium-Dissolved	µg/L	<1	<1	<1
Copper-Dissolved	µg/L	<1	<1	<1
Lead-Dissolved	µg/L	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	5	3	5
Zinc-Dissolved	µg/L	10	16	10

Total Phenolics in Water			
Our Reference		221807-1	221807-2
Your Reference	UNITS	BH401	BH406
Date Sampled		16/07/2019	16/07/2019
Type of sample		Water	Water
Date extracted	-	22/07/2019	22/07/2019
Date analysed	-	22/07/2019	22/07/2019
Total Phenolics (as Phenol)	mg/L	<0.05	<0.05

Method ID	Methodology Summary
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-003	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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-013	Water samples are analysed directly by purge and trap GC-MS.
Org-016	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.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
Date analysed	-			22/07/2019	[NT]	[NT]	[NT]	[NT]	22/07/2019	[NT]
TRH C_6 - C_9	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	82	[NT]
TRH C_6 - C_{10}	µg/L	10	Org-016	<10	[NT]	[NT]	[NT]	[NT]	82	[NT]
Benzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Toluene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
Ethylbenzene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	83	[NT]
m+p-xylene	µg/L	2	Org-016	<2	[NT]	[NT]	[NT]	[NT]	81	[NT]
o-xylene	µg/L	1	Org-016	<1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Naphthalene	µg/L	1	Org-013	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-016	98	[NT]	[NT]	[NT]	[NT]	99	[NT]
Surrogate toluene-d8	%		Org-016	98	[NT]	[NT]	[NT]	[NT]	100	[NT]
Surrogate 4-BFB	%		Org-016	100	[NT]	[NT]	[NT]	[NT]	96	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
TRH C_{10} - C_{14}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH C_{15} - C_{28}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH C_{29} - C_{36}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	116	[NT]
TRH >C_{10} - C_{16}	µg/L	50	Org-003	<50	[NT]	[NT]	[NT]	[NT]	101	[NT]
TRH >C_{16} - C_{34}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	87	[NT]
TRH >C_{34} - C_{40}	µg/L	100	Org-003	<100	[NT]	[NT]	[NT]	[NT]	116	[NT]
Surrogate o-Terphenyl	%		Org-003	87	[NT]	[NT]	[NT]	[NT]	125	[NT]

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
Naphthalene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	96	[NT]
Acenaphthylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluorene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	110	[NT]
Phenanthrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	74	[NT]
Anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	82	[NT]
Pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Benzo(a)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	96	[NT]
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-012	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	80	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-012	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: OCP in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
HCB	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	78	[NT]
gamma-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	82	[NT]
Heptachlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	77	[NT]
delta-BHC	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Heptachlor Epoxide	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
gamma-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-Chlordane	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	84	[NT]
Dieldrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	94	[NT]
Endrin	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	98	[NT]
pp-DDD	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	76	[NT]
Endosulfan II	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endrin Aldehyde	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	68	[NT]
Methoxychlor	µg/L	0.2	Org-005	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-005	82	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: OP Pesticides in water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			18/07/2019	[NT]	[NT]	[NT]	[NT]	18/07/2019	[NT]
Date analysed	-			19/07/2019	[NT]	[NT]	[NT]	[NT]	19/07/2019	[NT]
Azinphos-methyl (Guthion)	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Bromophos ethyl	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	117	[NT]
Chlorpyriphos-methyl	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dichlorvos	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Dimethoate	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	88	[NT]
Fenitrothion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	134	[NT]
Malathion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	102	[NT]
Parathion	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	105	[NT]
Ronnel	µg/L	0.2	Org-008	<0.2	[NT]	[NT]	[NT]	[NT]	124	[NT]
Surrogate TCMX	%		Org-008	82	[NT]	[NT]	[NT]	[NT]	82	[NT]

QUALITY CONTROL: HM in water - dissolved						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W4	[NT]
Date prepared	-			18/07/2019	1	18/07/2019	18/07/2019		18/07/2019	[NT]
Date analysed	-			18/07/2019	1	18/07/2019	18/07/2019		18/07/2019	[NT]
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	97	[NT]
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	99	[NT]
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	95	[NT]
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	105	[NT]
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	98	[NT]
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	102	[NT]
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	5	5	0	96	[NT]
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	10	10	0	96	[NT]

QUALITY CONTROL: Total Phenolics in Water					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			22/07/2019	[NT]	[NT]	[NT]	[NT]	22/07/2019	[NT]
Date analysed	-			22/07/2019	[NT]	[NT]	[NT]	[NT]	22/07/2019	[NT]
Total Phenolics (as Phenol)	mg/L	0.05	Inorg-031	<0.05	[NT]	[NT]	[NT]	[NT]	105	[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.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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; 60-140% for organics (+/-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.

Report Comments

Dissolved Metals: The preserved sample provided was not identified as either total or dissolved, therefore the unpreserved sample was filtered through 0.45µm filter at the lab.
Note: there is a possibility some elements may be underestimated.

