

ENVIRONMENTAL IMPACT STATEMENT

IN SUPPORT OF A DEVELOPMENT APPLICATION

PROPOSED COMMUNITY RECYCLING CENTRE
HEPHER ROAD, CAMPBELLTOWN



Premise

PREPARED FOR:

CAMPBELLTOWN CITY COUNCIL

JUNE 2019



ENGINEERING



ENVIRONMENT



AGRICULTURE



WATER

Report Title:	<i>Environmental Impact Statement</i>
Project:	<i>In Support of a Development Application</i>
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Certification

For submission of an environmental impact statement (EIS) under Part 4, Division 4.1 of the NSW *Environmental Planning and Assessment Act 1979*

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DESCRIPTION OF PROPOSED DEVELOPMENT:

Proposed waste management facility (waste transfer station) being a community recycling facility for problem household waste, to be located at Hepher Road, Campbelltown

LAND TO BE DEVELOPED:

Lot 104 DP1056782, Hepher Road, Campbelltown

CERTIFICATION:

We declare that this statement has been prepared in accordance with Schedules 1 & 2 of the *Environmental Planning and Assessment Regulation 2000*, contains all available information that is relevant to the environmental assessment of the development to which the statement relates, and that the information contained in this statement is neither false nor misleading.



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TABLE OF CONTENTS

CERTIFICATION	I
ABBREVIATIONS	VII
EXECUTIVE SUMMARY	VIII
INTRODUCTION	1
1.1 DEVELOPMENT OVERVIEW	1
1.2 BACKGROUND	1
1.3 THE APPLICANT	1
1.4 DEVELOPMENT SETTING.....	2
1.4.1 LOCATION AND REGIONAL CONTEXT	2
1.5 STATEMENT PURPOSE	4
1.6 STATEMENT REQUIREMENTS.....	4
1.7 STATEMENT STRUCTURE AND SCOPE	4
THE DEVELOPMENT.....	4
2.1 INTRODUCTION.....	4
2.2 SITE ESTABLISHMENT	4
2.2.1 INFRASTRUCTURE ESTABLISHMENT	5
2.3 CRC DESIGN	5
2.3.1 NSW EPA REQUIREMENTS.....	5
2.3.2 PROPOSED DESIGN	5
2.4 TRANSPORTATION	6
2.4.1 INTRODUCTION	6
2.4.2 ROAD CONDITION AND INTERSECTION OPERATION.....	6
2.5 WASTE MANAGEMENT.....	7
2.5.1 COLLECTION OF WASTE.....	7
2.5.2 NON-OPERATION WASTE	7
2.6 ANCILLARY INFRASTRUCTURE	7
2.7 SERVICES.....	7
2.7.1 POTABLE WATER	7
2.7.2 SEWER.....	7
2.7.3 STORMWATER.....	7
2.7.4 POWER.....	8
2.7.5 COMMUNICATIONS.....	8
2.8 HOURS OF OPERATION.....	8
2.9 ECONOMIC CONTRIBUTION	8
2.9.1 EMPLOYMENT	8
STATUTORY PLANNING.....	8
3.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979	8

3.1.1	OBJECTS OF THE ACT	8
3.1.2	ECOLOGICALLY SUSTAINABLE DEVELOPMENT	9
3.2	PERMISSIBILITY	11
3.3	DESIGNATED DEVELOPMENT	11
3.4	INTEGRATED DEVELOPMENT	13
3.5	CONSENT AUTHORITY	13
3.6	ENVIRONMENTAL PLANNING INSTRUMENTS	13
3.6.1	COMMONWEALTH LEGISLATION	13
3.6.2	STATE LEGISLATION	14
3.6.3	STATE ENVIRONMENTAL PLANNING POLICIES	17
3.6.4	CAMPBELLTOWN LOCAL ENVIRONMENTAL PLAN 2015	21
3.6.5	CAMPBELLTOWN DEVELOPMENT CONTROL PLAN 2015 – VOLUME 1	22
3.7	STRATEGIC PLANNING DOCUMENTS	38
3.7.1	CAMPBELLTOWN 2027: COMMUNITY STRATEGIC PLAN	38
3.7.2	CAMPBELLTOWN LOCAL PLANNING STRATEGY	38
3.7.3	CAMPBELLTOWN 2025: LOOKING FORWARD	39
3.7.4	NSW WASTE AVOIDANCE AND RESOURCE RECOVERY STRATEGY 2014-21	39
CONSULTATION		40
4.1	INTRODUCTION	40
4.2	GOVERNMENT AGENCIES	40
ENVIRONMENTAL ISSUES		40
5.1	PRELIMINARY RISK ASSESSMENT	40
5.2	SECRETARY'S REQUIREMENTS	42
ENVIRONMENTAL IMPACTS		42
6.1	WATER	42
6.1.1	EXISTING ENVIRONMENT	42
6.1.2	MANAGEMENT AND MITIGATION MEASURES	44
6.2	LAND USE	45
6.2.1	EXISTING LAND USE	45
6.2.2	POTENTIAL IMPACTS	45
6.3	SOILS AND GEOLOGY	45
6.3.1	GEOLOGY	45
6.3.2	SOILS	45
6.4	VISUAL IMPACT	46
6.4.1	EXISTING ENVIRONMENT	46
6.4.2	POTENTIAL IMPACTS	46
6.4.3	MANAGEMENT AND MITIGATION MEASURES	46
6.4.4	CONCLUSION	47
6.5	NOISE AND VIBRATION	47
6.5.1	EXISTING ENVIRONMENT	47
6.5.2	POTENTIAL IMPACTS	47
6.5.3	MANAGEMENT AND MITIGATION MEASURES	47

6.6	AIR QUALITY	48
6.6.1	EXISTING ENVIRONMENT	48
6.6.2	POTENTIAL IMPACTS	48
6.6.3	MANAGEMENT AND MITIGATION MEASURES	49
6.7	TRAFFIC	49
6.7.1	EXISTING ROAD CONDITIONS	49
6.7.2	EXISTING TRAFFIC, ROAD CAPACITY AND LEVEL OF SERVICE	49
6.7.3	TRAFFIC IMPACT OF PROPOSED DEVELOPMENT	50
6.7.4	MITIGATION MEASURES	51
6.7.5	CONCLUSIONS	51
6.8	BIODIVERSITY	52
6.8.1	BACKGROUND	52
6.8.2	EXISTING ENVIRONMENT	52
6.9	ABORIGINAL HERITAGE	54
6.9.1	HISTORY	54
6.9.2	DESKTOP ASSESSMENT	54
6.9.3	SITE VISIT	54
6.9.4	RECOMMENDATIONS	55
6.10	NON-ABORIGINAL HERITAGE	55
6.11	HAZARDS	56
6.11.1	DANGEROUS GOODS STORAGE	56
6.11.2	BUSHFIRE	56
6.11.3	FLOODING	56
6.11.4	FIRE	58
6.12	WASTE MANAGEMENT	58
6.13	SOCIO-ECONOMIC	60
6.13.1	STRATEGIC FRAMEWORK	60
6.13.2	DEMOGRAPHY	60
6.13.3	SOCIO-ECONOMIC IMPACTS (POSITIVE AND NEGATIVE)	61
6.13.4	MITIGATION MEASURES	61
6.14	CUMULATIVE IMPACT	61
MITIGATION MEASURES		62
7.1	SUMMARY OF SAFEGUARDS AND MANAGEMENT MEASURES	62
7.2	OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN	64
JUSTIFICATION AND CONCLUSION		64
8.1	NEED FOR THE PROJECT	64
8.2	JUSTIFICATION FOR UNDERTAKING THE PROPOSAL	65
8.2.1	BIOPHYSICAL	65
8.2.2	SOCIO-ECONOMIC BENEFITS	66
8.2.3	PUBLIC BENEFIT	67
8.3	CONSEQUENCES OF NOT PROCEEDING	67
8.4	ALTERNATIVES	67
8.5	CONCLUSION	68

REFERENCES 69

DRAWINGS

Architectural design plans

Drawing C001 – Title sheet, Site Location and Drawing List

Drawing C002 – Site Plan

Drawing C003 – Stage 1 layout plan

Drawing C004 – Stage 1 section plan

Drawing C005 - Stage 2 layout plan

Drawing C006 - Stage 2 section plan

Drawing C007 - Stage 3 layout plan

Drawing C008 - Stage 3 section plan

Drawing C009 - Stage 4 layout plan

Drawing C010 - Stage 4 section plan

Erosion and Sediment Control Plans

Drawing C001 – Title Sheet & Site Locality

Drawing C002 – ESCP site plan

Drawing C003 – ESCP Figures

Landscape Plan

Sheet 2 of 4 – Concept landscape design

Civil Concept Drawings

Sheet 01 of 02 – General arrangement plan showing utility connection

Sheet 02 of 02 - Section showing finished floor level and existing ground level

FIGURES

Figure 1:	Site location regional context (Source: NSW LPI).....	2
Figure 2:	Immediate site locality (Source: NSW LPI)	3
Figure 3:	Risk matrix.....	41
Figure 4:	Surface Water Features (Source: NSW LPI).....	43
Figure 5:	Key Fish Habitat (NSW DPI – Fisheries)	43
Figure 6:	Intersection Layout (SIDRA)	50
Figure 7:	Movement Summery (SIDRA)	51
Figure 8:	Study Area and Subject Site (Biosis, 2019).....	53
Figure 9:	Flood Map (CCC)	57
Figure 10:	Proposed siting of the CRC building in the context of flood	57
Figure 11:	Placard and manifest quantities for materials stored at CRCs	59
Figure 12:	Typical quantities of materials anticipated at a CRC serving 50,000 people and calculated collection frequency	59

TABLES

Table 3.1 – Objects of the EP&A Act	8
Table 3.2 – LEP Mapping Review.....	21
Table 3.3 – Consideration of relevant DCP Matters.....	23
Table 5.1 – Risk analysis of environmental issues	41
Table 7.1 – Summary of Safeguards and Management Measures for the Site	62
Table B.1 – SEARs requirements.....	B1

APPENDICES

APPENDIX A

Secretary's Environmental Assessment Requirements

APPENDIX B

SEARs Checklist

APPENDIX C

Ecological Assessment

APPENDIX D

Aboriginal Heritage Due Diligence Assessment

APPENDIX E

Contamination Assessment

APPENDIX F

Construction Waste Management Plan

ABBREVIATIONS

Acronyms

AHIMS	Aboriginal Heritage Information Management System
ANL	Acceptable Noise Levels
BOM	Bureau of Meteorology
BSAL	Biophysical Strategic Agricultural Land
CEMP	Construction Environmental Management Plan
DA	Development Application
DCP	Development Control Plan
DoE	Commonwealth Department of Environment
DPE	NSW Department of Planning and Environment
DPI	NSW Department of Primary Industries
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
ESD	Ecologically Sustainable Development
FRNSW	Fire and Rescue New South Wales
ICNG	Interim Construction Noise Guideline (2009)
INP	Noise Policy for Industry 2017
LEP	Local Environmental Plan
LGA	Local Government Area
LPI	NSW Land and Property Information
OEH	NSW Office Environment and Heritage
RFS	NSW Rural Fire Service
RMS	NSW Roads and Maritime Service
SEAR	Secretary's Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
SSD	State Significant Development

Units of measure

°C	degrees Celsius
dB(A)	A-weighted decibel
Ha	Hectare
m	Metres
m/s	Metres per second
ML	Megalitre

Executive Summary

Introduction

Campbelltown City Council, the proponent, seeks to develop a waste management facility (waste transfer station) on land at Hephher Road, Campbelltown, within the Campbelltown Local Government Area. The proposed development represents designated development but is not represent integrated or state significant development. As the development represents particular designated development (waste management facility), the consent authority is the Sydney Western Regional Planning Panel Council, pursuant to Clause 7, Schedule 7 of the *State Environmental Planning Policy (State and Regional Development) 2011*.

The waste transfer station would take the form of a Community Recycling Centre (CRC) that would serve the local community, being a resource for the collection of household waste materials that could potentially be hazardous to the environment (referred to as problem household waste). These materials include household quantities of paints, oils, batteries, gas cylinders, fluorescent light fixtures, and smoke detectors. The CRC would be expected to provide for a resident population of around 150,000 people and would be expected to receive around 450 tonnes of problem waste per year, of which around 213 tonnes is expected to be hazardous wastes. The residual would consist of other forms of problem waste, such as e-waste, which is not hazardous when intact.

Premise has prepared this Environmental Impact Statement (EIS) on behalf of the proponent. This EIS is prepared to satisfy the requirements of the *Environmental Planning and Assessment Act 1979* (EP&A Act) particularly with regard to the requirements of Section 4.15 and Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regs). The EIS addresses the requirements of the Secretary's Environmental Assessment Requirements (SEARs) issued 19 September 2018.

Proposal

The proposed development entails the development of a waste transfer station, which would accommodate around 450 tonnes per year of household problem waste, of which around 213 tonnes per year is anticipated to represent hazardous waste. Hazardous wastes are products that are listed on the Australian Dangerous Goods Code.

Infrastructure associated with the proposed development includes:

- A partly enclosed shed for the receival and temporary transfer of problem household wastes;
- One way sealed internal driveway access and connections with Hephher Road;
- Staff amenities;
- Proposed office/gatehouse;
- Stormwater management in accordance with Councils engineering standards;
- Site landscaping in accordance with the proposed **B+E Landscape Architects Landscaping Plan, dated 9/5/19**.

The proposed layout of the facility is provided on **Ideas Architect Drawings A01-A07**. Plans are conceptual in nature and subject to detailed design, however it is considered unlikely that the final arrangement would depart significantly from that depicted via these figures and drawings.

The proposal is wholly located within land owned by the proponent and the site is well separated, both geographically and visually, from both the wider public domain and unrelated potentially sensitive

receivers. The adjacent land is currently in use for the purposes of flood and stormwater management and this would not be effected by the proposed development. The directly surrounding locality accommodates industrial land uses.

It is anticipated the CRC would serve a local population of around 150,000 people. The next closest CRC is located at Liverpool, around 20 km from the proposed site. The provision of a local resource that is accessible to residents assists to ensure that problem waste is diverted from residential waste streams and from ending up in landfill.

Environmental Issues

An analysis of site constraints via an environmental risk assessment process has identified the following key environmental issues which it was deemed warranted quantitative assessment:

- Aboriginal heritage;
- Biodiversity;
- Traffic impacts;
- Flooding

Other matters requiring qualitative assessment in the body of the EIS include soils, visual impacts, cumulative impacts, air quality, land use, hazards, waste management, non-Aboriginal heritage and socio-economic impacts.

Mitigation measures outlined in relation to each of the above matters would be addressed in a construction environmental management plan or operational environmental management plan as appropriate.

Aboriginal heritage

An Aboriginal Cultural Due Diligence Assessment, including an on-site archaeological survey, was conducted by Biosis. The purpose of the assessment was to identify any previously unrecorded Aboriginal sites, objects or areas of archaeological potential; and to assess the level of previous ground disturbance within the study area.

Based on the results of the desktop assessment and archaeological survey the study area has been assessed as having low Aboriginal archaeological potential. The proposed works are there unlikely to impact on any Aboriginal archaeological values. Subject to the implementation of recommendations, the project may proceed with caution.

Ecology

An Ecological Assessment, including site survey, was completed by Biosis. The Local Government Area of Campbelltown is a Western Sydney interim designated areas by reference to clause 27(3) of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* (BC Transitional Regs). As such, this application represents a pending or interim planning application and compliance with the *Biodiversity Conservation Act 2016* is not required. The Biosis ecological assessment has therefore been prepared by reference to the *former planning provisions*. Pursuant to clause 27(1) of the BC Transitional Regs, the *former planning provisions* means ‘...the provisions of the *Environmental Planning and Assessment Act 1979* that would be in force if that Act had not been amended by the new Act’.

Via their assessment Biosis has confirmed that the proposal would result in the removal of 0.07 ha of Swamp Oak Floodplain Forest endangered ecological community and the removal of 0.07 ha of low quality foraging habitat for Glossy Black Cockatoo. The proposal would also result in indirect impacts to Freshwater Wetlands and Green and Golden Bell Frog habitat as a result of altered hydrology.

A test of significance was prepared to consider the potential for impacts of the proposed development in relation to the above communities and species. on Swamp Oak Floodplain Forest and Green and Golden Bell Frog in accordance with the *Biodiversity Conservation Act 2016*. A Significant Impact Criteria Assessment has also been undertaken for Green and Golden Bell Frog in accordance with the *Environment Protection and Biodiversity Conservation Act 1999*.

A significant impact is not assessed as likely. A range of recommendations are proposed to manage any residual impacts.

Traffic impacts

A traffic study including intersection analysis was completed by CCC Infrastructure Section.

The traffic study provides a range of conclusions and recommendations, including:

- The CRC design would facilitate effective and efficient movement of traffic;
- Design would allow for forward entry and exit of the site;
- Truckloads of material transported off-site would be covered and recorded;
- Posted internal speed limits would be adhered to, to maximise safety and minimise noise;
- A Vehicle Management Plan would be implemented to ensure all vehicle operators would be briefed in standard operating requirements; and
- A driver code of conduct would be included within the vehicle management plan

On the basis of the above, the consent authority can be satisfied that impacts are well managed and would not result in a significant impact to the local traffic environment.

Flooding

It is evident from the flood assessment that the mapped alignment of the creek line, as indicated via topographic mapping as bisecting the application site, is in fact not located within the site.

An assessment of potential flooding impacts was completed by CCC Infrastructure Section and confirms that the proposed development is outside of the area of impact of the 1% AEP flood event. Subject to implementation of the recommendations of the flood assessment, namely the development of the CRC facility with a minimum floor level of RL 69.85 m AHD and development of the building in accordance with the requirements of Clause 3.1.2.3 of Volume 2 of the Building Code of Australia and Section 4.5 of the Engineering Design Guide for Development, the assessment finds that the development would not result in a significant impact.

JUSTIFICATION

The assessments presented in the EIS indicate that the proposed CRC should be approved principally because:

- The Proposal satisfies all relevant planning requirements. The Proposal Site is zoned SP2 under the Campbelltown LEP and the development of a waste management facility on SP2 zoned land where undertaken by or on behalf of a public authority is permitted with consent pursuant to clause 121 of the *State Environmental Planning Policy (Infrastructure) 2007*;
- The identified impacts are generally minor, highly localised, capable of mitigation and often confined to the construction phase,
- The site is highly suited to use for a waste management facility given its physical and visual separation from potentially affected sensitive receivers, its central location to the population base it serves and its accessibility with respect to local and nearby roads;

- The Proposal provides an important local service that is not otherwise provided in the immediate locality;
- The site features excellent connectivity with minimal likelihood of posing a disruption to the local traffic environment.

The Proposal is consistent with the objects and matters for consideration in the EP&A Act and with the principles of Ecologically Sustainable Development.

Conclusion

The primary potential impacts of the proposal are:

- Clearing of land and potential impacts to habitat;
- Intermittent noise during the proposed construction phase;
- On-going noise associated with operation from vehicles arriving and leaving the facility;
- Minor impacts to the environment as a result of temporary waste storage for transfer.

The EIS concludes that the Proposal would not significantly affect environmental, cultural, social and economic values at both the local or regional scale. The proposal would provide for an important local service not otherwise provided in the locality.

INTRODUCTION

1.1 DEVELOPMENT OVERVIEW

Campbelltown City Council (CCC), as the applicant, is proposing to a waste management facility (waste transfer station) in the form of a community recycling centre (CRCs), to be located on land at Lot 104 DP1056782, Hephher Road, Campbelltown, NSW. The landscaped and development footprint of the site is approximately 2,900 square metres (m²).

CRCs are being funded across New South Wales by the NSW Environmental Protection Authority (EPA) to safeguard the environment from potentially hazardous chemicals otherwise discarded incorrectly.

CRCs are proposed as part of the EPA initiative *Improved Systems for Household Problem Waste*. The aims of the project are:

To provide 90% or more of NSW households with access to a service where they can drop off their problem waste free of charge.

Raise community awareness by engaging householders in good management of resource recovery and disposal options for their problem wastes.

To provide a sustainable solution for the management of household problem waste.

The proposed CRC provides an accessible solution for managing household problem wastes that would otherwise end up in the normal waste streams and potentially find their way to landfill.

1.2 BACKGROUND

The proposed CRC is a waste management facility (waste transfer station). The CRC would manage problem household wastes, some of which are listed as dangerous goods. The facility is proposed to be located within 100 metres of a natural water body. By virtue of these facts, the proposal represents designated development pursuant to clause 32, Schedule 3 of the *Environmental Planning and Assessment Regulations 2000* (EP&A Regs). An Environmental Impact Statement (EIS) is required to be prepared to support a designated development application.

The EIS is lodged with Campbelltown City Council, as the local authority for the Campbelltown Local Government Area. As the development represents particular designated development, the consent authority is the Sydney Western Regional Planning Panel, pursuant to Clause 7 of Schedule 7 of the *State Environmental Planning Policy (State and Regional Development) 2011*.

1.3 THE APPLICANT

CCC is a local council located in Sydney's south west that incorporates approximately 300 km². As of the 2008 Census, the Campbelltown LGA has a population of 149,071.

1.4 DEVELOPMENT SETTING

1.4.1 LOCATION AND REGIONAL CONTEXT

The proposed CRC site is located on land zoned SP2 – Infrastructure (Drainage) owned by CCC, to the south of Hephher Road, Campbelltown (forming part of Lot 104 DP1056782). The land is within the CCC Local Government Area (LGA).

The development site is accessible via Hephher Road, connecting to Johnson Road in the south, and onwards to Badgally Road in the east.

The site is zones SP2 Infrastructure (Drainage) and is located within an industrial estate south of the Hume Highway. The areas surrounding the industrial estate consist of residential to the north, south, and west, with commercially zoned areas to the east. To the north-west, on the opposite side of the Hume Highway, land is designated as a deferred matter via the LEP, but is currently used for agricultural purposes.

The closest residential building is approximately 310 m to the south west of the site of the Community Recycling Centre. The site is also approximately 140 m to the north of a child care centre.

The proposed development in a regional context is provided in **Figure 1** and in the immediate site locality in **Figure 2**.



Figure 1: Site location regional context (Source: NSW LPI)

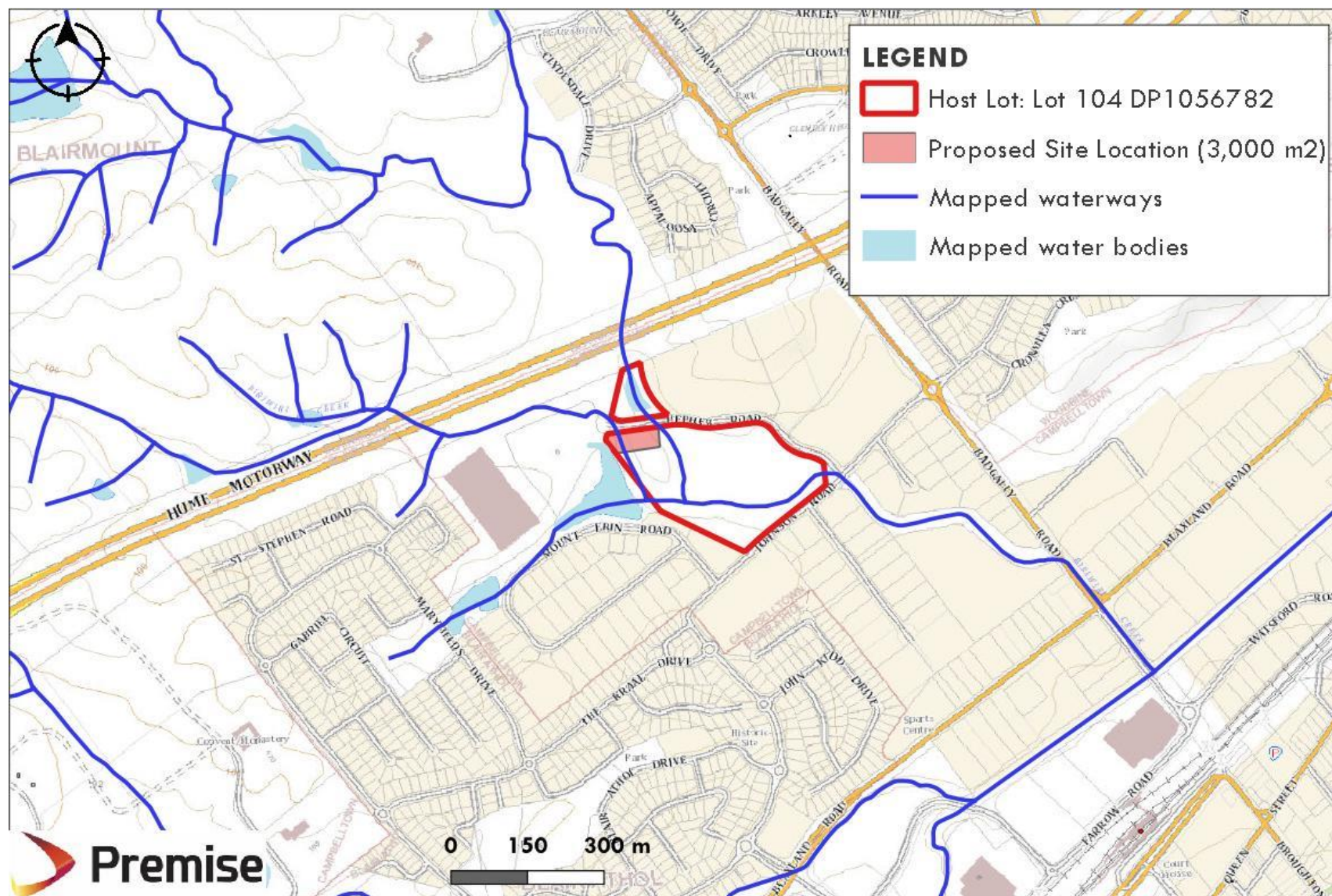


Figure 2: Immediate site locality (Source: NSW LPI)

1.5 STATEMENT PURPOSE

The construction and operation of the proposed development requires development approval under NSW planning legislation.