Douglas Partners
Geotechnics / Environment / Groundwater

CHAIN OF CUSTODY DESPATCH SHEET

Project No:	85310.02	**Suburb:**	Roseville	**To:**	Envirolab Services
Project Name:	Proposed Roseville College SWELL Centre	**Order Number**			
Project Manager:	WFY	**Sampler:**	WFY	**Attn:**	Aileen Hie
Emails:	wenfei.yuan@douglaspartners.com.au			**Phone:**	
Date Required:	Same day ☐ 24 hours ☐ 48 hours ☐ 72 hours ☐ Standard ☒			**Email:**	
Prior Storage:	☒ Esky ☒ Fridge ☐ Shelved	Do samples contain 'potential' HBM?	Yes ☐ No ☒ (If YES, then handle, transport and store in accordance with FPM HAZID)		

Sample ID	Lab ID	Date Sampled	Sample Type (S - soil, W - water)	Container Type (G - glass, P - plastic)	Analytes: Combo 4L	OCP/OPP	Combo 3	BTEX	TRH/BTEX				
BH 401	1	16/07/19	W	G/P	X	X							
BH 406	2	↓	W	G/P	X	X							
BD120190716	3	↓	W	G/P	-	-	X	-	-	-	-	-	-
TS	4	—	W	G				X					
TB	5	—	W	G					X				
BH408/0.5													
PQL (S) mg/kg													

ENVIROLAB — Environmental Services, 12 Ashley St, Chatswood NSW, Ph: (02) 9910 6200

Job No: 221807
Date Received: 17/07/2019
Time Received: 11:36
Received by: ID
Temp: Cool/Ambient
Cooling: Ice/Icepack
Security: Intact/Broken/None

ANZECC PQLs req'd for all water analytes ☐

PQL = practical quantitation limit. If none given, default to Laboratory Method Detection Limit

Lab Report/Reference No:

Metals to Analyse: 8HM unless specified here:

Total number of samples in container: 5 **Relinquished by:** AS/ WFY **Transported to laboratory by:**

Send Results to: Douglas Partners Pty Ltd **Address:** 96 Hermitage Road, West Ryde **Phone:** 9809 0999

Signed: **Received by:** Tony Doherty ELS **Date & Time:** 17/07/2019 11:36

Appendix 13 – Soil and Water Management Plan

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CONSULTANTS

Construction Soil and Water Management Report

Roseville College SWELL Centre

Prepared for: Taylor

Document no: SY190030_CSWMP REPORT

Issue no: Revision 03

Disclaimer

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REVISIONS

Revision	Date	Purpose	Prepared By	Approved By
01	28.07.2022	Issued for Review	S. Khan	M. Buttarelli
02	29.07.2022	Issued for Information	S. Khan	M. Buttarelli
03	07.10.2022	Issued for Information	S. Khan	M. Buttarelli

Review Panel	
Division/Office	**Name**
Sydney	M. Buttarelli

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Appendices

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Introduction

ACOR Consultants Pty Ltd has been commissioned by Taylor Pty Ltd to prepare a Construction Water and Soil Management (CSWM) plan and report to demonstrate compliance with the requirements of the State Significant Development (SSD-9912) Consent Condition No B17 'Construction Soil & Water Management Plan' and Landcom Managing Urban Stormwater: Soils and Construction Volume 1 (2004) by NSW Department of Planning and Environment.

1.1 Purpose and Scope of Report

The purpose of this CSWM report is to design site-specific erosion and sediment controls to eliminate stormwater pollution resulting from the construction activities and reduce the impacts of land disturbance activities on nearby lands and local waterways.

The CSWM Plan relates only to the stormwater, potable and non-potable discharges from the site. Management of site waste and contaminated fluids (oil, grease, or chemical products, etc.) resulting from construction activities/site services shall be managed in accordance with Ku-ring-gai Development Control Plan DCP 2021 – are not within the scope of this report.

1.2 Reference Documents

The CSWM Plan has been designed to comply with the following standards and local authority requirements:

a) Landcom Managing Urban Stormwater: Soils and Construction Volume 1 (2004)

b) Ku-ring-gai Council Development Control Plan 2021;

c) State Significant Development (SSD-9912) Consent Condition B17; and

d) Best Practice Erosion and Sediment Control Document (IECA) 2008.

This report must be read in conjunction with the following documentation:

- ACOR Soil Erosion and Sediment Control Plan, Drawing No SY190030-C15.01 Revision 04;
- ACOR Details Sheet 4, Drawing No SY190030-C11.08 Revision 03;
- Site topographic survey prepared by Rygate Surveyors, Plan No 78985, dated 25/07/2019.

2 Soil Erosion and Sedimentation Control

2.1 General Principles

A Construction Soil and Water Management Plan has been prepared for the Roseville College site works, in accordance with the Landcom Managing Urban Stormwater: Soils and Construction Volume 1 (2004).

The following general principles of soil and water management are to be followed:

- Conserve topsoil for later site rehabilitation/revegetation
- Control water flow from the top of, and through the development area
- Ensure all stockpiles are stored within sediment fences
- Ensure all existing inground services should be diverted/decommissioned prior to any earthworks.
- Avoid excavation and stripping unless it is ready to build.

- Ensure slope lengths do not exceed 80 meters immediately before forecast rainfall or during shut down periods.
- Provide necessary compaction to any fill, and vegetation for steep batters (>1V:6H slope).
- Avoid constructing steep temporary driveways.
- Install site waste receptacles (mini-skip, bins, etc.).
- Check erosion and sediment control devices on a routine basis to ensure they are in good working condition.
- Be aware of the weather forecast and ensure any loose materials are stored away that can be washed into the stormwater system.
- Ensure all materials are removed from the site when work is completed.
- The SWM Plan shall be distributed to all contractors and sub-contractors attending the site.
- Sediment and erosion controls shall be installed prior to initial earth disturbance.
- Rehabilitate disturbed lands quickly.
- Maintain soil and water management measures appropriately during the construction phase.

2.2 Sources of Pollution

Based on the proposed development activities, the following sources of pollution during construction that could lead to earthworks erosion, sediment and silt transportation, and contamination of downstream stormwater systems have been considered:

- Earthworks undertaken prior to rainfall events without sufficient auxiliary measures to manage drainage
- Earthworks areas that have not been stabilised or are exposed prior to temporary or permanent ground cover
- Establishment time for rehabilitation/revegetation of exposed earthworks
- Construction works to existing stormwater pipelines and overland flow paths
- Vehicle entry and exit to the construction site and associated tracking of debris out of the site
- Clearing and grubbing of vegetation / organic matter and stripping of topsoil
- Stockpiling of excavated materials or construction materials (e.g., road base, ordinary and select fill, etc)
- Re-fuelling and general maintenance of construction plant and equipment
- Storage of chemicals, fuel, and other hazardous materials
- Ineffective/incorrect installation or maintenance of soil erosion and sedimentation control measures

2.3 Soil and Water Management Strategy

The following construction management methodology has been developed for the site works and included in the CSWMP:

- Establish sediment fencing to the downstream perimeter of the zone of disturbed works to prevent sediment-laden water from entering Bancroft Avenue and other properties
- Installation of stabilised construction entry and exit grids to prevent construction vehicles from tracking debris into adjacent authority roadways and stormwater systems

- Construction of cut off drains to minimise generation of sediment-laden and silt-laden water by managing water runoff velocities.
- Protection of materials stockpiles by suitable wind protection fencing and/or temporary covering of stockpiles
- Protection of existing and recently constructed surface inlet pits with temporary sediment traps using geotextile filter fabric and sandbags
- Protection of existing and recently constructed overland flow paths with vegetated ground cover
- General expedited revegetation and stabilisation of exposed earthworks to prevent sedimentation of stormwater runoff

3 Erosion Risk Assessment

An erosion risk assessment has been conducted using the Revised Universal Soil Loss Equation (RUSLE). The calculated soil loss is then used to determine whether sedimentation basins are required, and for the volume of sedimentation basins required.

A = R x K x LS x P x C (Equation 1 Appendix 'A' Blue book)

A = 2960 x 0.019 x 0.91 x 1.3 x 1.0

A = 66.5m^3 / Ha / Year

Disturbed Site Area = 0.37 Ha

A = 24.6m^3 / Year < 150m^3 / Year

Landcom Managing Urban Stormwater Volume 1 Section 6.3.2 states that a sediment basin is not required should the average annual soil loss from the site (A) is less than 150m^3 / Year.

Where;

A is predicted soil loss (t/Ha/Yr)

K is the soil erodibility factor

R is the rainfall erosivity factor

LS is the slope length/gradient factor

P is the erosion control practice factor

C is the ground cover and management factor

4 Flood Flow Management

There is no available flood study documenting overland or mainstream flood affectation to the subject site. Flood management measures such as the provision for a flood storage volume do not apply to this development.

Stormwater and flood flows arising from large storm events up to 1% AEP shall be stored within the basement excavation.

5 Site-Specific Erosion and Sediment Controls

Site-specific controls are designed and documented on Drawing No SY190030-C15.01, to comply with general requirements of 'Landcom' Managing Urban Stormwater Volume 1, and Significant Site Development (SSD-9912) Consent Condition B17.

Construction details and notes for each control are provided on Drawing SY190030-C11.08.

Each of the nominated erosion and sediment controls are explained below:

5.1 Stabilised Construction Exit

Site access shall be managed to ensure that sediment is not tracked off the construction site. This can be achieved by providing a stabilised construction exit to divert sediment to a sediment trap where it is collected and removed. A diversion hump shall be provided within the site boundary to intercept sediment-laden water to the sediment trap. If the stabilised access is placed across a footpath, pedestrian safety shall be taken into consideration. This is usually achieved by covering large rocks with smaller aggregates and gravel.