This Environmental Impact Statement (EIS) has been prepared to support a Development Application (DA) lodged with the Campbelltown City Council as the local authority, for determination by the Western Sydney Regional Planning Panel, as the consent authority.

1.6 STATEMENT REQUIREMENTS

This EIS identifies and assesses the environmental impacts associated with the construction, operation of the proposed development.

It has been prepared in accordance with the requirements of Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*.

1.7 STATEMENT STRUCTURE AND SCOPE

The structure and content of this EIS addresses the Secretary's Environmental Assessment Requirements (SEARs) issued by DPE on 19 September 2018. The SEARs were issued by DPE following a 'request for Secretary's Requirements for the preparation of an Environmental Impact Statement', submitted to DPE on 14 August 2018.

A copy of the SEARs are provided in **Appendix A**.

Appendix B provides a checklist identifying where these environmental assessment requirements have been addressed in this EIS.

THE DEVELOPMENT

2.1 INTRODUCTION

The development subject to this application proposes the establishment of a community recycling centre to receive and store for transfer problem household waste. The material received would be stored safely on site until they can be recycled or disposed of appropriately at other sites.

The community recycling centre would be used for the collection of household materials that could potentially be hazardous to the environment. These materials include household quantities of paints, oils, batteries, gas cylinders, fluorescent light fixtures, smoke detectors and e-waste.

The approach for the implementation of this development is described in the following sections.

2.2 SITE ESTABLISHMENT

The site establishment element of the project would involve the following on a stage by stage basis:

- Survey and set-out;

- Implementation of erosion and sediment control measures;
- Stripping and stockpiling of topsoil and overburden;
- Establish topsoil and overburden stockpiles;
- Clearing of vegetation.

2.2.1 INFRASTRUCTURE ESTABLISHMENT

Initial establishment of infrastructure would involve the following:

- Installation of hardstand driveways, storage and receiving areas;
- Establishment of storage and receiving structures;
- Connections to existing services as required.

2.3 CRC DESIGN

2.3.1 NSW EPA REQUIREMENTS

The NSW EPA has requirements regarding the design of infrastructure and built environment for community recycling centres. These include:

- Well-ventilated receiving area;
- Separate well-ventilated storage area;
- Hardstand trafficable area for entering/exiting vehicles, suitable for forklift and heavy vehicle movements;
- Hardstand unloading areas to manage any potential spills;
- Provisions for Dangerous Goods Safety Cabinets;
- Appropriate drainage system to separate clean wastewater from any leachate.

Design and location within the site would aim to minimise impacts to:

- Significant trees;
- Flood behaviour.

2.3.2 PROPOSED DESIGN

By reference to the architectural plans prepared by **IDEAS Architect, Drawings A01-A07**, the proposed design of the CRC facility provides:

- A well-ventilated receiving area
- A separate well-ventilated storage area from the receiving area,
- A hardstand trafficable area for entering/exiting vehicles, allowing for forklift and heavy vehicle movements,
- A designated area for Dangerous Goods Safety Cabinets,

The Design and location of the CRC would minimise impacts to:

- Significant trees – the location of the site allows for the retention of the majority of flora existing within the site and an ecological assessment has concluded no significant impact.

- Areas of Aboriginal heritage significance – An Aboriginal Heritage Due Diligence assessment concluded no likely impact to sites or artefacts of Aboriginal heritage importance.
- Surface water flows – the site is located upon a lot zoned as SP2 Infrastructure (Drainage) containing detention basins and is prone to flooding. The designated site of the CRC is located outside the extent of the 1% Annual Exceedance Probability flood.

2.4 TRANSPORTATION

2.4.1 INTRODUCTION

Materials for disposal would be delivered to site by community residents in private vehicles. Access to the proposed site would be via Hephher Road and Johnson Road, while Badgally Road/Broughton Street would serve as a major feeder road to the site. The site is well situated to service the large population in the surrounding vicinity.

Residents would deposit waste in clearly identified bins or receptacles. When full, receptacles would be relocated to the rear of the shed for temporary holding prior to collection and off-site disposal or recycling.

Vehicles expected to access the property would include light vehicles (staff, customers and contractors), non-articulated heavy vehicles and 19 m heavy vehicles.

Forklifts would be used onsite to relocate containers, and would remain onsite

All vehicles accessing the site would be registered and road legal.

A traffic impact assessment prepared by CCC Infrastructure Section identifies traffic generation for businesses located on Hephher Road as 834 in the peak hour. The assumption is made that 10% of the 50 daily vehicles trips to the CRC would occur during peak hour, resulting in 5 peak hour trips associated with the CRC. This is a conservative assessment when comparisons are made with similar scale facilities in nearby LGAs, which have experienced around 20-30 vehicles per day.

Assuming 50 vehicles per day and 5 in the peak hour is consistent with 0.6% of all peak hour trips made on Hephher Road. This is an insignificant increase in potential vehicle movements on Hephher Road and the modelling confirms this is well within the capacity of the road and affected intersections.

2.4.2 ROAD CONDITION AND INTERSECTION OPERATION

2.4.2.1 Introduction

Access to the site would be from Hephher road. The site is located near the cul-de-sac end of Hephher Road, has an excellent sight distance in both directions and would comfortably accommodate the vehicle movements associated with the proposed use. The proposed ingress/egress arrangements provided a one-way system to effectively separate arriving and departing vehicles. This ensure safety for users and limits conflicts.

As stated, a SIDRA analysis of the intersection of Hephher Road and Johnson Road has been completed which demonstrates that proposed development would have negligible impact on the performance of the intersection of Hephher Road and Johnson Road and the surrounding traffic network. (refer **Section 6.7.3**).

2.5 WASTE MANAGEMENT

2.5.1 COLLECTION OF WASTE

The site is a *waste or resource transfer station*, estimated to receive around 450 tonnes per year of problem household waste, of which around 213 tonnes is expected to be hazardous waste (i.e., goods listed on the ADGC).

The CRC would receive waste materials such as paint, oil, gas bottles, batteries, fluorescent lights, Aerosol cans, and smoke detectors. These waste materials would be stored separately to avoid possible reactions between the materials and would be removed from site by contracted collectors for safe and proper disposal.

The CRC is also expected to receive non-targeted by-catch materials, that is materials that are not processed by the CRC. By-catch materials of flammable, oxidising, toxic, or corrosive nature are to be stored in Dangerous Goods Safety Cabinets and disposed of through the correct avenues. Whilst the use of safety cabinets is only advisable for quantities for minor storage quantities (as defined by Australian Standard 3833:2007), it is nonetheless the intention to both keep quantities below these levels and provide safety cabinets. This provides surety that any risk associated with by-catch materials is effectively minimised.

2.5.2 NON-OPERATION WASTE

A small range of wastes would be generated as part of non-production activities. These would generally be limited to general domestic refuse and recyclables associated with the office and amenities. Bins would be provided for the disposal of general refuse and the separation of recyclables.

2.6 ANCILLARY INFRASTRUCTURE

Ancillary infrastructure comprising offices, amenities and water tanks would be established in a designated amenities and facilities area to be located adjacent to the area of operation.

2.7 SERVICES

2.7.1 POTABLE WATER

Potable water would be available to the site via connection to Council's reticulated service.

2.7.2 SEWER

The site would be connected to Council's reticulated sewer network.

2.7.3 STORMWATER

Stormwater would be managed on site to ensure that post development off site flows match or improve on pre-development levels – refer **CCC Civil Drawings Sheets 1 and 2**.

2.7.4 POWER

The site would be connected to the existing power services in the area at the cost of the applicant and in accordance with the requirements of the service provider.

2.7.5 COMMUNICATIONS

Required communications on site would include internet connections, landline and mobile phone. Appropriate connections to the subject site are to be provided at the applicants costs to facilitate these communication uses.

2.8 HOURS OF OPERATION

Finalised hours of operation have not been proposed at this stage of development. However, the *NSW EPA Community Recycling Centres Operations and Management Handbook* suggests the site be open to the public for a minimum of 2 days a week and 3 hours on a weekend. A 7 day operational period is ideal in order to maximise availability and convenience for users. The site may need to be closed to the public during bulk collection times to avoid conflict.

2.9 ECONOMIC CONTRIBUTION

2.9.1 EMPLOYMENT

The project would provide employment for up to three (3) site based staff. The facility would also provide employment in the form of the contracted collection services.

STATUTORY PLANNING

3.1 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

In New South Wales (NSW), the relevant planning legislation is the *Environmental Planning and Assessment Act 1979* (EP&A Act). The EP&A Act instituted a system of environmental planning and assessment in NSW and is administered by the Department of Planning & Environment (DPE).

3.1.1 OBJECTS OF THE ACT

The objects as outlined in Section 1.3 of the EP&A Act are discussed in the context of the proposed project in **Table 3.1**.

Table 3.1 – Objects of the EP&A Act

Object	Comment
(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources,	The proposal design, impact mitigation and management measures detailed in this EIS allow for the proper management, development and conservation of natural and other resources.

Table 3.1 – Objects of the EP&A Act

Object	Comment
(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment,	Ecologically sustainable development is considered in Section 3.1.2 .
(c) to promote the orderly and economic use and development of land,	The proposal aligns with the strategic planning framework for the region to pursue sustainable waste management practices and is consistent with the orderly development of land.
(d) to promote the delivery and maintenance of affordable housing,	Not relevant to the proposal
(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats,	The proposal has been designed to minimise impacts on the environment, including threatened species, populations and ecological communities and their habitats. Additional measures would be developed as required to manage and offset impacts during and after construction.
(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage),	A detailed assessment has been completed in relation to the potential for the project to impact upon sites or artefacts of Aboriginal heritage. This is discussed in Section 6.9 . Historic heritage is also considered in detail and the EIS concludes that the development is unlikely to lead to any impacts to items or sites of historic heritage – refer Section 6.10 .
(g) to promote good design and amenity of the built environment,	Not relevant to the project
(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants,	This would be achieved via compliance with the requirements of the Building Code of Australia
(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State,	Through consultation with state regulators the various responsibilities of the differing levels of government are considered.
(j) to provide increased opportunity for community participation in environmental planning and assessment.	Consultation has been carried out with potentially affected regulatory stakeholders via the SEARs process and the comments received have been considered in the preparation of this EIS.

Source: Environmental Planning and Assessment Act 1979

3.1.2 ECOLOGICALLY SUSTAINABLE DEVELOPMENT

The *National Strategy for Ecological Sustainable Development* (NSED) (Department of Environment and Heritage 1992) defines Ecologically Sustainable Development (ESD) as:

using, conserving and enhancing the community's resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased (refer website)

The concept of ESD gives formal recognition to environmental and social considerations in decision-making to ensure the current and future generations can enjoy an environment that functions as well as or better than the environment they inherit.

The core objectives of the NSESD are:

- To enhance individual and community well-being and welfare by following a path of economic development that safeguards the welfare of future generations;
- To provide for equity within and between generations; and
- To protect biological diversity and maintain essential ecological processes and life-support systems.

As outlined in Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, the four principles of ESC are listed below and discussed in the following sections:

- Precautionary principle;
- Intergenerational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation and pricing of environmental resources.

3.1.2.1 Precautionary principle

The precautionary principle states where there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a justification for not implementing mitigation measures or strategies to avoid potential impact.

The potential impact from the proposal has been identified in the environmental assessment section of this report and all mitigation measures summarised in **Section 7.1**.

3.1.2.2 Intergenerational equity

The second principle of ESD is intergenerational equity, such that the present generation should ensure the health, diversity and productivity of the environment are equal to or better for future generations.

All work would be carried out in accordance with the environmental safeguards in **Section 7.1** to mitigate potential impact associated with noise and vibration, socio-economic considerations, traffic and transport, drainage and water quality, air quality, greenhouse gas emissions, climate change, Aboriginal and non-Aboriginal heritage, topography, soils, waste and hazardous materials.

3.1.2.3 Conservation of biological diversity and ecological integrity

The third principle of ESD is conservation of biological diversity and ecological integrity such that ecosystems, species and genetic diversity within species are maintained. The site is also part of a drainage reserve intended to be partially inundated during heavy rainfall events.

The development site mostly consists of regrowth vegetation and includes a variety of weed species such as hawthorn and blackberry as well as native species.

A search of the Bionet Atlas of NSW Wildlife identified 13 threatened flora species and 518 threatened fauna species that within a 5km radius of the subject site. However, none are mapped as being located within the site

The proposed area subject to development is unlikely to impact any established flora, leaving the majority of the site intact.

The mitigating measures for protecting biodiversity at the site are provided in **Section 6.7.5**.

3.1.2.4 Improved valuation, pricing and incentive mechanisms

The final principle of ESD is improved valuation and pricing of environmental resources which establishes the need to determine economic values for services provided by the natural environment such as the atmosphere's ability to receive gaseous emissions, cultural values and visual amenity. The principle is designed to improve methods of carrying out valuation of environmental costs and benefits and use this information when making decisions.

The development of policy to guide pricing and incentive mechanisms in delivering ecologically sustainable development is the responsibility of governments and regulatory stakeholders.

3.2 PERMISSIBILITY

The development site is currently zoned SP2 – Infrastructure (Drainage) via the *Campbelltown Local Environmental Plan 2012* (LEP). the proposed development is defined as waste or resource transfer station.

The LEP provides a definition of 'waste or resource transfer station' as:

waste or resource transfer station means a building or place used for the collection and transfer of waste material or resources, including the receipt, sorting, compacting, temporary storage and distribution of waste or resources and the loading or unloading of waste or resources onto or from road or rail transport.

A review of the LEP land use table confirms that a waste or resource transfer station is prohibited within the SP2 zone.

The objectives of the SP2 – Infrastructure zone are:

- To provide for infrastructure and related uses.
- To prevent development that is not compatible with or that may detract from the provision of infrastructure.
- To encourage activities involving research and development.
- To optimise value-adding development opportunities, particularly those associated with research.
- To provide for the retention and creation of view corridors.
- To preserve bushland, wildlife corridors and natural habitat.
- To maintain the visual amenity of prominent ridgelines.

However, under the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP), waste or resource transfer stations are permitted with consent within SP2 – Infrastructure zones. This is discussed further in **Section 3.6.3.1**.

Section 3.6.4 contains an assessment of relevant matters pursuant to the LEP, including but not limited to mapped environmental constraints.

3.3 DESIGNATED DEVELOPMENT

The proposed development is classified as 'waste management facilities' pursuant to Clause 32, Part 1, Schedule 3 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regs). Specifically:

(1) *Waste management facilities or works that store, treat, purify or dispose of waste or sort, process, recycle, recover, use or reuse material from waste and:*

- (a) *that dispose (by landfilling, incinerating, storing, placing or other means) of solid or liquid waste:*
- (i) *that includes any substance classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste, or*
 - (ii) *that comprises more than 100,000 tonnes of "clean fill" (such as soil, sand, gravel, bricks or other excavated or hard material) in a manner that, in the opinion of the consent authority, is likely to cause significant impacts on drainage or flooding, or*
 - (iii) *that comprises more than 1,000 tonnes per year of sludge or effluent, or*
 - (iv) *that comprises more than 200 tonnes per year of other waste material, or*
- (b) *that sort, consolidate or temporarily store waste at transfer stations or materials recycling facilities for transfer to another site for final disposal, permanent storage, reprocessing, recycling, use or reuse and:*
- (i) *that handle substances classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste, or*
 - (ii) *that have an intended handling capacity of more than 10,000 tonnes per year of waste containing food or livestock, agricultural or food processing industries waste or similar substances, or*
 - (iii) *that have an intended handling capacity of more than 30,000 tonnes per year of waste such as glass, plastic, paper, wood, metal, rubber or building demolition material, or*
- (c) *that purify, recover, reprocess or process more than 5,000 tonnes per year of solid or liquid organic materials, or*
- (d) *that are located:*
- (i) *in or within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area, or*
 - (ii) *in an area of high watertable, highly permeable soils, acid sulphate, sodic or saline soils, or*
 - (iii) *within a drinking water catchment, or*
 - (iv) *within a catchment of an estuary where the entrance to the sea is intermittently open, or*
 - (v) *on a floodplain, or*
 - (vi) *within 500 metres of a residential zone or 250 metres of a dwelling not associated with the development and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, visual impacts, air pollution (including odour, smoke, fumes or dust), vermin or traffic.*
- (2) *This clause does not apply to:*
- (a) *development comprising or involving any use of sludge or effluent if:*
 - (i) *the dominant purpose is not waste disposal, and*
 - (ii) *the development is carried out in a location other than one listed in subclause (1) (d), above, or*
 - (b) *development comprising or involving waste management facilities or works specifically referred to elsewhere in this Schedule, or*
 - (c) *development for which State Environmental Planning Policy No 52—Farm Dams and Other Works in Land and Water Management Plan Areas requires consent.*

Due to the location of the proposed CRC (within 500 metres of a residential zone, and within 100 metres of a mapped waterway), the development represents designated development. By reference to Clause 2(1)(e), Part 1, Schedule 1 of the EP&A Reg, an Environmental Impact Statement (EIS) must accompany the development application. This document fulfils that requirement.

3.4 INTEGRATED DEVELOPMENT

Section 4.46 of the EP&A Act states that development requiring consent and another activity approval is defined as Integrated Development. The proposed development is not classified as Integrated Development on the basis that no other approvals or consents are required in relation to the proposal. For the avoidance of doubt, the following is noted:

- An approval from the Environmental Protection Authority pursuant to Section 48 of the *Protection of the Environment Operations Act 1997* (POEO Act) for the undertaking of a scheduled activity at any premises, by reference to Clause 42(3)(a) of Schedule 1 of the POEO Act, is not required on the basis that facility would not accommodate more than 6,000 tonnes of waste per year and would not store more than 5 tonnes of hazardous waste at any one time;
- An approval from the Department of Primary Industries (Fisheries) is not required pursuant to Part 7 of the Fisheries Management Act 1994 on the basis that the affected waterways are not key fish habitat;
- An approval from Roads and Maritime Services is not required pursuant to Section 138 of the Roads Act 1993 on the basis that Hephher Road is a local road for which CCC is the roads authority;
- The subject site is not within a mine subsidence district;
- The land is not bushfire prone.

3.5 CONSENT AUTHORITY

The development represents regional development for which the Sydney Western Regional Planning Panel is the consent authority, pursuant to Schedule 7 of the *State Environmental Planning Policy (State and Regional Development) 2011* (SRD_SEPP). Schedule 7 of the SRD_SEPP identifies developments that are regionally significant development pursuant to Section 4.5 of the EP&A Act. The relevant trigger is clause 7 of Schedule 7 of the SRD-SEPP, being particular designated development for the purposes of waste management facilities or works.

As mentioned in **Section 3.3**, the proposed development is considered a designated development, therefore the development would be deemed a regionally significant development as it meets the requirements under clause 7 of schedule 7 of SEPP (State and Regional Development), and therefore would require the Sydney West Regional Panel to act as the consent authority.

3.6 ENVIRONMENTAL PLANNING INSTRUMENTS

3.6.1 COMMONWEALTH LEGISLATION

3.6.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is administered by the Commonwealth Department of the Environment (DoE). Under the EPBC Act, if the Minister determines that an action is a 'controlled action' which would have or is likely to have a significant impact on a Matter of National Environmental Significance (MNES) or Commonwealth land, then the action may not be undertaken without prior approval of the Minister.

The EPBC Act identifies the following nine MNES:

- *world heritage properties*
- *national heritage places*

- *wetlands of international importance (listed under the Ramsar Convention)*
- *listed threatened species and ecological communities*
- *migratory species protected under international agreements*
- *Commonwealth marine areas*
- *the Great Barrier Reef Marine Park*
- *nuclear actions (including uranium mines)*
- *a water resource, in relation to coal seam gas development and large coal mining development*

A search using the Commonwealth Protected Matters Search Tool on 30 July 2018 identified the following:

- There are no World Heritage or National Heritage Places nearby.
- There are no Wetlands of International Importance nearby.
- Commonwealth land would not be impacted by the project.
- There are eight listed threatened ecological communities and a number of threatened species (including migratory species) that may occur in the locality.

A search of the online Protected Matters Search Tool (PMST) was undertaken by Biosis as part of the Biodiversity Assessment to identify matters of national environmental significance or other matters protected by the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) likely to occur at or near the area. Species identified as having potential to occur on the study areas by the PMST were assessed as unlikely to occur owing to lack of habitat – refer **Section 6.8**.

3.6.1.2 Native Title Act 1993

The *Native Title Act 1993* provides a legislative framework for the recognition and protection of common law native title rights. Native title is the recognition by Australian law that Indigenous people had a system of law and ownership of their lands before European settlement. Where that traditional connection to land and waters has been maintained and where government acts have not removed it, the law recognises this as native title.

Native title exists upon all land except where the granting of tenure has extinguished or suspended native title. Freehold land and crown land subject to certain types of leasing arrangements (pre native title) has generally extinguished or suspended native title. Un-allocated crown land and some crown leases (granted after 1993 that are compatible with the existence of native title) are generally subject to the Native Title Act 1993.

A review of National Native Title Tribunal's Native Title Register (via WMS web services) did not identify any Native Title claims or applications, or Indigenous Land Use Agreements at or near the site.

3.6.2 STATE LEGISLATION

3.6.2.1 Environmental Planning and Assessment Act 1979

Planning in NSW is largely governed by the *Environmental Planning and Assessment Act 1979* (EP&A Act) and its associated regulations. The proposal would be assessed under Part 4 of the EP&A Act.

3.6.2.2 Protection of the Environment Operations Act 1997

Clause 42 of Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act) provides the criteria for scheduled activities relating to waste storage (including storage for transfer) and specifies that a licence is required for the activity in the following circumstances:

(3) The activity to which this clause applies is declared to be a scheduled activity if:

(a) more than 5 tonnes of hazardous waste, restricted solid waste, liquid waste or special waste (other than waste tyres) is stored on the premises at any time, or

(d) more than the following amounts of waste (other than waste referred to in paragraph (a) or (b)) is received per year from off site:

(i) in the case of premises in the regulated area—6,000 tonnes,

The facility would accommodate approximately 213 tonnes of hazardous waste per year and up to 450 tonnes of problem house waste per year. As per the summary in **Section 6.11.4 (Figure 12)**, it is not anticipated that the facility would accommodate more than 5 tonnes of problem/hazardous waste at any one time.