Stabilised access only requires periodic maintenance with topping additional gravel as conditions demand. Street sweeping on adjacent road will still be required to remove any washed or tracked off sediment. No hosing or washing of paved surfaces shall occur.

Construction and maintenance notes are provided on design drawing SY190030-C11.08.

Figure 1: Typical example of stabilised construction exit

Figure 2: Lack of maintenance resulting in heavy sedimentation

5.2 Sediment Control Fence

Sediment Control fences act as a sediment and wind erosion barrier on site. A typical sediment fence consists of self-supporting geotextile fabric. Sediment fences trap sediments while allowing filtered water to leave the site.

Sediment fences are relatively inexpensive and easy to construct on site. They should be placed as close as possible to parallel to the site contours to ensure surface flows are intercepted by the fence. The fence shall be installed minimum 200mm below the soil surface to ensure water does not bypass the fence.

Sediment fences can easily be crushed or damaged under building materials which can result in sediment-laden water escaping the site. Damaged portion of the sediment fences must be repaired promptly.

Refer to sediment fence construction notes and details on SY190030-C11.08. Location and layout of sediment fences are noted on Plan SY190030-C15.01.

Figure 3: Typical example of sediment fence

5.3 Temporary Sediment Basin

The soil loss calculations verify that a sediment basin is not required for the site. However, a temporary sediment basin is designed to reduce the risk of sediment laden water discharge into the adjacent properties downstream while the site is stripped.

Once the temporary basin is full, it shall be flocculated with a suitable flocculant agent such as gypsum or lime. Upon completion of flocculation, clean water can be discharged into the stormwater network.

The temporary basin is designed for a maximum of 6 months and sized in accordance with Landcom “Blue Book” requirements. The temporary sediment basin can be removed once the excavation for the building pad is completed. Basement excavation can be utilised to collect and retain sediment laden water during major storm events including the 1% AEP. Sediment laden water retained in the basement excavation shall be treated and disposed after being flocculated.

5.4 Temporary Water Diversion / Cut Off Drains

Cut off drains have been designed for the site to convey 10% AEP storm flows to the temporary sediment basin. Cut off drains shall be constructed with necessary rock check dams to ensure that the flow velocities are within the acceptable limits. Details of cut off drains and check dams are provided on drawing SY190030-C15.01 and SY190030C11.08.

Figure 4: Typical cut off drain on site

5.5 Stockpiles

Stockpiles shall be stored in a designated location behind the sediment controls. Stockpiles shall be placed in a hazard-free area including footpaths, roadways, waterways, and floodway. Stockpile height shall be limited to 2 metres.

All delivery drivers shall be notified of the designated stockpile areas to deliver building materials on site. Stockpile losses can be minimised with the use of covers. A sediment fence is to be provided around the stockpiles.

Figure 5: Stockpile surrounded with a sediment fence

Figure 6: Stockpile covered on site

5.6 Sandbag Sediment Traps and Inlet Traps

All existing and proposed stormwater surface inlet pits need to be protected during earthworks to ensure sediment-laden water does not enter the pits. Silt and sediment can flow into surface inlet pits and settle in the drainage pipes resulting in blockage.

All kerb 'sag' inlet pits located at a low point in the roadway shall be protected by sandbag sediment traps. These sandbags shall be used to capture sediment and other suspended material from wash water which can be the result of concreting works on site. Geotextile sediment sandbags shall be filled with coarse sand or 15 to 25mm aggregate to perform better in public roadways. Road safety issues must be taken into consideration before the Installation of sandbags in public roads as these can easily be damaged by running traffic and can pose a traffic safety hazard. No sandbags shall be located within the road carriageway unless approval from the applicable Road Authority is obtained.

Figure 7: Typical example of sandbags surrounding a kerb inlet pit

Figure 8: Sandbag sediment trap other than kerb inlet pit

Figure 9: Use of filter socks to form a sediment trap at sag inlet

All proposed and existing surface inlet pit openings and grates shall be wrapped in geotextile fabric until the completion of works.

Figure 10: A typical surface inlet trap

Details and location of sandbag sediment trap and inlet trap are provided on drawings SY190030-C15.01 and SY190030C11.08.

6 Site management during wet weather

6.1 Topsoil Management (Preserving topsoil)

Topsoil needs appropriate management to preserve its long term value. Topsoil contains living organic matter that has physical and biological properties which can be damaged if not managed properly. Stripped soil shall be used as soon as possible.

Following practices shall be adopted to preserve topsoil:

- Adequate stripping and stockpiling of topsoil;
- Where practicable, topsoil shall be stripped and stockpiled immediately before bulk earthworks take place within any stage of works.
- Preservation and storage of topsoil for reuse wherever possible, topsoil shall not be stockpiled for over 12 months.
- Topsoil shall be stripped only while in a moist condition. Avoid stripping topsoil in too wet or excessively dry conditions;
- Avoid excavation of topsoil if it is not ready to build;
- Avoid excessive compaction and overworking of topsoil;

6.2 Minimising Soil Compaction

Undesirable and excessive soil compaction shall be limited on site by adopting the following controls:

- Provide designated access paths for vehicular traffic movements within the site to avoid dust generation and undesirable soil compaction on site outside the access path.
- Use gravelling techniques to minimise soil compaction around site compound.

6.3 Stabilisation

Erosion and sediment control shall consider appropriate staging of soil disturbances and site stabilisation measures. Soil stabilisation sequence including site preparation and revegetation shall commence soon after the completion of each construction stage. Bed slope of catch drains and swales shall be stabilised by check dams etc. as the bed slope is usually governed by the site gradient.

6.3.1 Criteria and deadlines for initiating and completion of Stabilisation

Criteria adopted for stabilisation is based on the erosion risk rating, calculated as per Table 4.4.4 of IECA, 2008.

The erosion risk rating based on the monthly rainfall erosivity is provided in the table below:

Table 4.4.1 – Erosion risk rating (default) based on monthly rainfall erosivity

Erosion risk rating	Average monthly erosivity (R-factor)
Very Low	0 to 60
Low	60+ to 100
Moderate	100+ to 285
High	285+ to 1500
Extreme	>1500

The subject site erosion risk rating falls within “High” for the months of January-June, and “Moderate’’ for the months of July-December. The required management and best practice requirements are to be adopted as per the table below (Table 4.4.7 of IECA, 2008):

Risk [1]	Best practice requirements
All cases	• All reasonable and practicable steps taken to apply best practice erosion control measures to completed earth works, or otherwise stabilise such works, prior to anticipated rainfall—including existing unstable, undisturbed, soil surfaces under the management or control of the building/construction works.
Very low	• Land clearing limited to 8 weeks of work if rainfall is reasonably possible. • Disturbed soil surfaces stabilised with minimum 60% cover [2] within 30 days of completion of works if rainfall is reasonably possible. • Unfinished earthworks are suitably stabilised if rainfall is reasonably possible, and disturbance is expected to be suspended for a period exceeding 30 days.
Low	• Land clearing limited to maximum 8 weeks of work. • Disturbed soil surfaces stabilised with minimum 70% cover [2] within 30 days of completion of works within any area of a work site. • Unfinished earthworks are suitably stabilised if rainfall is reasonably possible, and disturbance is expected to be suspended for a period exceeding 30 days. • Appropriate protection of all planned garden beds is strongly recommended.
Moderate	• Land clearing limited to maximum 6 weeks of work. • Disturbed soil surfaces stabilised with minimum 70% cover [2] within 20 days of completion of works within any area of a work site. • All planned garden beds protected with a minimum 75 mm layer of organic *Mulching*, heavy *Erosion Control Blanket*, *Rock Mulching*, or the equivalent. • Staged construction and stabilisation of earth batters (steeper than 6H:1V) in maximum 3 m vertical increments wherever reasonable and practicable. • Unfinished earthworks are suitably stabilised if rainfall is reasonably possible, and disturbance is expected to be suspended for a period exceeding 20 days.
High	• Land clearing limited to maximum 4 weeks of work. • Disturbed soil surfaces stabilised with minimum 75% cover [2] within 10 days of completion of works within any area of a work site. • All planned garden beds protected with a minimum 75 mm layer of organic *Mulching*, heavy *Erosion Control Blanket*, *Rock Mulching*, or the equivalent. • Staged construction and stabilisation of earth batters (steeper than 6H:1V) in maximum 3 m vertical increments wherever reasonable and practicable. • The use of turf to form grassed surfaces given appropriate consideration. • Soil stockpiles and unfinished earthworks are suitably stabilised if disturbance is expected to be suspended for a period exceeding 10 days.

Figure 11: Table 4.4.7 - IECA 2008

6.4 General Maintenance Requirements

Following general maintenance requirements shall be followed on site:

- Establish waste collection areas.
- Ensure appropriate storage of chemicals and fuels (e:g. AS1940: The Storage and handling of flammable and combustible liquids)
- Where required, establish drip pans, (or similar, e: g. filter cloth sheeting) in vehicle maintenance areas to control pollution runoff from the road surfacing equipment.

- Where necessary, install appropriate building waste receptors.

Ensure that all general pollution prevention practices are followed on site with any additional measure deemed necessary to minimize pollution on the construction site or fulfil the CSWMP requirements shall be developed and implemented.

7 Emergency Spill Notification

It is prohibited to discharge toxic or hazardous substances from the site. If a leak or spill of hazardous material occurs on site, it is a duty to report pollution incidents under section 148 of the *Protection of the Environment Preparations Act 1997 (POEO Act).*

Leaks, spills and other pollution incidents can harm the environment. Each of the following response agencies needs to be informed of pollution incidents quickly, so action can be coordinated to prevent or limit harm to the environment and human health generally.