On the basis of the above, and pursuant to the provision of Clause 42 of Schedule 1 of the POEO Act, the proposed development is not considered a scheduled activity for which an Environmental Protection Licence (EPL) from the Environmental Protection Authority (EPA) is required.

3.6.2.3 Water Management Act 2000

Given the proximity to waterfront land, as defined in the WM Act, the development would typically require a controlled activity approval under section 91E of the Water Management Act 2000 (WM Act).

However, pursuant to Clause 41 of the *Water Management (General) Regulation 2018*, a public authority, including a Council, is exempt from the requirement to gain a CCA.

3.6.2.4 Biodiversity Conservation Act 2016

In 2017 the *Biodiversity Conservation Act 2016* (BC Act) was enacted seeking to maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development. The BC Act repeals and replaces the NSW Threatened Species Conservation Act 1995 as the key piece of legislation responsible for the conservation of biodiversity in NSW through the protection of threatened flora and fauna species, populations and EECs.

The BC Act, together with the NSW Biodiversity Conservation Regulation 2017, established the Biodiversity Offsets Scheme (BOS) and the biodiversity assessment method (the BAM), as well as a method for determining whether development is considered likely to significantly affect threatened species and communities. A development is likely to result in a significant effect if:

a) it is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test; or

b) the development exceeds the biodiversity offsets scheme threshold if the biodiversity offsets scheme applies to the impacts of the development on biodiversity values; or

c) it is carried out in a declared area of outstanding biodiversity value.

As noted in **Section 3.6.2.5**, CCC LGA represents an interim designated area for the purposes of the BC Act. As such, the provisions of the BC Act do not apply, as this DA is lodged before the 25 November 2019.

3.6.2.5 Biodiversity Conservation (Savings and Transitional) Regulation 2017

Campbelltown LGA is listed via Clause 27 of the *Biodiversity Conservation (Savings and Transitional) Regulation 2017* as a Western Sydney interim designated area for pending or interim planning applications. Pending or interim planning applications are applications lodged under Part 4 of the EP&A Act, in the case of Western Sydney interim designated areas, before 24 November 2019.

As this application is lodged before the 24 November 2019, the application represents a pending or interim planning application and the provisions of the BC Act do not apply, and the provisions of the Threatened Species Conservation Act 1995 apply.

3.6.2.6 Threatened Species Conservation Act 1995

As mentioned in **Section 3.6.2.5**, the current legislation, BC Act, does not apply to the site due to it being part of an interim designated area. As such, the former legislation applies to the site.

The *Threatened Species Conservation Act 1995* (TSC Act) is the key piece of legislation predating the BC Act, providing for the protection and conservation of biodiversity in NSW through the listing of threatened species, populations and ecological communities and the declaration and mapping of their critical habitats, as well as the identification of key threatening processes. With the clearing of native vegetation there may be the potential to impact threatened species, populations and ecological communities listed under the TSC Act.

The TSC Act also establishes a system for biodiversity certification and establishes the Biodiversity Banking and Offsets Scheme. An ecological assessment would be required to assess impacts to biodiversity in accordance with the Framework for Biodiversity Assessment (FBA). An ecological assessment is provided in **Appendix C** and summarised in **Section 6.7.5**, which satisfies this requirement.

3.6.2.7 Fisheries Management Act 1994

The development site does contain mapped watercourses but is not mapped as containing key fish habitat (refer – **Section 6.1**). As the land is not mapped as containing key fish habitat, a permit under Part 7 of the *Fisheries Management Act 1994* is not required.

3.6.2.8 National Parks and Wildlife Act 1974

The *National Parks and Wildlife Act 1974* (NPW Act) is a broad piece of legislation that covers a number of different areas including reserving lands, managing certain reserved lands, the protection of Aboriginal objects and places, the protection of fauna and the protection of native vegetation.

Aboriginal heritage and biodiversity are addressed in **Sections 6.9 and 6.7.5**, respectively.

3.6.2.9 Heritage Act 1977

The *Heritage Act 1977* (Heritage Act) aims to conserve heritage values. The Act defines 'environmental heritage' as those places, buildings, works, relics, moveable objects and precincts listed in the Local or State heritage Significance. A property is a heritage item if it is listed in the heritage schedule of the local Council's LEP or listed on the State Heritage Register, a register of places and items of particular importance to the people of NSW.

A review of the Campbelltown LEP, State Heritage Register and Australian Heritage Database confirms that there are no known items of heritage significance at or near the site. The closest local items are located approximately 350 metres to the south-east and north-west.

3.6.2.10 Roads Act 1993

The *Roads Act 1993* (Roads Act) provides for the classification of roads and for the declaration of the Roads and Maritime Services (RMS) and other public authorities as roads authorities for both classified and unclassified roads. It also regulates the carrying out of various activities in, on and over public roads.

Hepher Road is a local road for which CCC is the roads authority. There is therefore no requirement for approval or concurrence of RMS in relation to this application.

3.6.2.11 Environmental Planning and Assessment Regulation 2000

As mentioned in **Section 3.3**, the proposed development is deemed to be a designated development pursuant to clause 32 of schedule 3 of the EP&A Regs. The relevant subclauses of Schedule 3 are reproduced below:

(1) Waste management facilities or works that store, treat, purify or dispose of waste or sort, process, recycle, recover, use or reuse material from waste and:

(a) that dispose (by landfilling, incinerating, storing, placing or other means) of solid or liquid waste:

(i) that includes any substance classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste, or

(d) that are located:

(i) in or within 100 metres of a natural waterbody, wetland, coastal dune field or environmentally sensitive area, or

(vi) within 500 metres of a residential zone or 250 metres of a dwelling not associated with the development and, in the opinion of the consent authority, having regard to topography and local meteorological conditions, are likely to significantly affect the amenity of the neighbourhood by reason of noise, visual impacts, air pollution (including odour, smoke, fumes or dust), vermin or traffic.

With respect to Clause 32 (above), the proposed CRC development:

- is expected to receive substances classified in the Australian Dangerous Goods Code,
- is located within 100 metres of a natural waterbody,
- is located within 500 metres of a residential zone.

On the basis of the above triggers, the proposed CRC development is classified as a Designated Development. Pursuant to Section 4.12(8) of the EP&A Act, an application for designated development must be accompanied by an EIS. This document satisfies that requirement.

3.6.3 STATE ENVIRONMENTAL PLANNING POLICIES

3.6.3.1 State Environmental Planning Policy (Infrastructure) 2007

With reference to Clause 121(2a) of Division 23 of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP), Waste or Resource Transfer Stations are permitted with consent within prescribed zones.

Development permitted with consent

Development for the purposes of a waste or resource transfer station may be carried out by any person with consent on:

land in a prescribed zone

ISEPP identifies SP2 – Infrastructure zones as a prescribed zone.

prescribed zone means any of the following land use zones or a land use zone that is equivalent to any of those zones:

- (a) RU1 Primary Production,
- (b) RU2 Rural Landscape,
- (c) IN1 General Industrial,
- (d) IN3 Heavy Industrial,
- (e) SP1 Special Activities,
- (f) SP2 Infrastructure.

Pursuant of Division 23 of the *ISEPP*, Waste or Resource Transfer Station are permitted to be developed with consent in a prescribed zone.

As the SP2 is a prescribed zone, and on the basis that the proposed development satisfies the definition of a waste or resource transfer station, the development is permitted with consent.

3.6.3.2 State Environmental Planning Policy (State and Regional Development) 2011

The *State Environmental Planning Policy (State and Regional Development) 2011* (SRD_SEPP) seeks to identify development that is state significant, state significant infrastructure, critical state significant infrastructure and regional development.

The trigger for state significant infrastructure is outlined in Clause 23 of Schedule 1 of the SRD_SEPP, as:

Waste and resource management facilities

(1) Development for the purpose of regional putrescible landfills or an extension to a regional putrescible landfill that:

- (a) has a capacity to receive more than 75,000 tonnes per year of putrescible waste, or
- (b) has a capacity to receive more than 650,000 tonnes of putrescible waste over the life of the site, or
- (c) is located in an environmentally sensitive area of State significance.

(2) Development for the purpose of waste or resource transfer stations in metropolitan areas of the Sydney region that handle more than 100,000 tonnes per year of waste.

(3) Development for the purpose of resource recovery or recycling facilities that handle more than 100,000 tonnes per year of waste.

(4) Development for the purpose of waste incineration that handles more than 1,000 tonnes per year of waste.

(5) Development for the purpose of hazardous waste facilities that transfer, store or dispose of solid or liquid waste classified in the Australian Dangerous Goods Code or medical, cytotoxic or quarantine waste that handles more than 1,000 tonnes per year of waste.

(6) Development for the purpose of any other liquid waste depot that treats, stores or disposes of industrial liquid waste and:

- (a) handles more than 10,000 tonnes per year of liquid food or grease trap waste, or
- (b) handles more than 1,000 tonnes per year of other aqueous or non-aqueous liquid industrial waste.

With respect to Clause 23 (above) the proposed development:

- does not involve putrescible landfills;
- is not located in metropolitan areas of the Sydney;
- does not have the capacity to handle more than 100,000 tonnes of waste per year;

- does not involve waste incineration;
- does not involve the storage of more than 1,000 tonnes per year of hazardous materials classified in the Australian Dangerous Goods Code (refer **Section 6.11.4**); and
- does not involve industrial liquid waste.

On the above basis, the development does not represent State Significant Development.

Schedule 7 of the SRD_SEPP identifies developments which are Regionally Significant Development for which the Sydney Western Regional Panel is the consent authority (pursuant to Section 4.5 of the EP&A Act).

Clause 3 of Schedule 7 of the SRD SEPP provides:

Development that has a capital investment value of more than \$5 million if:

- (a) a council for the area in which the development is to be carried out is the applicant for development consent; or*
- (b) the council is the owner of any land on which the development is to be carried out; or*
- (c) the development is to be carried out by the council; or*
- (d) the council is a party to any agreement or arrangement relating to the development (other than any agreement or arrangement entered into under the Act or for the purposes of the payment of contributions by a person other than the council).*

The proposed development does not have a CIV in excess of \$5 million and is therefore not regionally significant development in this regard.

Clause 7 of Schedule 7 of the SRD SEPP further provides:

Development for the purposes of:

- (a) extractive industries, which meet the requirements for designated development under clause 19 of Schedule 3 to the [Environmental Planning and Assessment Regulation 2000](#), or*
- (b) marinas or other related land and water shoreline facilities, which meet the requirements for designated development under clause 23 of Schedule 3 to the [Environmental Planning and Assessment Regulation 2000](#), or*
- (c) waste management facilities or works, which meet the requirements for designated development under clause 32 of Schedule 3 to the [Environmental Planning and Assessment Regulation 2000](#).*

The proposed development is a waste management facility and is also designated development. The development is therefore regional development in this regard for the purposes of the EP&A Act by reference to clause 7.

3.6.3.3 State Environmental Planning Policy No. 55 – Remediation of Land

A review, completed on the 30 July 2018, of the EPA Contaminated Land Record under section 58 of the Contaminated Land Management Act 1997 and the List of NSW contaminated sites notified to EPA under section 60 of the Act does not identify any registered contaminated sites at or near the development site.

Given the apparent dumping of waste at the site, as identified by an initial site visit on the 10 July 2018, a contamination assessment taking account of the requirements of SEPP55 has been conducted (**Appendix E**) and found the site to be suitable to facilitate the proposed activity. The following conclusions are identified:

Premise make the following conclusions regarding the potential for land contamination at the site, based on a desktop review of available information, a review of historical records, and a site walkover reconnaissance.

The area of the site appears to have predominantly been historically utilised for rural / agricultural purposes including passive livestock grazing. In the 1980s the alignment of Biriwiri Creek and its unnamed tributary were altered to modify the site to its current layout, incorporating a large detention basin and levee bank.

No structures are present on the site, or have been identified as ever being present on the site.

Potential exists for runoff and sediments containing contaminants from off-site sources to pass across the site, however this would be largely limited to within drainage channels.

Soil stockpiles resulting from illegal dumping are present on the site.

Four (4) stockpile samples were collected from observed stockpiles across the site. All soil samples met the investigation criteria for the respective analytes.

No significant routes for exposure by receptors (current or future) to potential contamination sources have been identified, due to negligible impacts being recorded.

Having assessed the site against the investigation criteria documented in Section 5.2 of this P1 PSI report, and with respect to identified historic land uses, Premise considers the suitability of the site to be consistent with the proposed land use, identified as a community recycling facility, within the requirements of the NSW State Environmental Planning Policy No 55 – Remediation of Land (1998).

On the basis of the above, the requirements of SEPP55 are satisfied.

3.6.3.4 State Environmental Planning Policy No. 44 – Koala Habitat Protection

The development site is located within the Campbelltown Local Government Area (LGA) and as such *State Environmental Planning Policy 44 (Koala Habitat Protection)* must be considered. SEPP 44 aims to:

...encourage the proper conservation and management of areas of natural vegetation that provide habitat for Koalas, to ensure permanent free-living populations over their present range and to reverse the current trend of population decline...

The practical effect of SEPP 44 is that in consideration of a DA, the consent authority must ensure that approval is not issued without prior investigation of potential and core koala habitat. The policy applies to land in relation to which a DA has been made when the site has an area of more than one hectare.

SEPP 44 defines 'potential koala habitat' as vegetation that incorporates a minimum of 15 percent of tree species in the 'upper or lower strata of the tree component' listed in Schedule 2 of SEPP 44. A person suitably qualified in tree identification (clause 7 (2)) must assess the identification of potential koala habitat. Identification of potential koala habitat requires further investigations to determine whether the site supports core habitat.

Core koala habitat is defined as:

...an area of land with a resident population of Koalas, evidenced by attributes such as breeding females, and recent sightings of and historical records of a Koala population...

If the area does not support 'core koala habitat', under clause 8 of the policy, the consent authority may determine the development application. If the site is determined to support 'core koala habitat', then a plan of management must be prepared and approved prior to granting development consent.

As confirmed by the Biosis ecological assessment, the site does not support potential koala habitat. No further assessment is required (refer to **Section 6.7.5**).

3.6.3.5 State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

The *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development* (SEPP 33) defines hazardous materials and specifies thresholds for those materials to be stored or used within a site.

The proposed land use for the site is considered potentially hazardous due to materials temporarily being stored at the facility that are included on the Australian Dangerous Goods Code (ADGC). SEPP 33 defines Potentially Hazardous Industry as:

***potentially hazardous industry** means a development for the purposes of any industry which, if the development were to operate without employing any measures (including, for example, isolation from existing or likely future development on other land) to reduce or minimise its impact in the locality or on the existing or likely future development on other land, would pose a significant risk in relation to the locality:*

(a) to human health, life or property, or

(b) to the biophysical environment,

and includes a hazardous industry and a hazardous storage establishment.

CRC facilities receive a number of potentially hazardous materials, which include paints (water and oil based), oils, batteries (lead and nickel cadmium), gas cylinders, fluorescent light fixtures, and smoke detectors. While measures and guidelines are in place for the safe storage of the materials, there is potential for leaks, damaged containers, or accidents that could lead to potential hazards.

CRC facilities also expect to receive non-target by-catch materials, these materials have potential to be more hazardous than the materials accepted by the facility. These by-catch materials may include items such as pesticides, metal based paints, pool chemicals, acids and alkalis.

The volumes to be stored on site would be managed via regular collection to ensure that they remain at quantities that are less than the trigger levels identified in SEPP33 and as such a preliminary hazard analysis is not required – refer **Section 6.11.4** and **Figure 12 (page 59)**.

3.6.4 CAMPBELLTOWN LOCAL ENVIRONMENTAL PLAN 2015

The Campbelltown Local Environmental Plan 2015 (LEP) applies to the site.

It is noted that a number of deferred matters relate to land within the Campbelltown LGA, however it is confirmed that these deferred matters do not affect the subject site.

A review of the LEP mapping identifies the following environmental constraints that apply to the subject site. Those matters of relevance are discussed further in the relevant sections noted in **Table 3.2**.

Table 3.2 – LEP Mapping Review

Map	Relevance	Section of Report Discussed
Land Application Map	The proposed development is within the Campbelltown LGA.	No discussion required.
Land Zoning Map	The proposed development is on land zoned SP2 – Drainage.	Section 3.6.4.1
Lot Size Map	The proposed development is on land that has no specified minimum lot size. Subdivision is not proposed by the development.	No discussion required.
Heritage Map	There are no heritage items listed under Schedule 5 of the Campbelltown LEP at or near the proposed development.	No discussion required.

Table 3.2 – LEP Mapping Review

Map	Relevance	Section of Report Discussed
Drinking Water Catchment Map	The proposed development is not within a Drinking Water Catchment.	No discussion required.
Riparian Lands and Watercourses Map, Groundwater Vulnerability Map	The proposed development is not located on land mapped as Groundwater Vulnerable Land.	No discussion required

Source: Campbelltown Local Environmental Plan 2015

3.6.4.1 Land Zoning

The proposed development is on land zoned SP2 – Infrastructure (Drainage). The objectives of this zone include the following:

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*
- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*
- *To minimise the fragmentation and alienation of resource lands.*
- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*
- *To enable function centres, restaurants or cafes and appropriate forms of tourist and visitor accommodation to be developed in conjunction with agricultural uses.*

As outlined in **Section 3.2**, the proposed development is prohibited within the SP2 zone by virtue of the LEP Land Use Table, however is permitted with consent by reference to the prevailing provisions of clause 121 of the ISEPP – refer **Section 3.6.3.1**.

3.6.5 CAMPBELLTOWN DEVELOPMENT CONTROL PLAN 2015 – VOLUME 1

The Campbelltown Sustainable City Development Control Plan 2013 (DCP) applies to the whole of the Campbelltown LGA and therefore applies to development site. The DCP provides development controls for a range of development types including industrial. Specific controls for waste facilities are not included. The aims of the plan are:

- *Ensure that the aims and objectives of the CLEP are complemented by the Plan;*
- *Ensure that the principles of ecological sustainability are incorporated into the design, construction and ongoing operation of development;*
- *Facilitate innovative development of high quality design and construction in the City of Campbelltown;*
- *Ensure that new development maintains or enhances the character and quality of the natural and built environment;*
- *Ensure that new development takes place on land that is capable of supporting the proposed development;*
- *Encourage the creation of safe, secure and liveable environments;*
- *Ensure that new development minimises the consumption of energy and other finite resources, to conserve environmental assets and to reduce greenhouse gas emissions; and*
- *Provide for the design requirements for a variety of housing within the City of Campbelltown.*

By reference to the assessment provided in **Table 3.3**, the development is not antipathetic to the above objectives.

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
2.4.1 Rain Water Tanks	a) In addition to satisfying BASIX, residential development is encouraged to provide a rain water tank for new buildings.	Not Applicable	N/A
	b) A rain water tank shall be provided for all new buildings containing a roof area greater than 100sqm for all development not specified by BASIX. The rain water tank shall have a minimum capacity in accordance with Table 2.4.1.	In accordance to Table 2.4.1, a 5,000L Tank would be installed (Roof area of 285m ²)	✓
	c) All rainwater tanks shall comply with AS3500 (as amended) - National Plumbing and Drainage Code Guidelines for Plumbing Associated with Rainwater Tanks in Urban Areas and Sydney Water's Guideline for Rainwater Tanks on Residential Properties.	Not Applicable No Tank Proposed	N/A
	d) The rainwater tank incorporated in new commercial and industrial development exceeding 5,000sqm shall be connected to the plumbing in the building to provide water for toilets.	This would be achieved	✓
	e) Where it is intended that the development be strata title subdivided, the tank shall be sited in a location to be common property	Not Applicable	N/A
	f) Above ground water tanks shall be located behind the primary or secondary building line.	Not Applicable No Tank Proposed	N/A
2.4.2 Solar Hot Water	a) All new buildings are encouraged to provide a solar hot water system	Given the nature of the proposed development, no Solar Hot Water system is required or proposed.	N/A
	b) Where the site is connected to the gas main, the solar hot water system is encouraged to be gas boosted.	As above, no Solar Hot Water system proposed	N/A
2.4.3 Natural Ventilation	a) The design of new buildings shall be encouraged to maximise opportunities for cross flow ventilation, where practical, thus minimising the need for air conditioning.	The CRC is designed to allow for maximum ventilation.	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
2.4.4 Light Pollution	a) Outdoor lighting shall be designed to minimise pollution from the unnecessary dispersion of light into the night sky and neighbouring properties	Whilst the facility would not operate at night, it is expected that security lighting would be installed. This requirement is capable of being achieved and it is expected this would be addressed as a condition of consent.	✓
2.4.5 BASIX	The Building Sustainability Index (BASIX) is an interactive, internet-based planning tool designed to assess the potential performance of residential development against a range of sustainability indices. The focus of BASIX is on the key indices of water and energy, and the related indices of landscape, stormwater and thermal comfort, reflecting the NSW Government's decision to establish water consumption and greenhouse gas emission reduction targets for all new dwellings built in NSW.	Not Applicable BASIX not required as the development is not a BASIX affected building.	N/A
2.5 Landscaping	a) Landscape design shall enhance the visual character of the development and complement the design/use of spaces within and adjacent to the site.	This would be achieved – refer Landscaping Plans	✓
	b) Landscape design shall retain and enhance the existing native flora and fauna characteristics of a site wherever possible.	This would be achieved – refer Landscaping Plans	✓
	c) Landscape design shall add value to the quality and character of the streetscape.	This would be achieved – refer Landscaping Plans	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	d) A Landscape Concept Plan is required to be submitted with a development application for: i) Semi-detached dwellings; ii) dual occupancies; iii) attached dwellings; iv) multi dwelling housing; v) residential flat buildings; vi) mixed use development; vii) boarding houses; viii) shop top housing; ix) child care centres; x) places of Worship; xi) commercial development; xii) industrial development; and xiii) any other development that in the opinion of Council a landscape plan is required.	Refer Landscaping Plans	✓
	e) The Landscape Concept Plan shall illustrate mature height, spread of species, trees to be removed/retained and shall be prepared by a suitably qualified person.	This is satisfied by reference to the provided Landscaping Plans	✓
	f) Landscaping shall maximise the use of locally indigenous and other drought tolerant native plants and avoid the use of invasive species.	This would be achieved – refer Landscaping Plans	✓
2.6 Weed Management	a) A Weed Management Plan shall be submitted with any DA within land zoned for rural, environmental protection or waterways purposes that: i) is proposed on site of two (2) or more hectares in area; or ii) have a significant infestation of noxious or environmental weeds present iii) is within 100 metres of a watercourse;	Not applicable as land is zoned SP2. On site weeds would however be managed in line with the recommendations of the ecological assessment	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	b) Despite Clause 2.6 a) above, a weed management plan shall be prepared and submitted as part of a DA where Council is of the opinion that such a plan is needed.	Not Applicable	N/A
2.7 Erosion and Sediment Control	a) An Erosion and Sediment Control Plan (ESCP) shall be prepared and submitted with a development application proposing construction and/or activities involving the disturbance of the land surface. For requirements relating to the preparation of an ESCP, refer to Appendix 5 of Volume 1 and Council's Engineering Design Guide for Development available from Council's website at www.campbelltown.nsw.gov.au .	This would be provided under separate cover	✓
	b) Site activities shall be planned and managed to minimise soil disturbance.	This is capable of being achieved in relation to the development	✓
	c) Catch drains or diversion banks shall be designed and constructed to divert water around any area of soil disturbance.	This is capable of being achieved in relation to the development	✓
	d) All stockpiles shall be located within the sediment control zone and shall not be located within an overland flow path.	This is capable of being achieved in relation to the development	✓
2.8.1 Cut and Fill	a) A Cut and Fill Management Plan (CFMP) shall be submitted with a development application where the development incorporates cut and/or fill operations.	No significant cut or fill proposed	N/A
	b) For any dwellings within residential zones, the maximum level of cut shall not exceed 1.0 metre below the ground level (existing) and the maximum level of fill shall not exceed 1.0 metre above ground level (existing), when measured at any corner of the building platform.	Not Applicable – no dwellings proposed	N/A
	c) Any excavation within the zone of influence of any other structure requires a 'dilapidation report' (prepared by a suitably qualified person) demonstrating that adequate	Not Applicable	N/A

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	ameliorative measures are to be implemented to protect the integrity of any structure.		
	d) Development incorporating any cut or fill shall comply with the following requirements: i) minimum cross fall of 1% to any adjoining waterway; and ii) batters to be no steeper than 2H:1V ('H' stands for the term 'horizontal distance' and 'V' stands for the term 'Vertical distance'; iii) batters to be no steeper than 6H:1V for public areas.	Any minor residual cut or fill would satisfy this requirement	✓
	e) All fill shall be 'Virgin Excavated Natural Material' (VENM).	This would be achieved if applicable	✓
	f) No fill shall be deposited in the vicinity of native vegetation.	This would be achieved if applicable	✓
2.8.2 Surface Water and Floor Levels	a) Development shall not occur on land that is affected by the 100-year ARI event unless the development is consistent with the NSW Floodplain Development Manual.	This would be achieved	✓
	b) All development on land affected by stormwater flow from main stream, local creek or over land flow shall satisfy the relevant fill and floor level requirements as specified in Table 2.8.1.	This would be achieved – refer Section 6.11.3	✓
	c) All development shall have a ground surface level, at or above a minimum, equal to the 100-year 'average recurrence interval' (ARI) flood level.	This would be achieved	✓
	d) For development on land not affected by an overland flow path the minimum height of the slab above finished ground level shall be 150 mm, except in sandy, well-drained areas where the minimum height shall be 100mm. These heights can be reduced locally to 50mm near adjoining paved areas that slope away from the building in accordance with AS 2870 (Residential Slabs and Footings Construction).	Refer Section 6.11.3	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	e) Buildings involving basements, hospitals, seniors living dwellings and educational establishment with more than 50 students shall comply with the provisions of Council's Engineering Design Guide for Development available from Council's website at www. campbelltown.nsw.gov.au .	Not Applicable	N/A
	f) Any solid fence constructed across an overland flow path shall be a minimum 100mm above the finished surface level of the overland flow path.	Not Applicable	✓
	g) Where underground car parking is proposed, measures shall be taken in design and construction to ensure escape routes, pump out drainage systems (which include backup systems) and location of service utilities (including power, phone, lifts) are appropriately located in relation to the 100 year ARI event, in accordance with Section 4.13.8 of Council's Engineering Design Guide for Development available from Council's website at www. campbelltown.nsw.gov.au .	Not Applicable	N/A
2.10.1 Water Cycle Management	a) A comprehensive Water Cycle Management Plan (WCMP) shall be prepared and submitted as part of a development application.	This would be achieved	✓
2.10.2 Stormwater	a) All stormwater systems shall be sized to accommodate the 100- year ARI event (refer to Section 4 of Council's Engineering Design Guide for Development available from Council's website at www.campbelltown.nsw. gov.au .	This would be achieved	✓
	b) The design and certification of any stormwater system shall be undertaken by a suitably qualified person.	This would be achieved by reference to the attached Civil Drawings	✓
	c) Water quality control structures shall be located generally off line to creek paths or other watercourses. Major detention storages shall not be located on areas of native vegetation or within riparian areas.	Not Applicable	N/A

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	d) Development shall not impact on adjoining sites by way of overland flow of stormwater unless an easement is provided. All overland flow shall be directed to designated overland flow paths such as roads.	No impact adjoining sites.	N/A
	e) Safe passage of the Probable Maximum Flood (PMF) shall be demonstrated for major systems.	Not applicable in relation to the subject site	N/A
	f) A treatment train approach to water quality shall be incorporated into the design and construction of major systems.	Not a major system	N/A
	g) A major/minor approach to drainage is to be taken for stormwater flows. Generally the piped drainage system shall be sized to accommodate the difference between the 100-year ARI flow and the maximum safe overland flow, with minimum requirements as set out in section 4 of Council's Engineering Design Guide for Development available from Council's website at www.campbelltown.nsw.gov.au .	This would be achieved by reference to the attached Civil Drawings	✓
	h) Stormwater collected on a development site shall be disposed of (under gravity) directly to the street or to another Council drainage system/ device. Where stormwater cannot be discharged directly to a public drainage facility, a drainage easement of a suitable width shall be created over a downstream property(s) allowing for the provision of a drainage pipe of suitable size to adequately drain the proposed development to a public drainage facility.	Stormwater generated on site would be discharged to the adjacent stormwater/drainage reserve by reference to the attached Civil Drawings	✓
	i) All proposed drainage structures incorporated within new development shall be designed to maintain public safety at all times.	This would be achieved	✓
	j) Development shall not result in water run-off causing flooding or erosion on adjacent properties.	No impacts to adjoining properties is predicted. Surrounding land is drainage reserves.	N/A

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	k) Stormwater run-off shall be appropriately channelled into a stormwater drain in accordance with Council's Engineering Design Guide for Development available from Council's website at www.campbelltown.nsw.gov.au .	This would be achieved	✓
	l) Where applicable, the development shall incorporate the creation of an appropriate easement to manage stormwater in accordance with Council's Engineering Design Guide for Development available from Council's website at www.campbelltown.nsw.gov.au .	This would be achieved	✓
2.10.3 Stormwater Drainage	a) A stormwater Drainage Concept Plan shall be prepared by a suitably qualified person, and submitted with all development applications, involving construction (except for internal alterations/fitouts), demonstrating to Council how the stormwater would be collected and discharged from the site.	This would be achieved by reference to the attached Civil Drawings	✓
	b) The stormwater concept plan shall include the following information as a minimum: i) locations, layouts and sizes of stormwater pipes and pits; ii) minimum grades and capacity of stormwater pipes; and iii) existing and proposed easements, site contours and overland flow path/s.	This would be achieved by reference to the attached Civil Drawings	✓
2.14.1 Contaminated Land	a) The requirements of Managing Land Contamination Planning Guidelines, SEPP 55 – Remediation of Land (EPA, DUAP, 1998) shall be satisfied on sites known to have, or may give Council reason to suspect, a potential for previous contamination.	Satisfied – refer Section 3.6.3.3 and Appendix E	N/A
	b) An initial investigation regarding the possible or actual contamination of a site shall be carried out by a suitably qualified person.	Satisfied – refer Section 3.6.3.3 and Appendix E	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	c) Where a site is identified by Council, Office of Environment and Heritage and/or by the initial investigation as being, or having the potential to be contaminated, a Contamination Management Plan shall be submitted with the development application.	Not Applicable	N/A
2.14.2 Salinity	a) Any development: i) within 50 metres of the top of the bank of a watercourse; ii) located in an area that has bare soil patches or salt scalds; iii) occupied by soils that appear 'puffy' when dry, or greasy when wet; iv) located in an area that is occupied by salt tolerant plant species; v) located in an area that has white staining on nearby house foundations or walls; or vi) located on soils that are derived from Wianamatta Shale; shall be designed in accordance with Section 5.8 Council's Engineering Design Guide for Development available from Council's website at www.campbelltown.nsw.gov.au .	This would be achieved by reference to the attached Civil Drawings The site is within 50 metres of the top bank of a watercourse	✓
	b) A detailed Salinity Analysis and Remedial Action Plan shall be prepared and submitted with the development application if: i) the site has been identified as being subject to a salinity hazard; or ii) an investigation reveals that the land is saline.	Not Applicable	N/A
2.14.3 Bushfire	a) Development shall be designed and located so as to minimise the risk of loss of life or property from bushfire.	Site is not mapped as bushfire prone – risk from bushfire is not anticipated.	N/A
	b) Development on bush fire prone land (as detailed on the Campbelltown Bush Fire Prone Lands Map) shall comply with the requirements of Planning for Bushfire Protection, (NSW Rural Fire Service) as amended.	Not Applicable	N/A
	c) Development applications relating to land identified on the Bushfire Prone Land Map shall be accompanied by a Bushfire	Not Applicable	N/A

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	Hazard Assessment Report prepared by a suitably qualified person.		
	d) All 'Asset Protection Zones' shall be provided within the boundary of the subject land. National Parks, Crown Reserves, water catchments, easements, Council managed reserves, riparian corridors other private land shall not be considered as part of asset protection zones unless approved by the NSW Rural Fire Service.	As the land is not mapped as bushfire prone, no APZs required	N/A
	e) Adequate water reserves for fire fighting shall be available and accessible on site as specified in Planning for Bushfire Protection, as amended. Hazard reduction (burning or mechanical) proposals shall be in accordance with the Campbelltown Bush Fire Risk Management Plan and the Bush Fire Environmental Assessment Code. Landowners wishing to undertake hazard reduction shall contact the NSW Rural Fire Service (NSW RFS) for any requirements. Applications to undertake hazard reduction would be assessed by the NSW RFS under the Bushfire Environmental Assessment Code. Guidelines for hazard reduction include: i) as far as possible, the frequency, time of year and intensity of any hazard reduction burning in native vegetation is to approximate the natural regime; and ii) periodic weed monitoring and control shall be undertaken after bushfires and hazard reduction burning, and appropriate action taken as necessary.	As the land is not mapped as bushfire prone, not applicable. Notwithstanding, the land would be connected to Council's reticulated network and is supported by the hydrant system provided within the industrial estate	N/A
	f) Any development proposing the removal of native vegetation for APZ purposes shall investigate the environmental impact of the removal of that vegetation.	Not applicable, no clearing for APZs proposed.	✓
2.15.1 Waste Management Plan	a) A detailed Waste Management Plan (WMP) shall accompany development applications for certain types of development/land uses, as detailed in Table 2.15.1 and for	The site is a waste management facility, providing for the short term storage of problem waste. An operational environmental management plan would be developed	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	any other development that in the opinion of Council a WMP is required.	to outline the ongoing management and operation of the site and this would be supplied prior to operations commencing. The applicant has no objection to a condition of consent to this effect. A construction WMP is supplied as Appendix F	
	b) Council may require a WMP for any other development, where in Council's opinion, such a development	As above	✓
	c) Plans submitted with a development application shall detail the following (as applicable): i) the size and location of waste and recycling storage areas; ii) routes for occupants to access waste and recycling areas; iii) collection point and/or access route for collection vehicles; iv) ventilation of waste and recycling storage areas; v) location of garbage chute and service rooms; vi) bin and storage area washing facilities; and vii) occupants' disposal points for all waste streams.	As above	✓
2.15.2 Waste Management During Demolition and Construction	a) All waste and recyclable streams shall be stored separately on site.	This is provided for by the CRC model and the site would be operated in accordance with the EPA Operations and Management Handbook (2 nd Edition), or version as current	✓
	b) All storage areas/containers for each waste and recycling stream shall be kept on the site at all times and shall be indicated on the site plans/drawings as part of the WMP.	As above	✓
	c) Where material cannot be reused or recycled, it shall be disposed of at an appropriately licensed waste management facility. Details of disposal arrangements shall be specified in the WMP.	As above	✓
	d) Convenient and safe vehicular access to waste and recycling material storage areas shall be provided.	This would be achieved by reference to the provided drawings and the site design	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	e) The removal, handling and disposal of asbestos or other hazardous materials shall be carried out in accordance with WorkCover NSW, Office of Environment and Heritage and other regulatory authority guidelines and requirements.	Not applicable. The Phase 1 PSI confirms no asbestos on site. No buildings to be demolished	N/A
2.15.3 On-going Waste Management	a) Provision shall be made for all waste and recycling storage containers to be located behind the primary and secondary building line and out of public view.	Containers would be located within the proposed building	✓
	b) Any room(s) for storing garbage and recycling shall be located in a position that is convenient for occupants and waste collection staff. Collection rooms shall complement the development and not be visibly obtrusive when viewed from any public place.	Not applicable	N/A
	c) A refuse collection point shall be nominated demonstrating that waste loading operations can occur on a level surface not adjacent to steep gradients, vehicle ramps and pedestrian access points.	Not applicable	N/A
	d) The path for wheeling bins between waste storage area(s) and the collection vehicle shall be free of steps or kerbs and have a maximum gradient of 1V:8H.	Not applicable	N/A
	e) The maximum travel distance between any storage area/point and the collection point for all bins shall be 25 metres.	Not applicable	N/A
	f) Where it is intended that collection vehicles are to drive into a private property to collect waste and recycling, the development shall be designed to provide for: i) the safe and efficient service of the development with minimal need to reverse; ii) vehicles to enter and exit in a forward direction; iii) adequate clearance to accommodate the waste collection vehicle dimensions detailed in Table 2.15.2.	This is achieved by reference to the design drawings supplied. A one way access/egress arrangements ensures the safety of users. An OEMP would be developed for the ongoing operation of the facility.	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	iv) where collection vehicles are required to enter the property, the pavement shall be constructed in such a manner that would not be damaged by a collection vehicle carrying the maximum legal weight.		
2.16.1 Water	a) Where connection to the reticulated water supply system is not available, development shall be provided with: i) sufficient water storage to cater for all relevant activities of the proposed use of the development; ii) sufficient storage for fire fighting purposes in accordance with Planning for Bushfire Protection 2006, NSW Rural Fire Service.	Not Applicable – connection to a reticulated network is available and would be provided at the developers cost	N/A
2.16.2 Electricity	a) Details of the proposed method of power supply shall be provided as part of the development application for any development involving the construction of a building within rural and environmental protection zones.	The site would be connected to the existing underground reticulated network located in Hephher Road, at the full cost of the applicant and in accordance with the requirements of the energy service provider.	✓
	b) Any structure associated with the provision of electricity shall not result in any adverse impacts on the natural environment and/or adjoining properties.	Not Applicable	N/A
2.16.3 On-Site Wastewater Sewage Management	a) On-site Wastewater Management Systems and Private Recycled Water Schemes shall comply with the following codes and standards: i) Council's Wastewater Management and Water Recycling Strategy 2009; ii) Environmental & Health Protection Guidelines: On-site Sewage Management for Single Households 1998; iii) NSW Guidelines for the Management of Private Recycled Water Schemes 2008; iv) NSW Guidelines for Greywater Reuse in Sewered, Single Household Residential Premises 2007;	This would be achieved	✓

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	v) the then Department of Environment & Conservation NSW, Environmental Guidelines Use of Effluent by Irrigation, 2004; vi) AS/NZS 1547: On-site Domestic Wastewater Management (as amended); vii) AS/NZS 3500 National Plumbing and Drainage Standards and NSW Code of Practice – Plumbing and Drainage (as amended); viii) AS/NZS 1546.1 On-site domestic wastewater treatment units Part 1: Septic Tanks (as amended); ix) AS/NZS 1546.2 On-site domestic wastewater treatment units Part 2: Waterless composting toilet (as amended); x) AS/NZS 1546.3: On-site domestic wastewater treatment units Part 3: Aerated Wastewater treatment systems (as amended); xi) AS/NZS 3500 National Plumbing and Drainage Standard (as amended); xii) National Water Quality Management Strategy-Australian Guidelines for Water Recycling (Phase 1) 2006; and xiii) National Water Quality Management Strategy-Australian Guidelines for Water Recycling Stormwater Harvesting and Reuse 2009.		
	b) All development applications for an onsite wastewater management system or private recycled water scheme shall be accompanied by a site specific wastewater report for all wastewater facilities located on the premises. The report shall be prepared by a suitably qualified person/company specialising in wastewater and water recycling systems in accordance with Council's Wastewater Management and Water Recycling Strategy 2009.	Not Applicable	N/A

Table 3.3 – Consideration of relevant DCP Matters

Section	Control	Comment	Compliance
	c) The type of wastewater management system and method of reclaimed effluent application shall be determined having regards to the following: i) allotment size and slope; ii) soil classification; and iii) proximity to water courses.	Not Applicable	N/A
	d) The connection of an existing septic tank to a single tank Aerated Wastewater Treatment System would be assessed on its merits providing that the existing septic tank is structurally sound in accordance with Council's requirements and specifications.	Not Applicable	N/A
	e) On-site Wastewater Management Systems & Private Recycled Water Schemes shall be designed, installed, operated and maintained in accordance with the manufacturer's specifications.	Not Applicable	N/A
	f) All wastewater management systems and private recycled water schemes shall be provided with the following minimum buffer distance: i) 100 metres to permanent surface waters; ii) 250 metres to domestic groundwater well; and iii) 40 metres to other waters	Not Applicable	N/A

3.7 STRATEGIC PLANNING DOCUMENTS

3.7.1 CAMPBELLTOWN 2027: COMMUNITY STRATEGIC PLAN

Campbelltown 2027 (C2027) was released in 2017 and provides the highest level, strategic planning strategy within the Council. C2027 seeks to outline the key aspirations and goals of the Council and community, to be realised over the next 10 ten years.

C2027 identifies four key outcomes, being:

- Outcome 1: A vibrant, liveable city
- Outcome 2: A respected and protected natural environment
- Outcome 3: A thriving, attractive city
- Outcome 4: A successful city

Each outcome is supported by a range of specific strategies. Relevant to the project are the following outcomes and strategies:

- Outcome Two: A respected and protected natural environment;
 - 2.1- Implement and advocate for initiatives that conserve the city's natural environment
 - 2.3- Promote and educate our community on sustainable practices and encourage practicable take up of more sustainable life-choices
 - 2.4- Conserve and care for our city's biodiversity
 - 2.5- Plan for and ensure that development in our city is sustainable and resilient
- Outcome Three: A thriving, attractive city
 - 3.2- Ensure that service provision supports the community to achieve and meets their needs
 - 3.7- Public funds and assets are managed strategically, transparently and efficiently
- Outcome Four 4 A successful city
 - 4.2- Support and advocate for infrastructure solutions that meet the needs of our city and which pay an economic and liveability dividend
 - 4.3- Responsibly manage growth and development, with respect for the environment, heritage and character of our city
 - 4.5- Work in partnership with the State Government to achieve positive planning outcomes

The proposed CRC project is a joint initiative of Council and the EPA, to provide a resource for managing problem household waste. This has a range of benefits including diverting problem waste from landfill, providing a secure and accessible local resource.

Via these methods, the proposal is considered to be consistent with the aims of C2027.

3.7.2 CAMPBELLTOWN LOCAL PLANNING STRATEGY

The Campbelltown Local Planning Strategy (LPS) was developed to:

Provide a decision making framework to guide delivery of the community inspired strategic vision (embodied in Campbelltown 2025 – looking forward and other strategic documents).

The main purpose of the LPS is:

To guide future planning decision making so that it results in realisation of the community shared vision.

The objectives of the LPS are:

To ensure consistent, holistic and balanced outcomes that are consistent with achieving the community shared vision.

The supplementary and specific objectives are to:

- * Facilitate achievement of the Campbelltown 2025 Vision and in doing so realise the objectives of the Campbelltown Community Strategic Plan 2012 – 2022 (CCSP).*
- * Provide long-term direction for future sustainable land use planning decisions.*
- * Ensure land use planning decisions are consistent with the NSW 2021 (“State Planning Strategy”), Metropolitan Plan 2036 and Draft South West Sub Regional Strategy.*
- * Provide a proactive “Growth Management Strategy” that addresses population and employment growth rates and determines appropriate boundaries for growth.*
- * Provide a sound foundation for a comprehensive Campbelltown City Local Environmental Plan and a revised Campbelltown Sustainable City DCP*

A specific recommendation of the LSP is:

- * to pursue sustainable waste management practices (CCC, LSP, p.37)*

Through the provision of an important local resource that assists with waste management and the protection of the environment, the proposal is considered to be consistent with the provisions of the LSP.

3.7.3 CAMPBELLTOWN 2025: LOOKING FORWARD

Campbelltown 2025: Looking Forward (C2025) was developed in 2004 as a long term planning strategy for the Campbelltown area.

The purpose of C2025 is:

Campbelltown 2025 Looking Forward is a statement of broad town planning intent (Strategy) for the longer term future of the City of Campbelltown that:

- responds to what Council understands people want the City of Campbelltown to look, feel and function like;*
- recognises likely future government policies and social and economic trends; and*
- sets down the foundations for a new town plan, that will help achieve that future.*

By providing an essential waste management service to the population of Campbelltown, the proposal responds to the overarching objectives of C2025.

3.7.4 NSW WASTE AVOIDANCE AND RESOURCE RECOVERY STRATEGY 2014-21

The NSW Waste Avoidance and Resource Recovery Strategy 2014-21 (WARR) is developed around a core set of objectives and targets, including:

- *Avoid and reduce waste generation*
 - *By 2021–22, reduce the rate of waste generation per capita*
- *Increase recycling*
 - *By 2021–22, increase recycling rates for:*
 - *municipal solid waste from 52% (in 2010–11) to 70%*

- *commercial and industrial waste from 57% (in 2010–11) to 70%*
- *construction and demolition waste from 75% (in 2010–11) to 80%*
- *Divert more waste from landfill*
 - *By 2021–22, increase the waste diverted from landfill from 63% (in 2010–11) to 75%*
- *Manage problem wastes better*
 - *By 2021–22, establish or upgrade 86 drop-off facilities or services for managing household problem wastes statewide*
- *Reduce litter*
 - *By 2016–17, reduce the number of litter items by 40% compared with 2011–12 levels and then continue to reduce litter items to 2021–22*
- *Reduce illegal dumping*
 - *From 2013–14, implement the NSW Illegal Dumping Strategy 2014–16 to reduce the incidence of illegal dumping statewide*
As part of this strategy, by 2016–17:
 - *reduce the incidence of illegal dumping in Sydney and the Illawarra, Hunter and Central Coast regions by 30% compared with 2010–11*
 - *establish baseline data to allow target-setting in other parts of the state*

The proposal directly supports the aims and targets of the WARR by developing a facility specifically designed to target problem wastes and divert these from landfill. This also assist to reduce illegal dumping by providing a legal disposal method of problem wastes.

CONSULTATION

4.1 INTRODUCTION

4.2 GOVERNMENT AGENCIES

Government agencies have been provided with the opportunity to comment on the proposal through the SEARs process and each relevant agency has provided written comments to inform preparation of the SEARS.

Those comments are summarised in **Appendix B** with a commentary to identify the relevant section of this EIS where the comments are addressed.

ENVIRONMENTAL ISSUES

5.1 PRELIMINARY RISK ASSESSMENT

A risk assessment has been undertaken to characterise the likely environmental risks associated with the operation of the proposed waste transfer station. The aim of the risk assessment is to ensure that all relevant risks are investigated and mitigated as part of the project submission, relative to the degree of environmental risk they represent.

The risk rating is a factor of the consequence of the impact occurring and the likelihood of the impact occurring. Depending on the combination of consequence and likelihood, the overall risk rating could be low to extreme. High to extreme risks warrant a higher level of investigation, whilst low or medium risks have received a lower level of investigation.

Environmental Consequence	How likely is it to occur?			
	Very Likely (VL) Could happen any time	Likely (L) Could happen sometime	Unlikely (U) Could happen but very rarely	Very Unlikely (VU) Could happen, but probably never will
Catastrophic (4)	High	High	High	Medium
Major (3)	High	High	Medium	Medium
Moderate (2)	High	Medium	Medium	Low
Minor (1)	Medium	Medium	Low	Low

Figure 3: Risk matrix

Table 5.1 – Risk analysis of environmental issues

EIS Section	Environmental Risk	Consequence	Likelihood	Risk Rating	SEAR Key Issue?
6.1	Water	Moderate	Likely	Medium	Yes
6.2	Land use	Minor	Unlikely	Low	Yes
6.3	Soils and geology	Moderate	Likely	Medium	Yes
6.4	Visual impact	Minor	Unlikely	Low	Yes
6.5	Noise and vibration	Moderate	Unlikely	Medium	Yes
6.6	Air quality	Moderate	Unlikely	Medium	Yes
6.7	Greenhouse gas emissions	Moderate	Likely	Medium	Yes
6.8	Traffic	Moderate	Likely	Medium	Yes
6.9	Biodiversity	Major	Likely	High	Yes
6.10	Indigenous heritage	Major	Likely	High	Yes
6.11	Non-Indigenous heritage	Minor	Unlikely	Low	No
6.12	Hazards	Major	Likely	High	No
6.13	Waste management	Major	Likely	High	Yes
6.14	Socio-economic	Minor	Unlikely	Low	Yes
6.15	Cumulative impact	Minor	Unlikely	Low	No

Table 5.1 summarises the results of the risk assessment. Four of these matters have been the subject of specialist investigations, being:

- Biodiversity
- Indigenous Heritage
- Traffic and access
- Flooding

A further eleven lower risk issues were identified and investigated primarily using desktop assessment, including:

- Water (surface and groundwater)
- Noise and Vibration
- Greenhouse Gas Emissions
- Soils and geology
- Soil and water management
- Air quality
- Land use
- Economic and Social Impacts
- Cumulative Impacts
- Waste management
- Hazards
- Visual Impacts
- Non-indigenous Heritage

5.2 SECRETARY'S REQUIREMENTS

The Secretary's Environmental Assessment Requirements were confirmed via issue of the SEARs on the 19 September 2018. A planning focus meeting was not held.