- The appropriate regulatory authority (ARA)
- Environment Protection Authority (EPA) if they are not the ARA
- Ministry of Health
- SafeWork NSW (formerly WorkCover)
- local authority, if they are not the ARA
- Fire and Rescue NSW

8 Site Inspection and Monitoring

Site inspection and monitoring shall be undertaken in accordance with section 6.17 and 7.4 of the Best Practice Erosion and Sediment Control Document (IECA, 2008) which states the following:

CSWM plans should be considered as live documents that will require review and updating if the site conditions change, or the adopted CSWMP measures fail.

Effectiveness of an CSWM plan shall be monitored through a combination of site inspections and water quality monitoring. Monitoring is likely to include detailed logbook entries of the field observations, daily inspection times, and site maintenance activities.

Best practice site management requires all CSWMP measures to be inspected at the following intervals and include the following checks as a minimum:

- Daily – when rain is occurring
  - all drainage, erosion and sediment control measures;
  - occurrence of excessive sediment deposition (whether on-site or off-site);
  - all site discharge points.

- Weekly – (even if work is not occurring on site)
  - all drainage, erosion and sediment control measures;
  - occurrence of excessive sediment deposition (whether on-site or off-site);
  - occurrences of construction materials, litter or sediment placed, deposited. Washed or blown from the site, including deposition by vehicular movements;
  - litter or waste receptors;
  - oil, fuel and chemical storage facilities.

- Within 24 hours prior to expected rainfall
  - all drainage, erosion and sediment control measures;
  - all temporary flow diversion and drainage works;

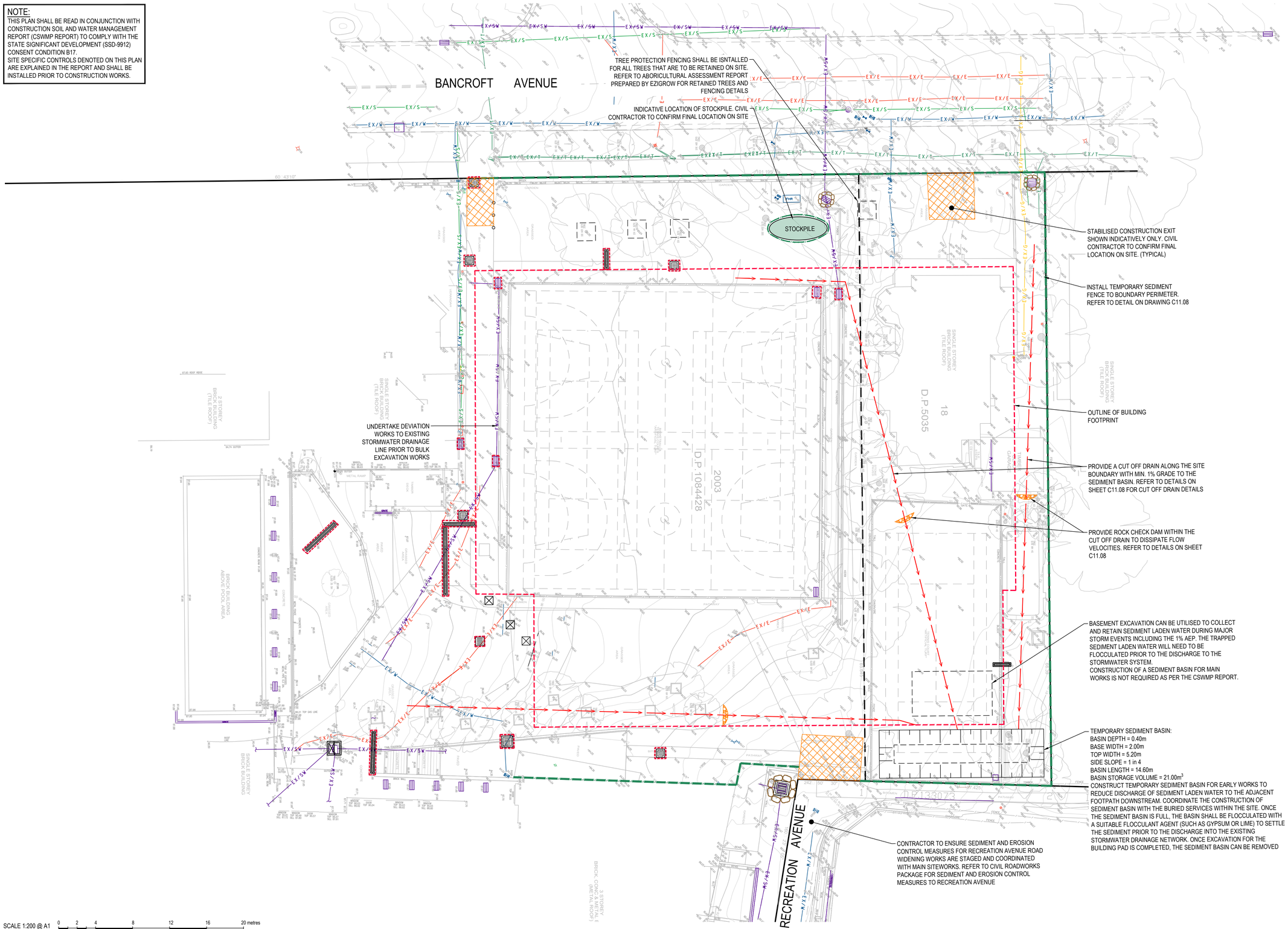
- Within 18 hours of a rainfall event of sufficient intensity and duration to cause on-site runoff.
  - all drainage, erosion and sediment control measures;
  - occurrence of excessive sediment deposition (whether on-site or off-site);
  - occurrences of construction materials, litter or sediment placed, deposited. Washed or blown from the site, including deposition by vehicular movements;
  - occurrence of excessive erosion, sedimentation, or mud regeneration around the site office, carpark and material storage areas.