A summary of the SEARs and the section of the EIS where each matter is addressed is provided in **Appendix B**.

ENVIRONMENTAL IMPACTS

6.1 WATER

6.1.1 EXISTING ENVIRONMENT

6.1.1.1 Surface Water

The site is within the Georges River catchment. There are several mapped watercourses, drainage lines and dams in the vicinity of the site, as depicted in **Figure 4**.

At the site, Biriwiri Creek along with other non-perennial tributaries flow east towards Bow Bowing Creek. Bow Bowing Creek flows towards the north and is a tributary of Bunbury Curren Creek. Bunbury Curren Creek joins the Georges River approximately 13 km north of the site.

Georges River is mapped as Key Fish Habitat by the NSW Department of Primary Industries (Fisheries), however Biriwiri Creek and Bow Bowing Creek are not identified as Key Fish Habitats (

A Strahler forth order stream crosses the footprint area of the proposed development, however, flood mapping and recent development suggest the stream no longer flows through the site.

Historical aerial imaging indicates the subject site has been subject to significant levels of ground disturbance such as earth works and levelling.

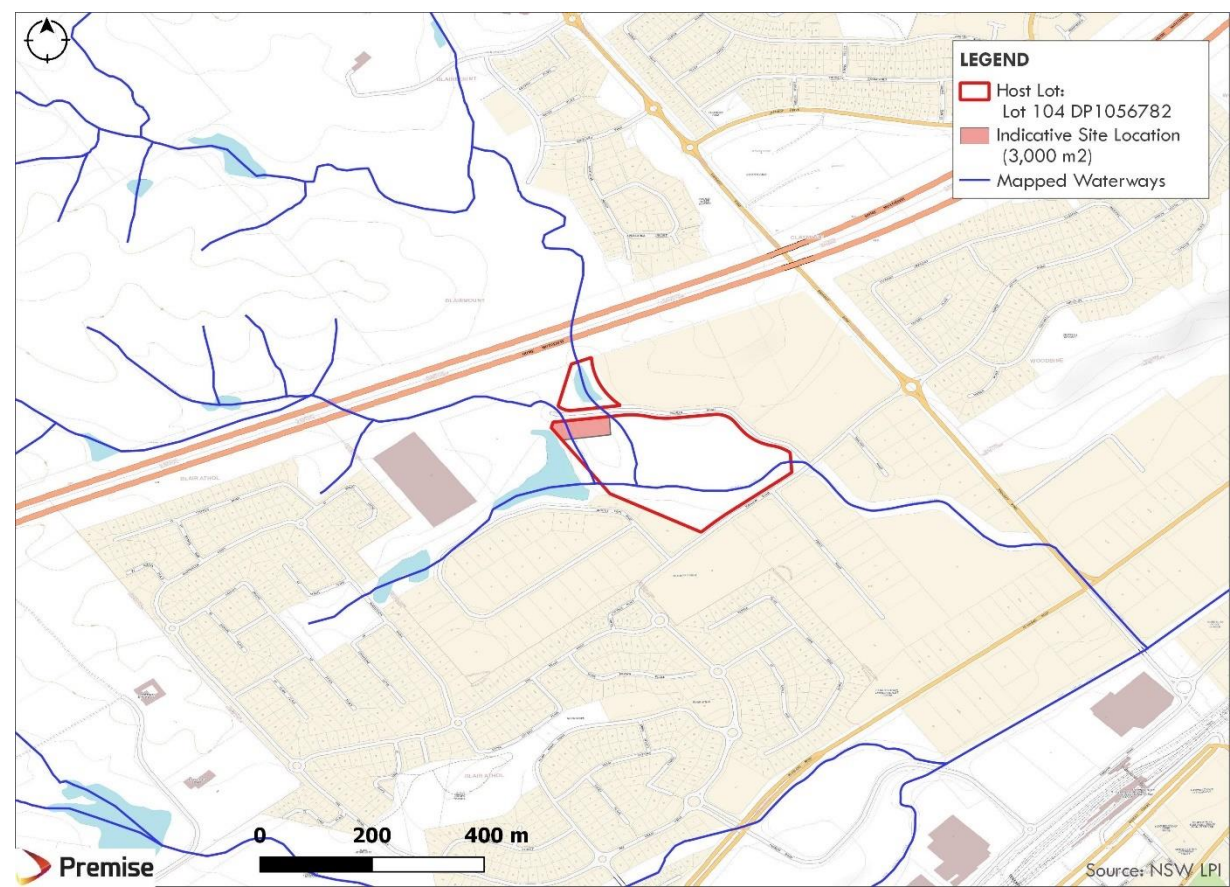


Figure 4: Surface Water Features (Source: NSW LPI)

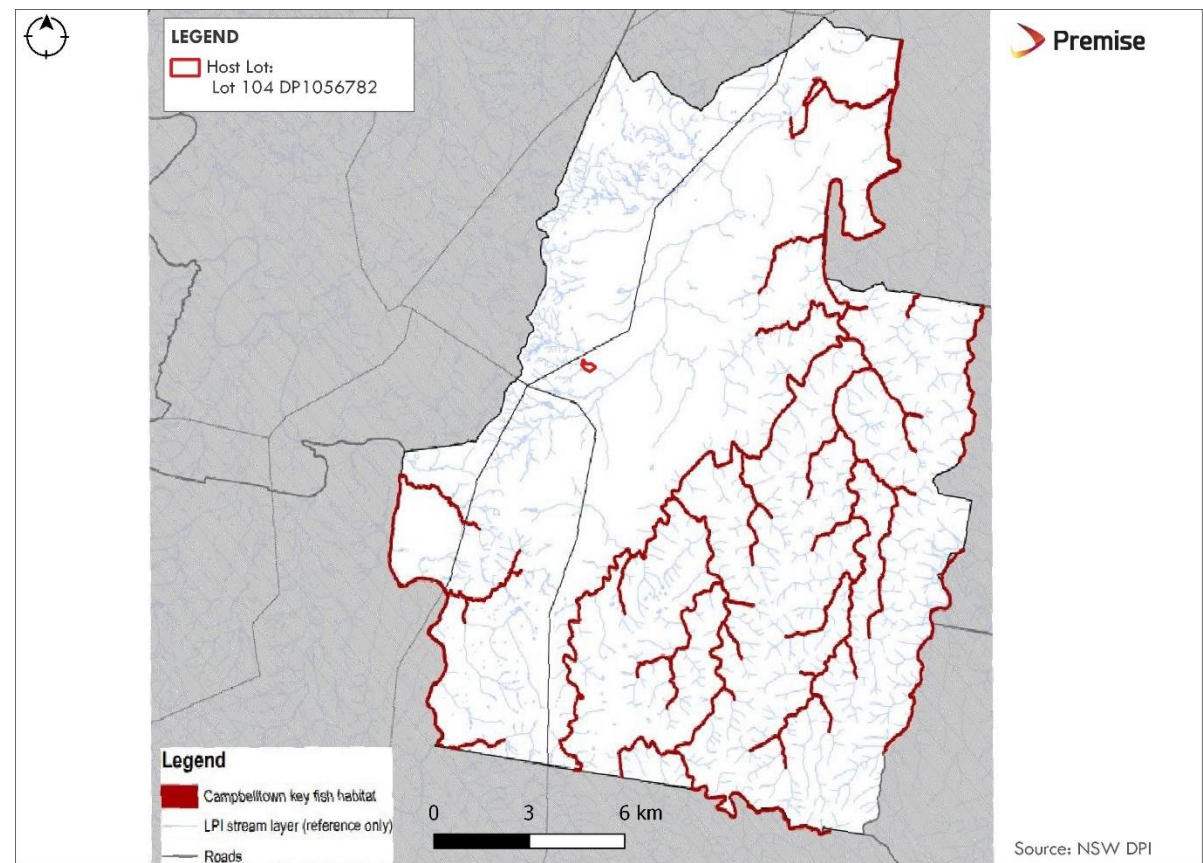


Figure 5: Key Fish Habitat (NSW DPI – Fisheries)

6.1.1.2 Groundwater

A review of the Water NSW Real Time Water Map confirms that there are no registered groundwater bores within the development site and none with 500 metres of the site. The closest recorded bores are four monitoring bores located approximately 880 metres to the south-east of the site, however none of these hold recorded data.

6.1.1.3 Surface Water

The site is intersected by or very close to three distinct waterways.

A third order stream, Biriwiri Creek, flows from the north-west and is mapped as bisecting the development site in a north-south direction. From a review of survey and via the flooding assessment completed at **Section 6.11.3**, it is apparent that this mapped alignment is incorrect and that the creek in fact passes to the west of the site.

A second, fourth order, unnamed stream, flows to the east of the site in a southerly direction.

A third, first order, unnamed stream, flows to the south of the site.

These three streams intersect to the south of the development site.

Proposed development works are to occur on an elevated area of the site specifically adopted to avoid impacts to flood behaviour. An assessment of flooding at **Section 6.11.3** demonstrates that the proposal would not, subject to the implementation of appropriate mitigate measures, detrimentally impact on the function of these surface water features.

The site layout for maintaining surface water flows is illustrated in **CCC Drawings Sheets 1 and 2**.

The approximately 285m² roof of the CRC would adequately cover the receiving area, preventing contamination. Collected rainwater would be used in the amenities building on site.

The proposed internal road is intended to be hard stand to accommodate for heavy vehicle access, this would eliminate the possibility of erosion cause by vehicle movements on wet soils.

6.1.1.4 Groundwater

The proposed development does not propose excavations or extraction of groundwater. The potential impacts to groundwater are negligible. Mitigation measures would be put in place to minimise any impacts.

6.1.2 MANAGEMENT AND MITIGATION MEASURES

Premise propose the following management and mitigation measures be adopted to minimise the potential for impacts to surface water and groundwater to occur:

- The CRC would be operated in a way that would not impact water flows;
- Methods of containing any spilt contaminants would be employed and outlined in an OEMP;
- The receiving area is covered and would feature bunding or appropriate grading effectively separate leachate from clean stormwater runoff; and
- Minimal cut and fill to minimise alterations to flow paths and flood regimes.

6.2 LAND USE

6.2.1 EXISTING LAND USE

The site is currently used as a drainage channel and detention basin to facilitate heavy rainfall events. The portion of the site subject to development is located outside the 1% AEP flood. The flow paths would largely remain unaffected.

6.2.2 POTENTIAL IMPACTS

The proposed development would have negligible impacts on the drainage and detention capabilities of the site as the area of development is outside the 1% AEP flood event. The site would be able to continue to act as a drainage channel and detention basin with the proposed development on site.

The proposed CRC would also have negligible impacts upon the land uses of adjoining sites. Potential impacts to neighbouring sites are discussed in the following sections.

6.3 SOILS AND GEOLOGY

6.3.1 GEOLOGY

The site is largely situated on Quaternary Alluvium, with a small portion of the south-western portion contained within the Ashfield Shale formation, which itself is part of the Wianamatta Group geological formation.

6.3.2 SOILS

6.3.2.1 Acid Sulfate Soil

A review of the NSW Government Sharing and Enabling Environmental Data (SEED) indicates an no known occurrence of acid sulfate soils occurring in the project area.

6.3.2.2 Contaminated Soil

A review of the NSW EPA Contaminated Land Record and List of NSW contaminated sites notified to the EPA confirms there are no known contaminated sites at or near the site. Contamination may be present from illegal dumping and water flows depositing sediments through the drainage channel and detention basins. This has been assessed via the Premise report attached as **Appendix E** and measures to remediate the site are provided – refer **Section 3.6.3.3**.

Based on the historical use of the site, it is unlikely that significant contamination exists at the site and therefore no further investigation is proposed.

6.3.2.3 Potential Impacts

Impacts associated with the project in terms of the soil environment are anticipated to consist of:

- Potential soil impacts relate to the potential for erosion and sedimentation. The soil resource would be protected through retaining the vegetative cover of the site. This would ensure that the surrounding areas are stabilised.

- Sediment and erosion controls would be implemented in accordance with *Managing Urban Stormwater: Soils and Construction* (Blue Book) to minimise erosion and sedimentation impacts within the quarry.

6.3.2.4 Management and Mitigation Measures

Subject to the implementation of the following management measures it is not anticipated that the project would lead to any significant or irreversible impacts to the local soil or geologic environment:

- Topsoils would be stripped separately and retained for rehabilitation purposes.
- Topsoils would be stockpiled and would be used for landscaping purposes.
- A Soil and Water Management Plan would be developed consistent with the requirements of the Blue Book, to be implemented prior to works commencing and maintained for the life of the project in accordance with *Managing Urban Stormwater: Soils and Construction* (Blue Book) (Landcom, 2004).

6.4 VISUAL IMPACT

6.4.1 EXISTING ENVIRONMENT

The development site has a very limited viewing catchment by virtue of location and existing stands of vegetation to the south, which would be predominantly retained. The site is bounded by existing industrial buildings and warehouses, which have previously detracted the visual aesthetic of the site. The site of the CRC is shielded from residential receivers by major roads such as Blaxland Road and the Hume Motorway by existing vegetation. The proposed development has an industrial appearance and is located in an industrial area.

The proposed landscape plan would soften the visual aesthetic of the CRC development even further to ensure it effectively integrates with the industrial aesthetic in the locality.

6.4.2 POTENTIAL IMPACTS

The proposed CRC location is well protected visually from the public domain, as it would only be visible from Hephher Road and would not result in unreasonable visual impacts to members of the public or highway users.

There are a number of residential areas within a 400m radius of the site. These residential areas are well separated from the subject site by industrial buildings, vegetation, roads and the Hume Motorway.

The residential areas located closest to the subject site are located equidistant to the site, approximately 350m to the north, west and south. As previously mentioned, these areas are well shielded from viewing the CRC site by vegetation and infrastructure.

6.4.3 MANAGEMENT AND MITIGATION MEASURES

Visual mitigation measures are proposed as follows:

- Minimise vegetation clearing on the site to ensure the majority of vegetation is retained; and
- Implement the proposed landscape plan and maintain this in perpetuity.

6.4.4 CONCLUSION

Visual impact is essentially a subjective judgement. What is intrusive or objectionable to some can be either innocuous or pleasing to others. For this reason, conclusions as to the acceptability or significance of a visual impact is basically an opinion.

In the absence of any recognised landscape conservation areas as listed in local, State or Commonwealth heritage registers, or noted scenic or significant vistas (as is the case), visual amenity would be valued most by local people who live and work in the locality.

As is demonstrated above, the visual impacts of the proposed development are limited and would not lead to any unreasonable impacts.

The implementation of the above management measures would ensure that any residual impacts are appropriately mitigated.

6.5 NOISE AND VIBRATION

6.5.1 EXISTING ENVIRONMENT

The subject site is located at the end of a cul-de-sac that receives, as discussed in **Section 6.7**, an estimated 834 peak hour vehicular trips per day. The site is also approximately 185 metres from the Hume Motorway which sees 40,927 vehicles daily on average 2019 (permeant counter located 24 kms away at Pheasants Nest). Vehicular movements generate the highest form of noise pollution in the area.

The closest residential zoned land to the subject site is located approximately 350 metres away.

6.5.2 POTENTIAL IMPACTS

Given the small scale of the proposed operation, likely impacts associated with the proposal are primarily associated with vehicle movements, both within and to/from the site.

As discussed in **Section 6.7**, the CRC is expected to receive 50 vehicular movements a day, with 5 of those during peak hour. This results in an estimated 839 daily peak hour vehicle movements along Hephher Road. The slightly increased number of daily vehicular movements would have negligible impacts on the neighbouring residential areas in regard to noise and vibration when considered in the context of the broader traffic environment.

Waste bins would be relocated on site by use of a forklift. Collected waste would be collected approximately once a week (or when receiving bins are reaching capacity) by a dog and trailer heavy vehicle. The addition of a single heavy vehicle approximately once a week and movements made by a forklift would again have a negligible impact on noise and vibration.

Construction impacts would be short lived and manageable through the implementation of standard controls.

6.5.3 MANAGEMENT AND MITIGATION MEASURES

The following standard controls are recommended to ensure that any residual impacts are appropriately mitigated during construction:

- All plant and equipment would be operated and maintained in accordance with the manufacturer's specifications and be fitted with appropriate noise attenuation devices.

- Standard construction hours (7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday and at no times on Public holidays) would be implemented;
- Operating hours would be daytime hours only, as outlined at **Section 2.8**.
- Any noise complaint would be investigated, recorded and possible mitigation measures investigated if required.

6.6 AIR QUALITY

6.6.1 EXISTING ENVIRONMENT

The subject site is located within a developed area of Campbelltown. The Hume Motorway is located close by, traffic on the motorway combined with local traffic and nearby industries impact the local air quality.

The NSW Department of Planning Interim Guideline 'Development Near Rail Corridors and Busy Roads' (2008) (Planning Guideline) presents assessment guidelines for development near busy roads, particularly focussed on sensitive land uses, including schools and child care facilities. The guideline was developed to support the specific rail and road provisions of the *State Environmental Planning Policy (Infrastructure) 2007* (ISEPP).

With respect to the potential air quality impacts from roads, Part C Section 4 of the Planning Guideline recommends that the design of the proposal should take into consideration air quality where the following apply:

- *Within 10 metres of a congested collector road (traffic speeds of less than 40 km/hr at peak hour) or a road grade > 4% or heavy vehicle percentage flows > 5%;*
- *Within 20 metres of a freeway or main road (with more than 2,500 vehicles per hour, moderate congestions levels of less than 5% idle time and average speeds of greater than 40 km/hr);*
- *Within 60 metres of an area significantly impacted by existing sources of air pollution (road tunnel portals, major intersection/roundabouts, overpasses or adjacent major industrial sources); or*
- *As considered necessary by the approval authority based on consideration of site constraints, and associated air quality issues.*

The proposed facility is an industrial facility providing for the collection of problem waste, with expected visitation rates of around 30-50 cars per day. Emissions associated with the facility are limited to those generated by these vehicles accessing the facility. At the very low levels of usage proposed via this application, and noting that a proportion of those accessing the facility would be expected to do so opportunistically when they are otherwise passing the facility, would not be expected to result in any significant impact on air quality in the locality.

6.6.2 POTENTIAL IMPACTS

Construction of the CRC would cause short term impacts to air quality in the vicinity of the site through emissions associated with machinery, vehicle and plant movements. Operational impacts would be limited to emissions from on-site machinery (forklift and delivery/collection trucks) and light vehicles (non-commercial) accessing the site.

6.6.3 MANAGEMENT AND MITIGATION MEASURES

In order to minimise the impacts of the machinery, vehicle and plant movement and operation, controls would be in place during construction including:

- Limiting the area of soil and vegetation disturbance;
- Utilising dust suppression on access tracks and exposed soil;
- Covering of trucks transporting soils and construction materials;
- Minimising vehicle movement and speed;
- Standard construction hours (7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday and at no times on Public holidays) would be implemented;
- Avoiding dust generating activities during windy and dry conditions; and
- Maintaining all equipment in good working condition such that the construction contractor and site manager ensure the prevention of the release of smoke by construction equipment, which would be in contravention of Section 124 of the Protection of the Environment Operations Act 1997 and Clause 16 of the Protection of the Environment Operations (Clean Air) Regulation 2010.

6.7 TRAFFIC

A traffic impact assessment has been conducted by CCC Infrastructure Section to assess the likely impacts of the inclusion of a CRC on Hepher Road and the surrounding road network, provided in this section.

6.7.1 EXISTING ROAD CONDITIONS

The site is located on Hepher Road, a cul-de-sac within an industrial area of Campbelltown. Hepher road is a local road that connects with Johnson Road (collector road) which in turn connects to Badgally Road (semi-arterial road). Toward the western extent of Hepher Road, a culvert runs below the road as part of a stormwater drainage system, which, during high rainfall events, has potential to flood Hepher Road

6.7.2 EXISTING TRAFFIC, ROAD CAPACITY AND LEVEL OF SERVICE

An estimation of peak hour vehicle trips on Hepher road has been made using the existing total gross floor area (GFA). The total GFA of Hepher road is approximately 83,360 m² consisting of warehouses, factories and car tyre retail outlets. RMS Guide to traffic generating developments suggests the peak hour traffic volumes for the previously mentioned uses are as follows:

- Warehouse = 0.5 per 100 sqm GFA
- Factories = 1 per 100 sqm GFA
- Car tyre retail outlets = 1 per 100 sqm GFA

Adopting conservative peak hour trip of 1 per 100 sqm GFA, the resultant peak hour trips is 834.

Hepher Road is used by a mixture of heavy vehicles, such a semi-trailers, and personal vehicles, and is sufficient in supporting the mixed vehicle types.

6.7.3 TRAFFIC IMPACT OF PROPOSED DEVELOPMENT

6.7.3.1 Impact on road capacity

The CRC is estimated to generate 50 trips per day, with 5 of those assumed to be during peak hour. This number would raise the total peak hour vehicle movements of Hephher Road to 839, an insignificant increase.

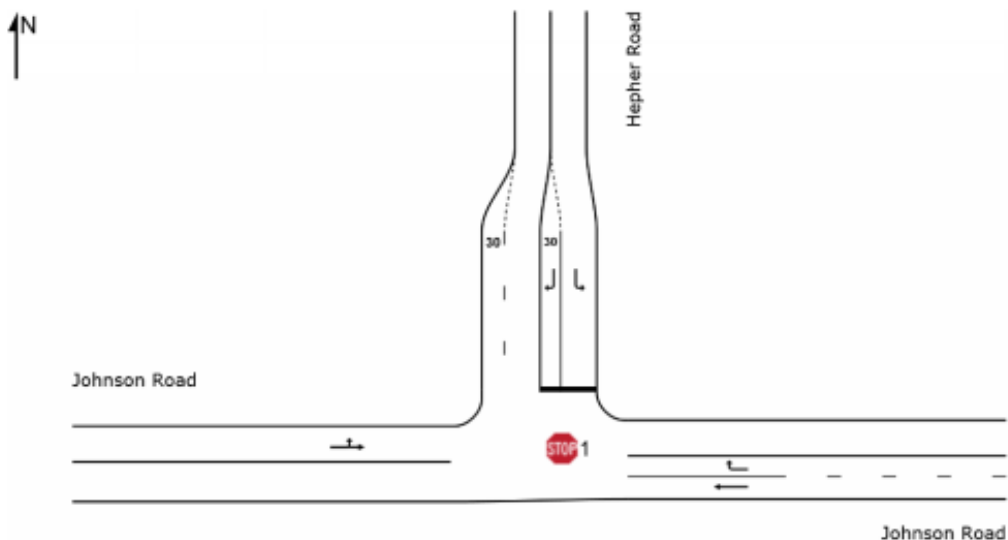
6.7.3.2 Impact on intersection

The intersection of Hephher Road and Johnson Road (shown below in **Figure 6**) is well suited to receive the potential increase in traffic movements expected to be generated by the proposed CRC

SITE LAYOUT

Site: 1 [Hephher Road - Johnson Road - 2016 - AM]

Hephher Road - Johnson Road
With CRC Development
Site Category: (None)
Stop (Two-Way)



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Figure 6: Intersection Layout (SIDRA)

MOVEMENT SUMMARY

Site: 1 [Hepher Road - Johnson Road - 2016 - AM]

Hepher Road - Johnson Road
With CRC Development
Site Category: (None)
Stop (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	Demand Total veh/h	Flows HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Johnson Road												
5	T1	120	5.0	0.064	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	60.0
6	R2	353	5.0	0.380	8.9	LOS A	2.2	16.1	0.64	0.90	0.81	46.1
Approach		473	5.0	0.380	6.6	NA	2.2	16.1	0.48	0.67	0.60	47.0
North: Hepher Road												
7	L2	91	5.0	0.081	9.2	LOS A	0.3	2.4	0.34	0.88	0.34	45.7
9	R2	91	5.0	0.311	22.3	LOS B	1.3	9.1	0.79	1.05	0.95	36.2
Approach		181	5.0	0.311	15.8	LOS B	1.3	9.1	0.56	0.96	0.64	40.5
West: Johnson Road												
10	L2	352	5.0	0.287	4.5	LOS A	0.0	0.0	0.00	0.35	0.00	52.8
11	T1	219	5.0	0.287	0.0	LOS A	0.0	0.0	0.00	0.35	0.00	46.3
Approach		571	5.0	0.287	2.8	NA	0.0	0.0	0.00	0.35	0.00	51.7
All Vehicles		1224	5.0	0.380	6.2	NA	2.2	16.1	0.27	0.57	0.33	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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Figure 7: Movement Summary (SIDRA)

6.7.4 MITIGATION MEASURES

- Truckloads of material transported off-site would be covered and recorded;
- Posted internal speed limits would be adhered to, to maximise safety and minimise noise;
- A Vehicle Management Plan would be implemented to ensure all vehicle operators would be briefed in standard operating requirements; and
- A driver code of conduct would be included within the vehicle management plan

6.7.5 CONCLUSIONS

The proposed CRC design would facilitate effective and efficient movement of traffic and would allow for forward entry and exit of the site. Subject to the implementation of the above measures, the facility would operate in a manner that would not lead to any detrimental impacts to the local traffic environment.

6.8 BIODIVERSITY

Biosis were engaged to prepare an ecological assessment to consider the extent of impact associated with the proposed development. The completed assessment is provided at **Appendix C** and summarised in the following sections.

6.8.1 BACKGROUND

In preparing the ecology report, Biosis conducted an initial review of key information, including:

- *Commonwealth Department of the Environment and Energy (DEE) Protected Matters Search Tool for matters protected by the EPBC Act.*
- *NSW Office of Environment and Heritage (OEH) BioNet Atlas of NSW Wildlife, for items listed under the TSC Act.*
- *NSW DPI Biosecurity Act 2015 for Priority listed weeds for the Greater Sydney Local Land Services (LLS) area.*
- *OEH Vegetation Information System (VIS) mapping, including:*
 - *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands (SCIV1) (Tozer et al. 2010).*
 - *The Native Vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities (Tozer 2003).*

Biosis conducted a site inspection on the 19 February 2019.

6.8.2 EXISTING ENVIRONMENT

The Biosis analysis and site visit confirm that the site accommodates two vegetation communities, being the Swamp Oak Floodplain Forest and Freshwater Wetlands – refer **Figure 8**.

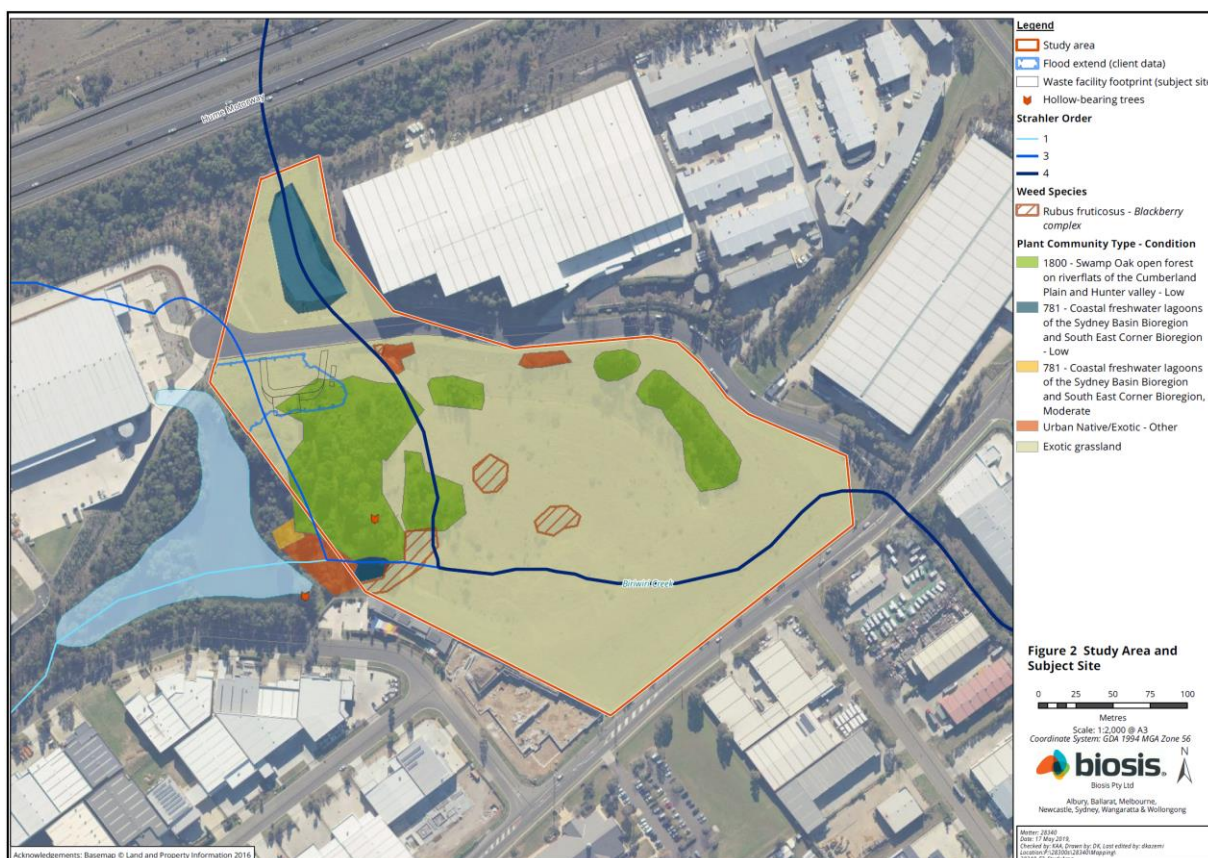


Figure 8: Study Area and Subject Site (Biosis, 2019)

6.8.3 IMPACT ASSESSMENT

Biosis note:

The proposed waste management facility would involve the following impacts to ecological features:

- Removal of 0.07 hectares of Swamp Oak Floodplain Forest EEC.
- Removal of 0.07 hectares of low quality foraging habitat for Glossy Black Cockatoo.
- Indirect impacts to Freshwater Wetlands and Green and Golden Bell Frog habitat as a result of altered hydrology.

A test of significance has been prepared to assess the potential for impacts of the proposed development on Swamp Oak Floodplain Forest and Green and Golden Bell Frog in accordance with the BC Act. A Significant Impact Criteria Assessment has also been undertaken for Green and Golden Bell Frog in accordance with the EPBC Act. These assessments are provided in Appendix 4 and Appendix 5.

The assessment determined that the development would not be considered a significant impact to Swamp Oak Floodplain Forest as it would result in the removal of 0.07 hectares of low condition vegetation. The study area contains a further 12.9 hectares of similar condition Swamp Oak Floodplain Forest, the project would result in the removal of 0.54% of the total community within the study area.

6.8.4 RECOMMENDATIONS

Biosis note:

Given there are requirements for removal of some native vegetation including canopy trees, the focus of the following recommendations is to minimise disturbance to any surrounding native vegetation and fauna habitat. These recommendations are:

- To the fullest extent practicable, minimise disturbance to any native vegetation surrounding the study area.

- *Where possible, retained trees should be protected in accordance with Australian Standard AS4970– 2009 Protection of Trees on Development Sites, during construction, operation and decommissioning of the site compound.*
- *Appropriate erosion and sediment control measures should be installed surrounding the impact site to avoid sedimentation of receiving water bodies or other indirect impacts to surrounding biodiversity values.*
- *Temporary frog exclusion fencing should be erected to the north of Hephher Road to divert any dispersing frogs around the construction site and towards Biriwiri creek.*
- *In the unlikely event that unexpected threatened species are identified during the project, works should cease and an ecologist should be contacted immediately.*
- *Soil transportation should be minimised within, into or out of the study area to reduce the spread of weeds.*
- *Six priority weeds were identified within the study area (Table 4). Appropriate measures should be implemented to minimise the spread of these species.*

Subject to the implementation of the above recommendations, it is not anticipated that the proposal would result in significant ecological impacts.

6.9 ABORIGINAL HERITAGE

Due to the positioning of the site in relation to waterways, there is the potential to encounter sites or artefacts of Aboriginal significance. Biosis were commissioned on behalf of Premise to undertake an Aboriginal Due Diligence Assessment. The completed ADDA is provided at **Appendix D** and summarised in the following sections.

6.9.1 HISTORY

The site presents landforms and waterways that suggest potential historical use by Aboriginal people. Artefact sites are the most commonly recorded site types in the Campbelltown region, and are most commonly identified within undisturbed crest, gentle slope or raised terrace landforms in close proximity to water sources. However, aerial imaging indicates that the site has undergone large amounts previous ground disturbance and land modification.

6.9.2 DESKTOP ASSESSMENT

An initial desktop assessment of likely sites or artefacts of Aboriginal significance was completed, including a search of the following databases:

- Aboriginal Heritage Information Management System (AHIMS);
- Native Title Vision;
- State Heritage Register; and
- Campbelltown LEP 2012;

This search did not reveal any known or mapped sites of Aboriginal heritage significance within the project area.

6.9.3 SITE VISIT

An archaeological survey was conducted onsite by Biosis, to identify any previously unrecorded Aboriginal sites, objects or areas of archaeological potential; and to assess the level of previous ground disturbance within the study area.

The entire study area was found to have been heavily disturbed by the construction of a large causeway at the northern and south eastern edges of the study area, the modification of the creek lines which transect the study area, the construction of embankments along the northern, eastern and southern boundaries, bulk earthworks and vegetation clearance in the western portion of the site, and increased inundation events in the centre of the study area as a result of the modification of the creek lines and the installation of the embankments.

Based on the results of the desktop assessment and archaeological survey the study area has been assessed as having low Aboriginal archaeological potential. The proposed works are there unlikely to impact on any Aboriginal archaeological values.

6.9.4 RECOMMENDATIONS

The ADDA prepared by Biosis makes the following recommendations:

Recommendation 1: No further archaeological assessment is required

No further archaeological work is required in the study area due to the entire study area assessed as having low archaeological potential.

Recommendation 2: Discovery of Unanticipated Aboriginal Objects or Aboriginal Ancestral Remains

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the OEH. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist would provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

- 1. Immediately cease all work at that location and not further move or disturb the remains.*
- 2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.*
- 3. Not recommence work at that location unless authorised in writing by OEH.*

By reference to the above recommendations, it is considered that the project may proceed.

6.10 NON-ABORIGINAL HERITAGE

A search of the NSW Planning Portal (Heritage), inclusive of items listed under the Campbelltown LEP, the NSW Office of Environment and Heritage State Heritage Register and Department of the Environment Australian Heritage Database did not identify any heritage items at or near the site.

As evident, the closest items to the site are located approximately 500 metres to the north and 500 metres to the south of the project site.

Given the identified and established historic modifications to the site for drainage purposes, it is not anticipated that any sites of previously undiscovered non-Aboriginal heritage would be revealed through the carrying out of the project and as such, impacts would not be anticipated.

6.11 HAZARDS

6.11.1 DANGEROUS GOODS STORAGE

The purpose of the CRC is to temporarily store household goods for future recycling or reuse that are deemed dangerous or hazardous. Goods stored on site include:

- Batteries (lithium ion, lead acid, other)
- Fluorescent tubes and light fittings,
- Fire extinguishers
- Oil (heating, motor and cooking), and
- Gas canisters (Propane and LPG)

Goods would be stored in accordance with the *National Standard: Storage and Handling of Workplace Dangerous Goods*.

By reference to the information provided in **Section 6.11.4**, via management and regular collection, it is understood that transportation volumes of these goods would remain under the threshold that triggers a preliminary hazard analysis under *State Environmental Planning Policy No. 33 – Hazardous and Offensive Development*.

Small quantities of unintended by-catch waste is expected to be received at the CRC and would be stored on site until appropriate collection is arranged. Quantities would be managed through collection to ensure only small quantities are retained on site for any prolonged period.

Hazards associated with the site are considered minor and manageable.

6.11.2 BUSHFIRE

The site is not mapped as being located within a bush fire prone area. The land on the western extent of the Hume Motorway is mapped, however, the motorway provides a suitable fire break.

6.11.3 FLOODING

An analysis of flooding impacts has been provided for this EIS by CCC Infrastructure Section, provided in this section.

*As shown in the flood map (1% AEP) in **Figure 9** below; there are detention basins to the north and south of Hephher Road. There is a major culvert system under the Hephher Road connecting the two basins and the road is flooded in the 1% AEP flood event. The proposed CRC facility is to be located outside the extent of 1% AEP flood (refer **Figure 10**), however the property is a Flood Control Lot with respect to flooding from a 1% Annual Exceedance Probability (AEP) flood.*

A Flood Control Lot is defined in the State Environment Planning Policy (Exempt and Complying Development Codes) 2008 – REG 1.5 as “a lot to which flood related development controls apply in respect of development for the purposes of industrial buildings, commercial premises, dwelling houses, dual occupancies, multi-dwelling housing or residential flat buildings (other than development for the purposes of group homes or seniors housing)”.

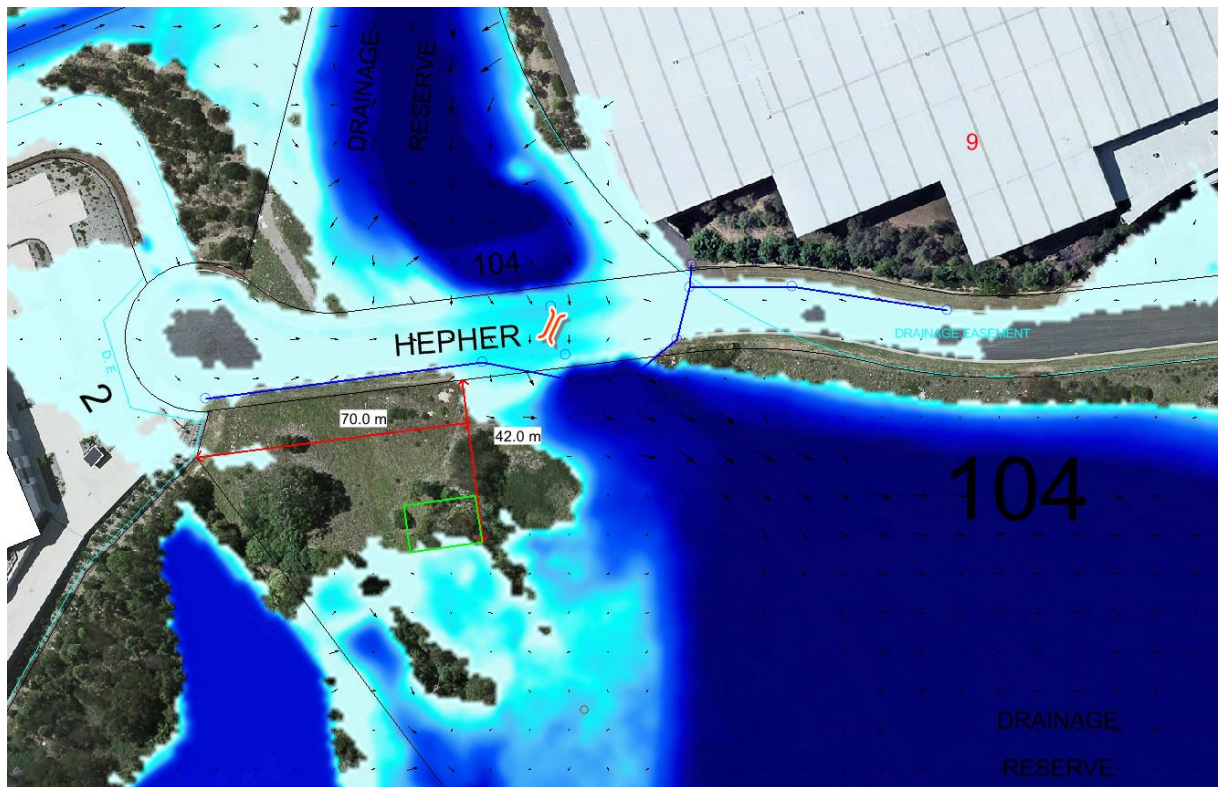


Figure 9: Flood Map (CCC)

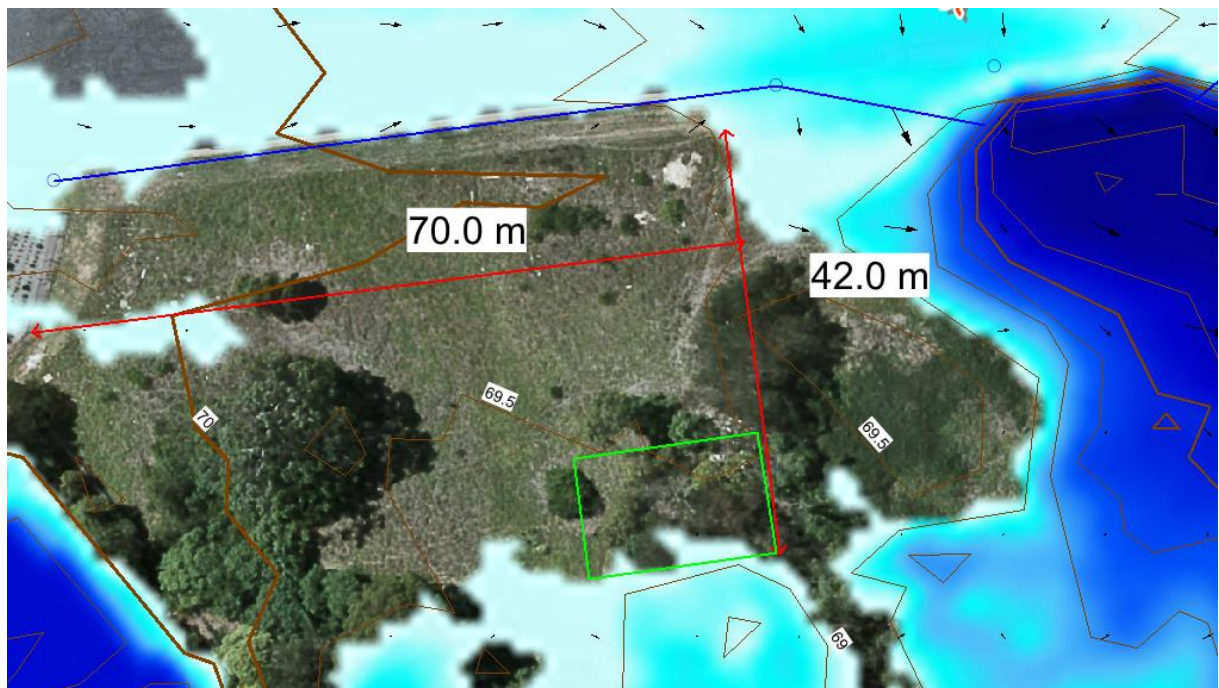


Figure 10: Proposed siting of the CRC building in the context of flood

*The minimum floor level control for the CRC facility at the location shown above due to 1% Annual Exceedance Probability (AEP) flood shall be **RL 69.85 m AHD** based on Council's flood model*

The floor level of the building must also comply with the requirements set out in Clause 3.1.2.3 of Volume 2 of the Building Code of Australia and Section 4.5 of the Engineering Design Guide for Development.

It is proposed to provide site drainage in accordance with the Campbelltown Engineering Design Guide.

6.11.4 FIRE

The site is well separated from adjacent land uses by virtue of the

6.12 WASTE MANAGEMENT

Waste received at the facility would consist of household quantities of waste. The types of waste to be received includes wastes that are classified as hazardous, albeit in small quantities and low volumes. As hazardous wastes are to be temporarily stored at the premises, the requirements of the NSW Workplace Health and Safety Regulation 2011 are applicable. The Regulation provides for the safe use, storage and handling of chemicals classified under the UN Globally Harmonised System of Classification and Labelling of Chemicals (GHS).

Some requirements of the Regulations are only relevant where quantities stored exceed specific levels. These placard and manifest quantities for materials stored at CRCs are outlined in **Figure 11**. The classifications of these materials under the Australian Dangerous Goods Code (ADGC) and the GHS are also shown.

Table A1.1(a): Placard and manifest quantities for materials stored at CRCs

Material	ADG Class	GHS classification	Placard quantity	Manifest quantity
Batteries – household				
Lithium ion	9 Miscellaneous	None	No limit	No limit
Other types	None	None	No limit	No limit
Batteries – lead acid ¹	8 Corrosive: packing group II	Skin corrosion: category 1A	250kg or L	2,500kg or L
Fire extinguishers	2.2 Compressed gases	Compressed gas	1,000L	10,000L
Fluorescent tubes and light fittings ²	6.1 Toxic: packing group II	Acute toxicity – Category 1	250kg	2,500kg
Gas cylinders LPG or propane	2.1 Flammable gas	Flammable gases category 1	200L	5,000L
Oil – heating	3 Flammable liquid: packing group III	Flammable liquid: category 3	1,000	10,000L
Oil – motor and cooking	None	None	No limit	No limit
Paint – water based	None	None	No limit	No limit
Paint – oil based	3 Flammable liquid:	Flammable liquid:		
	Packing group II	Category 2	250L	2,500L
	Packing group III	Category 3	1,000	10,000L

¹ Although fluorescent tubes and fittings packed for retail distribution are not considered dangerous goods, good practice for waste lamps is to consider them as mercury containing waste, or Mercury Compounds N.O.S. which is classified as 6.1 Toxic under the ADG Code.

Figure 11: Placard and manifest quantities for materials stored at CRCs

Source: NSW Community Recycling Centres – Operations and management handbook – 2nd edition (Appendix 1.1)

The EPA recommend that CRCs are managed to ensure that materials are stored at quantities below the manifest quantity. From the rollout of similar programs in Victoria and Western Australia, it is possible to estimate the quantities of particular materials stored at a facility, based on a population of 150,000 people. The quantities are provided in **Figure 12**.

Table A1.1(b): Typical quantities of materials anticipated at a CRC serving 50,000 people and calculated collection frequency

Material	Quantity tonnes per year	Quantity kilograms per week	Collection frequency weeks
Batteries – household	0.07	2	NA
Batteries – lead	9	150	17
Fire extinguishers	0.14	3	> 52
Fluorescent tubes and light fittings	0.71	15	> 52
Gas cylinders – LPG and propane	3.6	100	> 52
Oil	8.6	200	NA
Paint – water based	30.0	600	NA
Paint – oil based	19.1	400	7
Total	71.22	1,470	

Figure 12: Typical quantities of materials anticipated at a CRC serving 50,000 people and calculated collection frequency

Source: NSW Community Recycling Centres – Operations and management handbook – 2nd edition (Appendix 1.1)

The proposed Campbelltown CRC is proposed to serve a population of 150,000 people and therefore the estimates provided in the table are considered highly relevant to the proposed application. Based on the population serviced, total hazardous wastes would be anticipated to be approximately 213 tonnes per year.

Residual wastes not representing problem waste would also be received at the facility (estimated at around 4,770 tonnes per year) and these would be managed by Council for transfer to an appropriate waste disposal facility.

The proposed development is considered to be consistent with the aims and objectives of the *NSW Waste Avoidance and Resource Recovery Strategy 2014-21* as discussed in further detail in **Section 3.7**. The proposal directly supports the aims and targets of the WARR by developing a facility specifically designed to target problem wastes and divert these from landfill. This also assist to reduce illegal dumping by providing a legal disposal method of problem wastes.

6.13 SOCIO-ECONOMIC

The proposed development has the potentials to result in a range of real and perceived socio-economic impacts, both positive and negative, as follows:

- Provide a recycling centre to allow proper disposal of problem household waste items, thereby diverting these from landfill or from being illegally dumped;
- Potential visual impacts associated with the operation;

The above matters are considered in the following sections and provide consideration of the issues together with a range of recommended controls to mitigate any perceived residual impacts.