A formal Monitoring and Maintenance Program shall be prepared prior to site establishment.
A weekly inspection report shall be maintained for record-keeping which shall include a checklist of all sediment and erosion control items with date-stamped photographs, a record of non-conformance or defects, details of maintenance and amendments made to achieve/maintain required treatment/performance, and any erosion and sedimentation control failure.
Details of Monitoring and Maintenance Program can be obtained from Chapter 7 of the Best Practice Erosion and Sediment Control Document.

9 APPENDICES

Appendix A - Soil Erosion and Sediment Control Plan

NOTE:
THIS PLAN SHALL BE READ IN CONJUNCTION WITH CONSTRUCTION SOIL AND WATER MANAGEMENT REPORT (CSWMP REPORT) TO COMPLY WITH THE STATE SIGNIFICANT DEVELOPMENT (SSD-9912) CONSENT CONDITION B17.
SITE SPECIFIC CONTROLS DENOTED ON THIS PLAN ARE EXPLAINED IN THE REPORT AND SHALL BE INSTALLED PRIOR TO CONSTRUCTION WORKS.



SCALE 1:200 @ A1
SCALE 1:400 @ A3
0 2 4 8 12 16 20 metres

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Issue	Description	Date	Drawn	Approved
05	RE-ISSUE FOR CONSTRUCTION CERTIFICATE	07.10.22	RP	SK
04	RE-ISSUE FOR CONSTRUCTION CERTIFICATE	29.07.22	RP	SK
03	ISSUE FOR CONSTRUCTION CERTIFICATE	26.07.22	DJ	SK
02	DRAFT ISSUE FOR CONSTRUCTION CERTIFICATE	22.07.22	DJ	SK

1cm at full size

North

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Drawing Title
SOIL EROSION AND AND SEDIMENT CONTROL PLAN

Drawn	Date	Scale	A1	Q.A. Check	Date
DK	AUG 2019	1:200		UK	21.07.22
Designed	Project No.			Dwg. No.	Issue
MB	SY190030			C15.01	05

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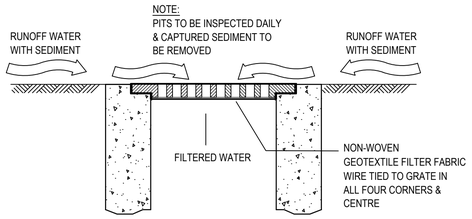
Oct 07, 2022 - 2:31pm

Appendix B - Soil Erosion and Sediment Control Details



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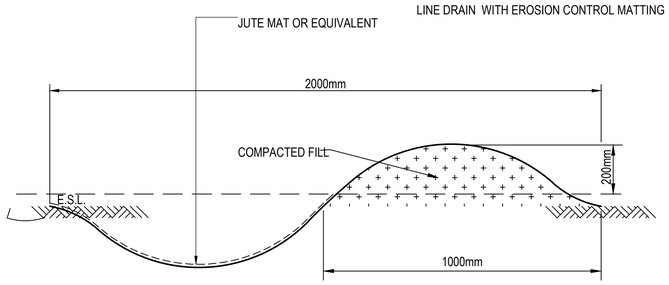

CUT-OFF DRAIN - 2.0m WIDE
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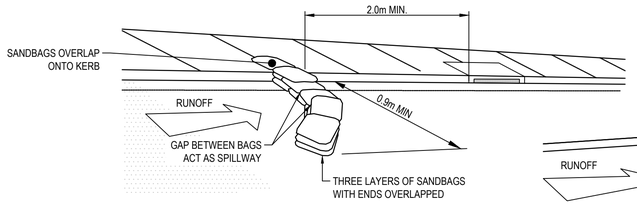
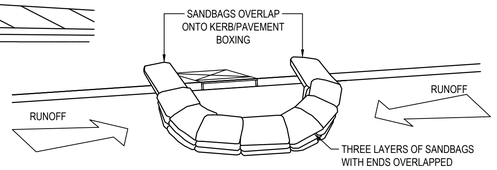