6.13.1 STRATEGIC FRAMEWORK

The above listed potential impacts are relevant in the context of the existing strategic framework applying to the locality. The strategic framework is implemented by Campbelltown Local Planning Strategy (CLPS) and includes the Campbelltown 2025 Strategic Plan (CSP) and Campbelltown Community Strategic Plan: 2012 – 2022 (CCSP).

These documents are discussed in detail in **Section 3.7**.

By reference to that assessment, the proposed development is considered to be consistent with the overarching objectives of these documents and is therefore generally consistent with the overarching community strategic framework.

6.13.2 DEMOGRAPHY

The project is proposed with the Campbelltown City Council area. By reference to the 2016 census prepared by the Australian Bureau of Statistics, the following key statistics are noted about the Campbelltown LGA:

- Population – 157,006
- Median age – 34
- Children aged 0 - 14 years made up 21.6% of the population and people aged 65 years and over made up 11.9% of the population.
- 17.5% reported having completed Year 12 as their highest level of educational attainment, 16.8% had completed a Certificate III or IV and 8.5% had completed an Advanced Diploma or Diploma.
- The most common ancestries in Campbelltown (Local Government Areas) were Australian 21.6%, English 20.3%, Irish 5.8%, Scottish 4.7% and Indian 4.2%.
- There were 74,713 people who reported being in the labour force in the week before Census night in Campbelltown (Local Government Areas). Of these 61.3% were employed full time, 26.1% were employed part-time and 7.9% were unemployed. Unemployment in Campbelltown is above the national average of 6.9%.
- Most common occupations were Managers 20.9%, Professionals 16.5%, Technicians and Trades Workers 14.4%, Clerical and Administrative Workers 11.8%, and Labourers 11.6%
- The most common occupations in Campbelltown (Local Government Areas) included Clerical and Administrative Workers 16.1%, Professionals 15.3%, Technicians and Trades Workers 13.9%, Machinery Operators and Drivers 11.9%, and Community and Personal Service Workers 11.3%.
- Of the employed people in Campbelltown (Local Government Areas), 3.4% worked in Hospitals (except Psychiatric Hospitals). Other major industries of employment included Supermarket and

Grocery Stores 3.0%, Aged Care Residential Services 2.4%, Road Freight Transport 2.2% and Takeaway Food Services 2.2%.

- The median weekly income was \$632 compared to \$662 across Australia

6.13.3 SOCIO-ECONOMIC IMPACTS (POSITIVE AND NEGATIVE)

Positive socio-economic impacts of the project include:

- Provide a recycling centre to allow proper disposal of problem household items;
- Provide local employment having a positive impact on communities in the locality;

Negative socio-economic impacts of the project could include:

- Potential visual impacts associated with the operation;

The negative impact is minor and given the location and surrounding industrial land uses is considered negligible when compared to the positive impacts associated with the project.

6.13.4 MITIGATION MEASURES

The following management and mitigation measures are proposed to off-set any residual perceived socio-economic impacts associated with the project:

- Establish, operate and maintain a clear and easily used method for engaging with the general public;
- Maintaining a reporting system that transparently reflects the activities at the site, available for viewing by the general public and regulatory agencies;
- Seek to employ local people rather than those from further afield;
- Seek to use local companies rather than larger regional or interstate firms;
- Ensure landscaping is upkept to minimise the visual impacts of the site;

On balance, positive socio-economic impacts are considered to outweigh the negative, and the measures proposed would ensure the project operates in a responsible and sustainable manner.

6.14 CUMULATIVE IMPACT

Cumulative impacts associated with the project are identified to potentially occur in the following scenarios:

- cumulative noise impacts associated with traffic generated from the project and existing traffic numbers on Hephher Road;
- cumulative air quality impacts in the context of the surrounding traffic environment and surrounding industrial land uses;

Cumulative impacts in relation to the above scenarios could include impacts such as:

- individual impacts so close in time that the effects of one are not dissipated before the next (time crowded effects); or
- individual impacts so close in space that the effects overlap (space crowded effects); or
- repetitive, often minor impacts eroding environmental conditions (nibbling effects); or
- different types of disturbances interacting to produce an effect which is greater or different than the sum of the separate effects (synergistic effects).

By virtue of the assessments contained within this EIS, it is demonstrated that the overall impacts of the project are unlikely to lead to the above listed cumulative impacts.

MITIGATION MEASURES

7.1 SUMMARY OF SAFEGUARDS AND MANAGEMENT MEASURES

Table 7.1 provides a summary of proposed controls recommended through this EIS.

Table 7.1 – Summary of Safeguards and Management Measures for the Site

Section	Impact	Environmental Safeguards
6.1	Water	- The CRC would be operated in a way that would not impact water flows. - Methods of containing any spilt contaminants would be employed. - Design of the receiving area to minimise contamination of stormwater runoff and to ensure areas for waste collection and storage are separated from surface flows, - Minimal cut and fill to minimise alterations to flow paths and flood regimes.
6.2	Land use	No specific mitigation proposed or required
6.3	Soils and geology	- Topsoils would be stripped separately, stockpiled and retained for landscaping purposes. - Am ESCP would be developed consistent with the requirements of the Blue Book, to be implemented prior to works commencing and maintained for the life of the project in accordance with Managing Urban Stormwater: Soils and Construction (Blue Book) (Landcom, 2004).
6.4	Visual impact	- Minimise vegetation clearing on the site to ensure the majority of vegetation is retained; and - Implement the proposed landscape plan and maintain this in perpetuity.
6.5	Noise and vibration	- All plant and equipment would be operated and maintained in accordance with the manufacturer's specifications and be fitted with appropriate noise attenuation devices. - Standard construction hours (7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday and at no times on Public holidays) would be implemented; - Operating hours would be daytime hours only, as outlined at Section 2.8. - Any noise complaint would be investigated, recorded and possible mitigation measures investigated if required.

Table 7.1 – Summary of Safeguards and Management Measures for the Site

Section	Impact	Environmental Safeguards
6.6	Air quality	- Limiting the area of soil and vegetation disturbance; - Utilising dust suppression on access tracks and exposed soil; - Covering of trucks transporting soils and construction materials; - Minimising vehicle movement and speed; - Standard construction hours (7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday and at no times on Public holidays) would be implemented; - Avoiding dust generating activities during windy and dry conditions; and - Maintaining all equipment in good working condition such that the construction contractor and site manager ensure the prevention of the release of smoke by construction equipment, which would be in contravention of Section 124 of the Protection of the Environment Operations Act 1997 and Clause 16 of the Protection of the Environment Operations (Clean Air) Regulation 2010.
6.7	Traffic	- Truckloads of material transported off-site would be covered and recorded; - Posted internal speed limits would be adhered to, to maximise safety and minimise noise; - A Vehicle Management Plan would be implemented to ensure all delivery/collection vehicle operators would be briefed in standard operating requirements; and - A driver code of conduct would be included within the vehicle management plan
6.8	Biodiversity	- To the fullest extent practicable, minimise disturbance to any native vegetation surrounding the study area. - Where possible, retained trees should be protected in accordance with Australian Standard AS4970– 2009 Protection of Trees on Development Sites, during construction, operation and decommissioning of the site compound. - Appropriate erosion and sediment control measures should be installed surrounding the impact site to avoid sedimentation of receiving water bodies or other indirect impacts to surrounding biodiversity values. - Temporary frog exclusion fencing should be erected to the north of Hephher Road to divert any dispersing frogs around the construction site and towards Biriwiri creek. - In the unlikely event that unexpected threatened species are identified during the project, works should cease and an ecologist should be contacted immediately. - Soil transportation should be minimised within, into or out of the study area to reduce the spread of weeds. - Six priority weeds were identified within the study area (Table 4). Appropriate measures should be implemented to minimise the spread of these species.
6.9	Aboriginal Heritage	If suspected aboriginal heritage items are uncovered during construction or operation: 1. Immediately cease all work at that location and not further move or disturb the remains. 2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.

Table 7.1 – Summary of Safeguards and Management Measures for the Site

Section	Impact	Environmental Safeguards
		3. Not recommence work at that location unless authorised in writing by OEH.
6.10	Non-Aboriginal Heritage	No mitigation proposed or required
6.11	Hazards	- The minimum floor level control for the CRC facility at the location shown above due to 1% Annual Exceedance Probability (AEP) flood shall be RL 69.85 m AHD based on Council's flood model - The floor level of the building must also comply with the requirements set out in Clause 3.1.2.3 of Volume 2 of the Building Code of Australia and Section 4.5 of the Engineering Design Guide for Development. - Site drainage to be provided in accordance with the Campbelltown Engineering Design Guide.
6.12	Waste management	- A construction waste management plan is provided - An OEMP would be developed and implemented prior to operations commencing
6.13	Socio-economic	- Establish, operate and maintain a clear and easily used method for engaging with the general public ; - Maintain a complaints line providing a direct avenue for complaints to be registered and addressed directly with the applicant rather than Council needing to get involved; - Maintaining a reporting system that transparently reflects the activities at the site, available for viewing by the general public and regulatory agencies; - Seek to employ local people rather than those from further afield; - Seek to use local companies rather than larger regional or interstate firms; - Ensure landscaping is upkept to minimise the visual impacts of the site;
6.14	Cumulative impacts	No mitigation proposed or required

7.2 OPERATIONAL ENVIRONMENTAL MANAGEMENT PLAN

Potential environmental impacts would be avoided, minimised and managed through adoption of mitigation measures incorporated into all phases of the project, including:

- Detailed design;
- Construction; and
- Operations.

The strategy for ensuring these commitments are acted upon would be to prepare and submit for Council approval an OEMP setting out proposed operational methods for the site to ensure it is operated in accordance with best practise.

JUSTIFICATION AND CONCLUSION

8.1 NEED FOR THE PROJECT

The CRC provides an environmentally safe option for disposal of problem household hazardous wastes.

The centre provides this service on a community level to ensure problem waste does not enter the environment and cause harm, instead allowing problem waste to be recycled, reused or appropriately disposed of as a last resort.

The closest existing CRC is currently 20 kms away in Liverpool. The proposed CRC would allow for convenient disposal of recyclable problem waste for the southwest region of Sydney and would serve a project residential population of approximately 150,000 people.

8.2 JUSTIFICATION FOR UNDERTAKING THE PROPOSAL

In assessing whether the proposed community recycling centre is justified, consideration has been given to both biophysical and socio-economic factors, including the potential for residual effects on the environment and the potential benefits of the project.

8.2.1 BIOPHYSICAL

The project has been conceived to:

- Minimise the footprint of physical disturbance (such as vegetation clearance or soil and water disturbance) through the refinement of the proposed footprint;
- Minimises impacts to sensitive landforms and the local water environment through provision of high quality management measures and processes;
- Avoids impacts to sites or items of Aboriginal heritage significance;
- Minimise the clearing of native vegetation, including minor amendments to the development footprint to ensure tree loss is minimised;
- Minimise the likelihood of pollution to the soil and water environment through adoption of industry standard controls;

Despite the above, there remains some potential for residual impacts to the environment, despite the proposed safeguards and mitigations measures outlined throughout this report, and these are summarised in the following sections.

8.2.1.1 Ecology

The proposal involves the clearance of vegetation listed as forming two separate vegetation communities, being the Swamp Oak Floodplain Forest and Freshwater Wetlands.

Biosis was engaged to prepare an ecological assessment and as a component of this, prepared tests of significance for potentially affected species. These assessments determined that the development would not result in a significant impact affected species.

Subject to the implementation of provided recommendations, the development would not result in a significant impact.

8.2.1.2 Aboriginal heritage

The site has been assessed by an archaeologist who has determined that the site does not contain any sites or artefacts of Aboriginal heritage significance. As such, further approvals in relation to Aboriginal Heritage matters are not required.

Subject to implementation of an unexpected finds protocol, residual impacts to Aboriginal heritage are not anticipated.

8.2.1.3 Traffic and access

Impacts associated with traffic and access are considered to be low risk given the well-connected location in the context of the local transport network. The low daily volumes of traffic associated with land uses ensure that impacts associated with traffic generation are acceptable.

The assessment provided within the EIS demonstrates that predicted volumes would be well within the capacity of the road network and would not lead to any reduction in the surrounding level of service.

8.2.1.4 Noise & Vibration

Operational noise impacts would be minor and would primarily be associated with the arrival and departure of traffic to the facility, including the weekly and monthly collection vehicle. Impacts associated with these vehicle would be confined to specific operating hours and subject to the implementation of recommended controls and mitigations. The following is noted in this respect:

- The location of the site ensures excellent separation to potentially sensitive residential receivers, with the closest receivers being well removed from the subject site;
- Standard controls are imposed to ensure any residual impacts are appropriately managed.

8.2.1.5 Air quality

Construction of the CRC would cause short term impacts to air quality in the vicinity of the site through emissions associated with machinery, vehicle and plant movements. Operational impacts would be limited to emissions from on-site machinery (forklift and delivery/collection trucks) and light vehicles (non-commercial) accessing the site.

Subject to the implementation of standard mitigation measures, significant impacts to air quality are not predicted.

8.2.1.6 Flooding

An assessment of potential flooding impacts confirms that the proposed development is outside of the area of impact of the 1% AEP flood event. Subject to implementation of the recommendations of the flood assessment, namely the development of the CRC facility with a minimum floor level of RL 69.85 m AHD and development of the building in accordance with the requirements of Clause 3.1.2.3 of Volume 2 of the Building Code of Australia and Section 4.5 of the Engineering Design Guide for Development, the assessment finds that the development would not result in a significant impact.

8.2.1.7 Surface and ground water

The site would be designed to ensure stormwater generated on site is managed and discharged in accordance with Council's adopted engineering standards. By reference to the attached concept stormwater plans (refer **Civil Drawings Sheets 1 and 2**), the development is acceptable in this regard.

8.2.1.8 Hazards

Hazardous materials storage would be carried out in accordance with the requirements of the applicable standards and criteria. Site management of quantities, and regular collection of hazardous materials, are the most effective methods of minimising risk.

8.2.2 SOCIO-ECONOMIC BENEFITS

The project has been conceived to:

- Provide a well-managed and well connected project site that provides a necessary local waste management resource;
- Minimises impacts to the environment through improving opportunities for managing problem waste and diverting this from landfill.

The proposed development of the subject site is justified as it provides a local waste management resource for the immediate locality that provides a method of managing problem household wastes.

In summary the proposal is considered to be justified on the basis that:

- Is consistent with the zoning of the area and represents an approved use;
- Is designed and sited to minimise impacts to the local receiving environment;
- Is well separated from sensitive residential receivers to ensure minimal impacts;
- The site is suitable for the proposal; and
- Is consistent with the principles of ecologically sustainable development.

8.2.3 PUBLIC BENEFIT

The public interest may be determined by consideration of relevant national, state and local government goals, as well as community priorities, which are expressed through a range of documentation. Relevant strategic documents are considered in **Section 3.7**.

The proposed development is considered to be in the public interest on the basis that it:

- Provides an appropriate method of dealing problem household wastes in a suitable and accessible location; and
- Has been designed with appropriate to the consideration to social, environmental and sustainability interests of the community.

8.3 CONSEQUENCES OF NOT PROCEEDING

The logical consequences of not proceeding in its current form would be that the services provided by the development would not be provided in the local area and local users would need to travel to other areas to access these services. Identified consequences include:

- Benefits to the environment would not be realised, as a lack of available waste management services may encourage people to dispose of problem wastes at non-approved locations;
- Minor impacts to the local biophysical environment would not occur.

By reference to the above, it is considered that the anticipated positive impacts of the development outweigh any minor residual impacts identified throughout this EIS.

8.4 ALTERNATIVES

A range of alternatives were considered in the conception of the project including:

1. Not proceeding;
2. Proceeding with the project in another location;
3. Proceeding with the project at the proposed location.

These alternatives were considered however it was considered that option 3 was the most acceptable outcome. Opportunities for developing the project in another location were dismissed on the basis that the subject site is well located to serve the local area, has excellent connections to the nearby road network, is well separated from nearby receivers and can be developed with minimal impacts to the local environment.

8.5 CONCLUSION

This EIS has been prepared in accordance with the relevant provisions of Part 4 of the EP&A Act and Schedule 2 of the EP&A Regs. The development represents designated development by reference to clause 32, Part 1, Schedule 3 of the EP&A Regs and the EIS is provided as required to support the development application.

This EIS has been prepared in accordance with the SEARs issued on the 19 September 2018.

Development of the proposed waste management facility provides a necessary local resource that is in demand in the local area and in a location that is both well connected to transport and well separated from sensitive receivers.

An assessment of potential environmental impacts has identified a number of minor adverse impacts to the environment that would require the implementation of appropriate controls to ensure compliance in accordance with relevant legislation, standards and guidelines. Measures are proposed during both construction and operation to ensure impacts are appropriately managed. These measures would ensure compliance with relevant legislation and any conditions of approval.

References

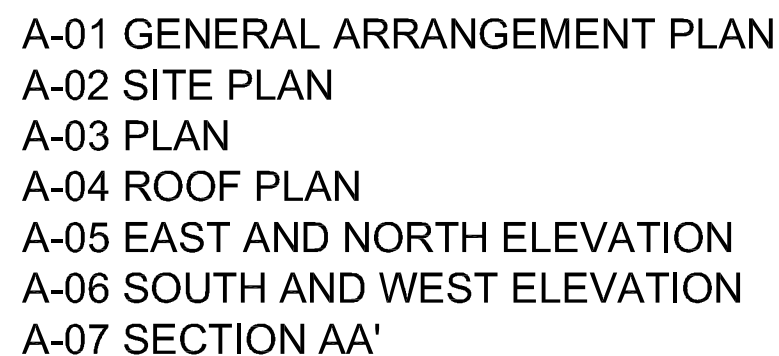
Biosis. 2019. <i>Aboriginal Heritage Due Diligence Assessment Report</i>
Department of Urban Affairs and Planning (DUAP). nd, <i>Guide to Section 79C</i> , NSW Department of Urban Affairs and Planning, Sydney.
Department of Urban Affairs and Planning (DUAP). 2001, <i>Crime Prevention and the Assessment of Development Applications: Guidelines under section 79C of the Environmental Planning and Assessment Act 1979</i> , DUAP, Sydney.
Biosis. 2019, <i>Flora and Fauna Assessment for new Community Recycling Centre at Hephher Road, Campbelltown NSW</i>
Commonwealth of Australia. (2016). <i>Leading Practice Sustainable Development Program for the Mining Industry guidelines</i> . Retrieved from https://industry.gov.au/resource/Programs/LPSD/Pages/LPSDhandbooks.aspx
CSIRO. (n.d). <i>Australian Soil Resource Information System</i> [Online Map]. Retrieved from http://www.asris.csiro.au/mapping/viewer.htm
Department of Environment and Heritage. (1992). <i>National Strategy for Ecological Sustainable Development</i> . Retrieved from http://www.environment.gov.au/about-us/esd/publications/national-esd-strategy
Department of Planning (DoP). (2011). <i>Hazardous and Offensive Development Application Guidelines - Applying SEPP 33</i> . Retrieved from http://www.planning.nsw.gov.au/~media/Files/DPE/Guidelines/hazardous-and-offensive-development-application-guidelines-applying-sepp-33-2011-01.ashx
NSW Office of Environment & Heritage (OEH). (n.d.). <i>Land and Soil Capability Mapping for NSW</i> [GIS Data] Available via OEH Data Portal at http://data.environment.nsw.gov.au/
Landcom. (2004). <i>Managing urban stormwater: soils and construction</i> . Retrieved from http://www.environment.nsw.gov.au/resources/water/BlueBookVol1.pdf
National Transport Commission. (2017). <i>Australian Code for the Transportation of Dangerous Goods by Road and Rail</i> . Retrieved from http://www.ntc.gov.au/Media/Reports/(91D53582-C568-8B4A-6C7C-E746D36C65FD).pdf
NSW Department of Planning. (2011). <i>Hazardous and Offensive Development Application Guidelines - Applying SEPP 33</i> . Retrieved from http://www.planning.nsw.gov.au/~media/Files/DPE/Guidelines/hazardous-and-offensive-development-application-guidelines-applying-sepp-33-2011-01.ashx
NSW Department of Planning & Environment (DPE). (2017). <i>Central West and Orana Regional Plan</i> . Retrieved from http://www.planning.nsw.gov.au/Plans-for-your-area/Regional-Plans/~media/9C3DD0CC6D1F4E27A7A6B76AB47092C5.ashx
NSW Government. (n.d.). <i>Sharing and Enabling Environment Data (SEED)</i> [Online Map]. Retrieved from https://www.seed.nsw.gov.au/
NSW Office of Environment and Heritage (OEH). 2012. <i>The land and soil capability assessment scheme: a general rural land evaluation system for New South Wales</i> . Retrieved from http://www.environment.nsw.gov.au/resources/soils/20120394lsc2s.pdf
NSW Office of Water (NOW). (n.d.) <i>All Groundwater Map</i> [Online Map]. Retrieved from http://allwaterdata.water.nsw.gov.au/water.stm
Rural Fire Service (RFS). (2006). <i>Planning for Bushfire Protection 2006 (PBFP)</i> . Retrieved from https://www.rfs.nsw.gov.au/_data/assets/pdf_file/0008/4400/Complete-Planning-for-Bush-Fire-Protection-2006.pdf
Safe Work Australia. (2017). <i>National Standard for the Storage and Handling of Workplace Dangerous Goods</i> . Retrieved from https://www.safeworkaustralia.gov.au/doc/national-standard-storage-and-handling-workplace-dangerous-goods-nohsc-1015-2001
Standards Australia. (2009). <i>Australian Standard 3959-2009 Construction of buildings in bushfire prone areas</i> . Retrieved from

http://www.ballarat.vic.gov.au/media/620247/as3959_2009.pdf

WorkCover NSW. (2005). *Storage and Handling of Dangerous Goods Code of Practise.* Retrieved from http://www.safework.nsw.gov.au/_data/assets/pdf_file/0005/50729/storage-handling-dangerous-goods-1354.pdf