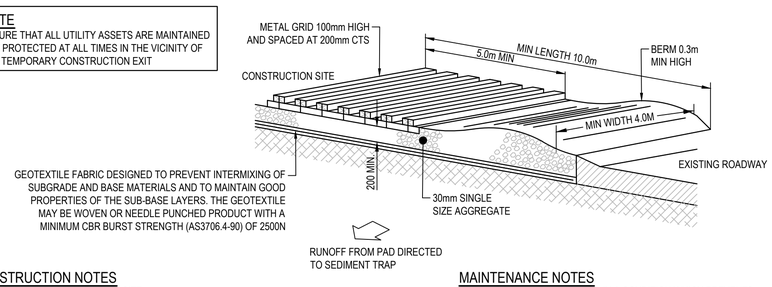
SANDBAG SEDIMENT TRAP - AT ON GRADE PIT



SANDBAG SEDIMENT TRAP - AT KERB SAG PIT

SANDBAG SEDIMENT TRAP
NTS

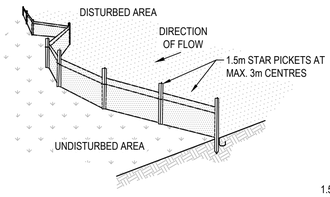
NOTE
ENSURE THAT ALL UTILITY ASSETS ARE MAINTAINED AND PROTECTED AT ALL TIMES IN THE VICINITY OF THE TEMPORARY CONSTRUCTION EXIT

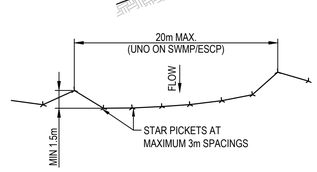


CONSTRUCTION NOTES
1. STRIP TOPSOIL AND LEVEL SITE.
2. COMPACT SUBGRADE.
3. COVER AREA WITH NEEDLE-PUNCHED GEOTEXTILE.
4. CONSTRUCT 200mm THICK PAD OVER GEOTEXTILE USING 30mm SINGLE SIZE AGGREGATE.
5. CONSTRUCT HUMP IMMEDIATELY WITHIN BOUNDARY TO DIVERT WATER TO A SEDIMENT FENCE OR OTHER SEDIMENT TRAP WHERE THE SEDIMENT IS COLLECTED AND REMOVED.

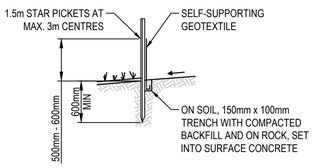
MAINTENANCE NOTES
THE EXIT SHALL BE MAINTAINED IN A CONDITION WHICH PREVENTS TRACKING OR FLOWING OF SEDIMENT OFF THE CONSTRUCTION SITE. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL GRAVEL AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED OFF THE CONSTRUCTION SITE MUST BE REMOVED IMMEDIATELY.

TEMPORARY STABILISED CONSTRUCTION EXIT
NTS





PLAN



SECTION DETAIL

CONSTRUCTION NOTES
1. CONSTRUCT SEDIMENT FENCE AS CLOSE AS POSSIBLE TO PARALLEL TO THE CONTOURS OF THE SITE.
2. DRIVE 1.5m LONG STAR PICKETS INTO GROUND, 3 METRES APART.
3. DIG A 150mm DEEP TRENCH ALONG THE UPSLOPE LINE OF THE FENCE FOR THE BOTTOM OF THE FABRIC TO BE ENTRENCHED.
4. BACKFILL TRENCH OVER BASE OF FABRIC.
5. FIX SELF-SUPPORTING GEOTEXTILE TO UPSLOPE SIDE OF POSTS WITH WIRE TIES OR AS RECOMMENDED BY GEOTEXTILE MANUFACTURER.
6. JOIN SECTIONS OF FABRIC AT A SUPPORT POST WITH A 150mm OVERLAP.

SEDIMENT CONTROL FENCE
NTS

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Issue	Description	Date	Drawn	Approved
03	ISSUE FOR CONSTRUCTION CERTIFICATE	26.07.22	DJ	SK
02	DRAFT ISSUE FOR CONSTRUCTION CERTIFICATE	22.07.22	DJ	SK
01	ISSUED FOR TENDER ADDENDUM	13.04.22	RD	SK
0	ISSUED FOR TENDER	11.03.22	RP	SK

North

0 1cm at full size 10cm 20cm

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Drawing Title
DETAILS
SHEET 4

Drawn	Date	Scale A1	Q.A. Check	Date
RP	MAR 2022	AS SHOWN	UK	21.07.22
Designed	Project No.		Dwg. No.	Issue
MB	SY190030		C11.08	03

Thank you

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TAYLOR