Drawings

ARCHITECTURAL DESIGN FOR Hepher Road Community Recycling Centre



EAST ELEVATION

ISSUE FOR DA

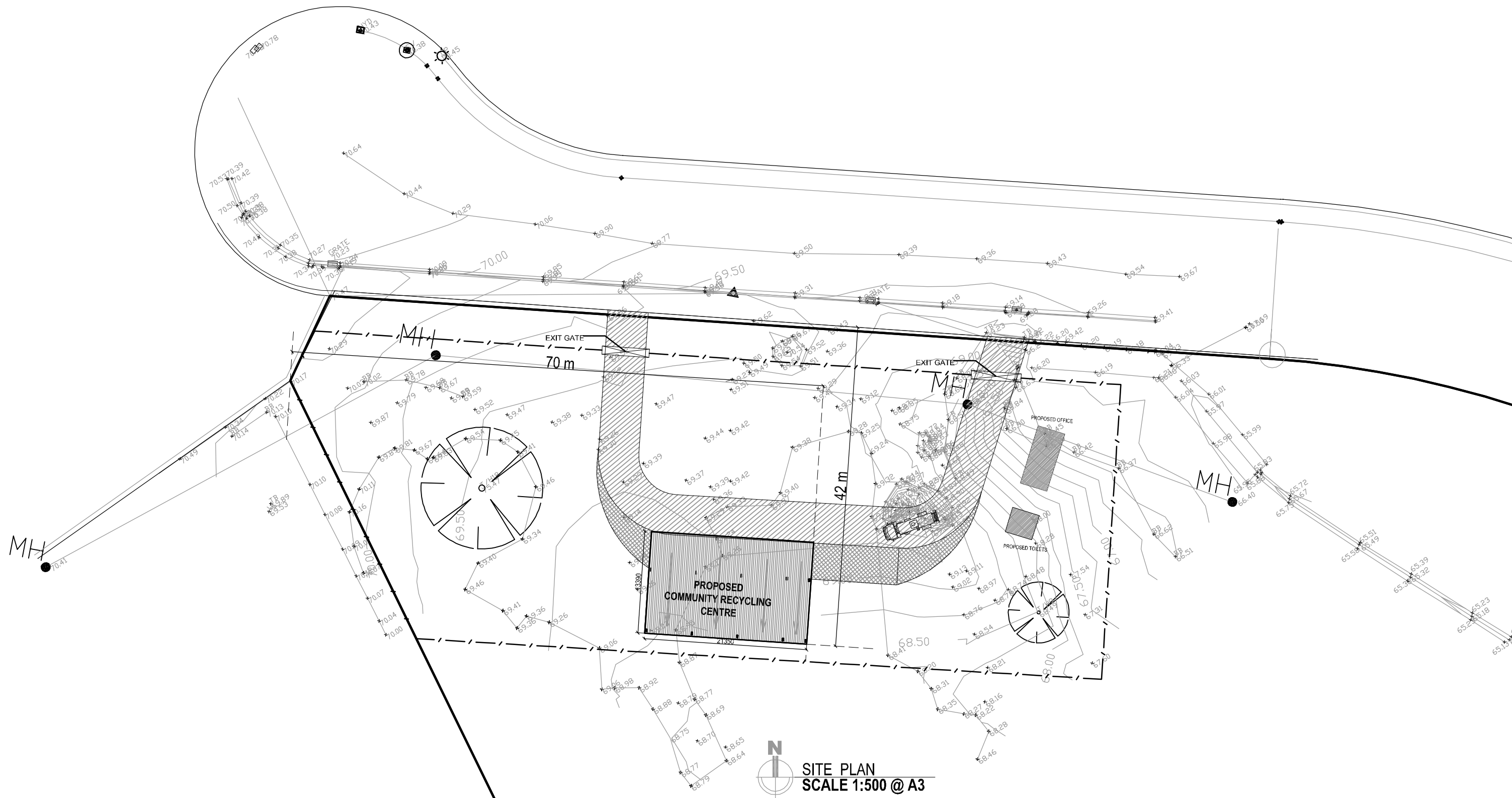
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	29.04.2019	DA ISSUE (Title Revised)	
	17.04.2019	DA ISSUE	
	15.04.2019	CONCEPT 02	
	11.04.2019	CONCEPT 01	



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ARCHITECT:
IFTEKHAR ABDULLAH
B. Arch., M. Urb. Des., (Sydney Uni.)
Architect (Reg.8626 NSW, 2410 ACT)



campbelltown
city council

Civic Centre Queen Street Campbelltown PO Box 57 Campbelltown NSW 2560
Telephone 02 4645 4003 Facsimile 02 4645 4111
Email council@campbelltown.nsw.gov.au Web www.campbelltown.nsw.gov.au
ABN 31 459 914 087

Approved
Director City Delivery:
K.Lynch

Signed
Date

Recommended
Executive Manager Infrastructure:
M.Wolczak

Signed
Date

Recommended
Co-ordinator Traffic & Roads:
A. Arora

Signed
Date

Checked: IA

Drawn: AR

Designed: IA

Surveyed:

Date: 17.04.2019

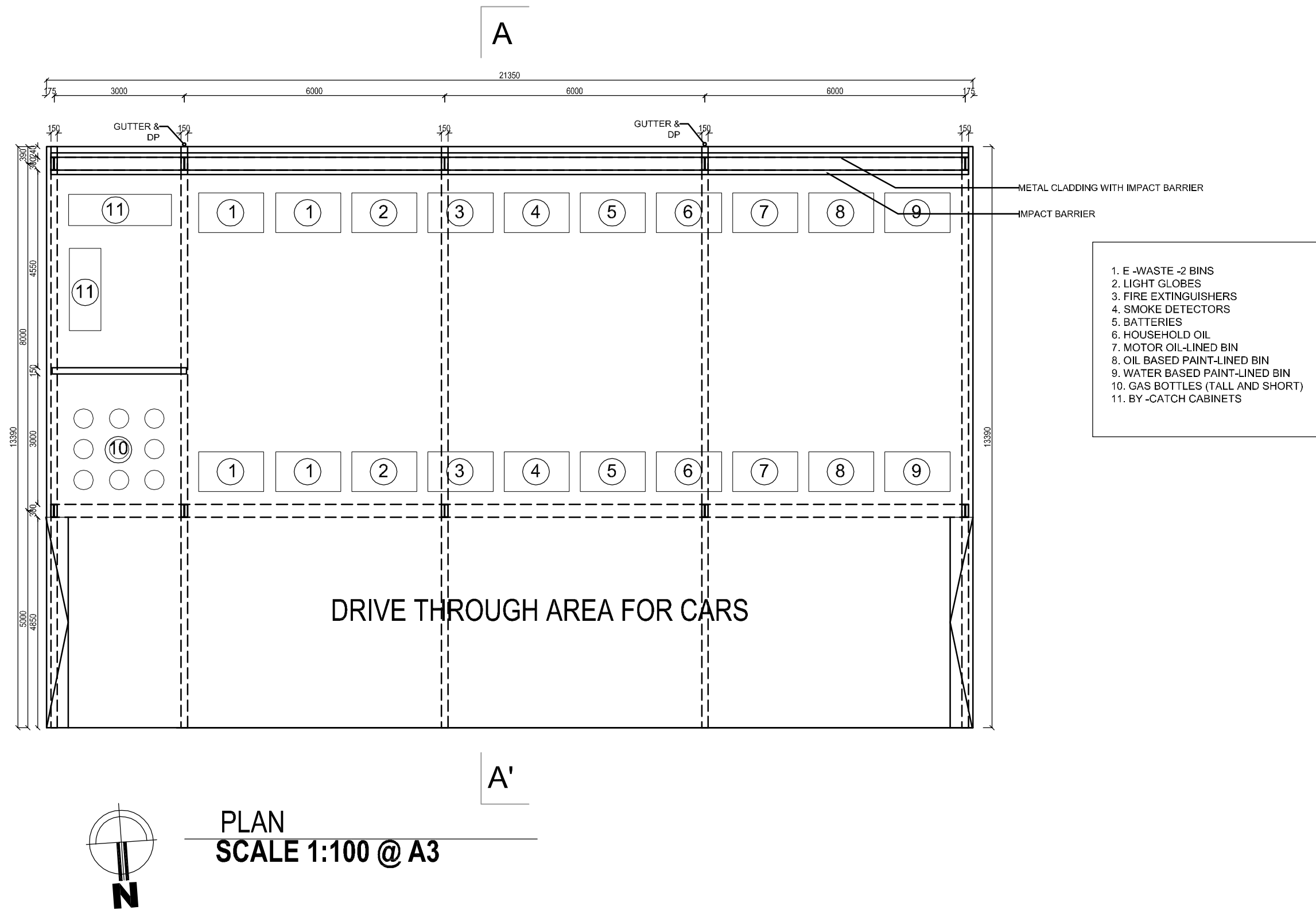
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Project:
**ARCHITECTURAL DESIGN FOR
Hepher Road Community
Recycling Centre**

SITE PLAN

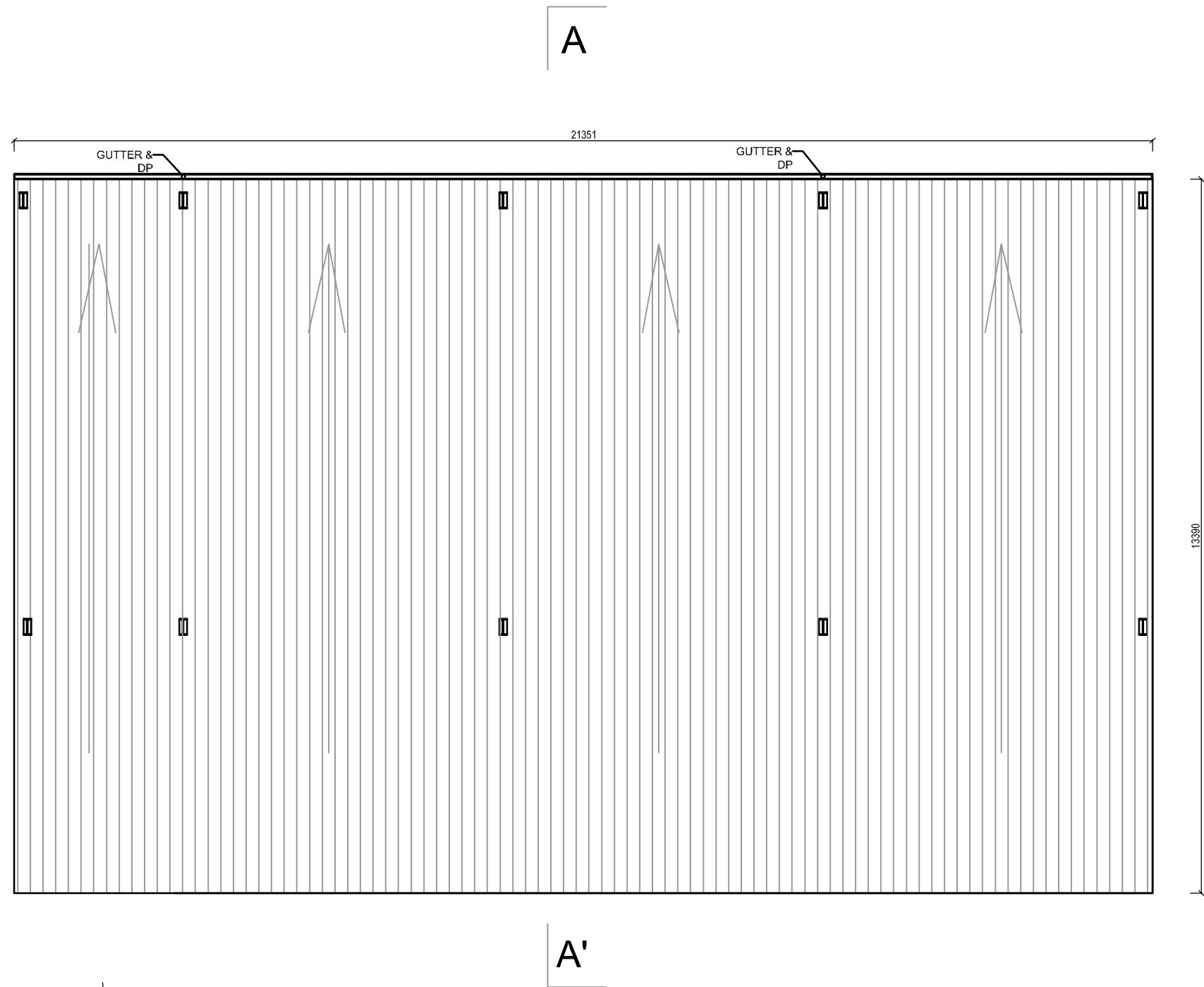
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Job no:



ISSUE FOR DA

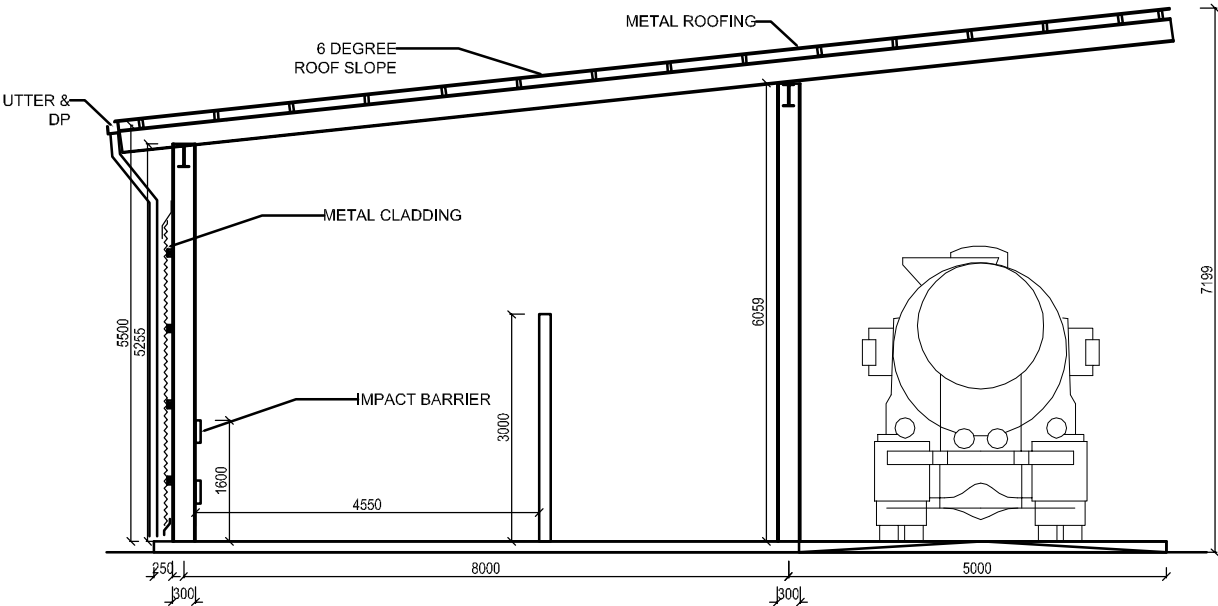
				ideas Architects • Urban Designers iftekhar+design associates 17 Warragamba Cr. Leumeah, NSW - 2560 Ph: 02 46257733, Mobile: 0404 891 326 e-mail: info@ideas-design.com.au www.ideas-design.com.au ARCHITECT: IFTEKHAR ABDULLAH B. Arch., M. Urb. Des. (Sydney Uni.) Architect (Reg.8626 NSW, 2410 ACT)	campbelltown city council Civic Centre Queen Street Campbelltown PO Box 57 Campbelltown NSW 2560 Telephone 02 4645 4000 Facsimile 02 4645 4111 Email council@campbelltown.nsw.gov.au Web www.campbelltown.nsw.gov.au ABN 31 459 914 087	Approved Director City Delivery: K.Lynch	Recommended Executive Manager Infrastructure: M.Wolczak	Recommended Co-ordinator Traffic & Roads: A. Arora	Checked: IA	Surveyed:	Project: ARCHITECTURAL DESIGN FOR Hepher Road Community Recycling Centre PLAN Sheet no: 03 of 07Job no:
	29.04.2019	DA ISSUE (Title Revised)									
	17.04.2019	DA ISSUE									
	15.04.2019	CONCEPT 02									
	11.04.2019	CONCEPT 01									
Revision	Date	Description	Approved			Signed Date	Signed Date	Signed Date	Designed: IA	Datum:	



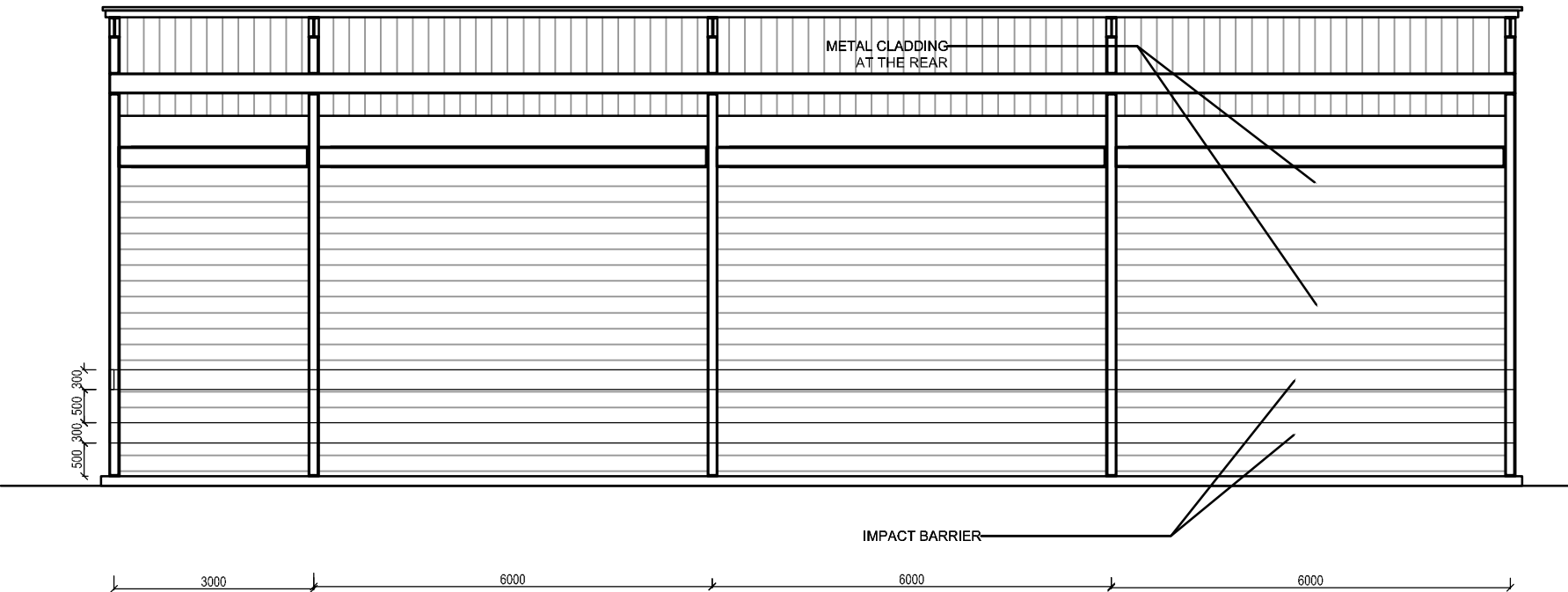
ROOF PLAN
SCALE 1:100 @ A3

ISSUE FOR DA

				ideas Architects • Urban Designers iftekhart+design associates 17 Warragamba Cr, Leumeah, NSW - 2560 Ph: 02 46257733, Mobile: 0404 891 326 e-mail: info@ideas-design.com.au www.ideas-design.com.au ARCHITECT: IFTEKHAR ABDULLAH B. Arch., M. Urb. Des. (Sydney Uni.) Architect (Reg.8626 NSW, 2410 ACT)	campbelltown city council Civic Centre Queen Street Campbelltown PO Box 57 Campbelltown NSW 2560 Telephone 02 4645 4000 Facsimile 02 4645 4111 Email council@campbelltown.nsw.gov.au Web www.campbelltown.nsw.gov.au ABN 31 459 914 087	Approved Director City Delivery: K.Lynch Signed Date	Recommended Executive Manager Infrastructure: M.Wolczak Signed Date	Recommended Co-ordinator Traffic & Roads: A. Arora Signed Date	Checked: IA Drawn: AR Designed: IA Surveyed: Date: 17.04.2019 Datum:	Project: ARCHITECTURAL DESIGN FOR Hepher Road Community Recycling Centre ROOF PLAN Sheet no: 04 of 07 Job no:	
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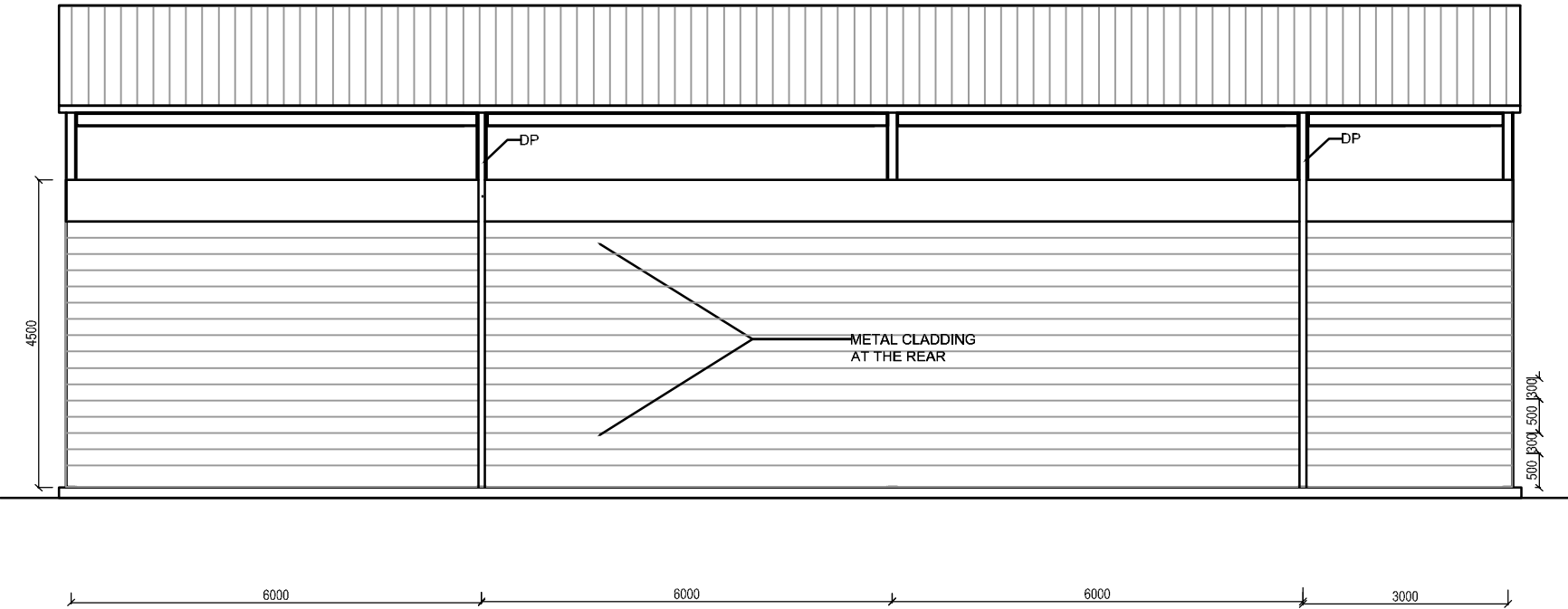
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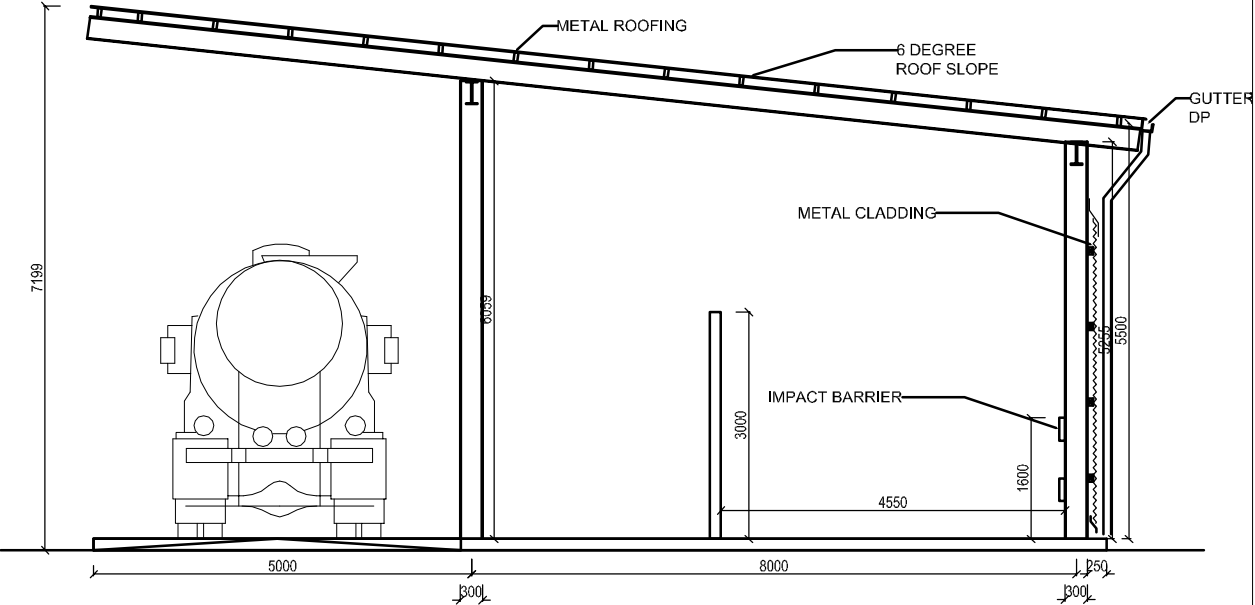
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29.04.2019	DA ISSUE (Title Revised)											NORTH AND EAST ELEVATIONS
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15.04.2019	CONCEPT 02											
11.04.2019	CONCEPT 01											
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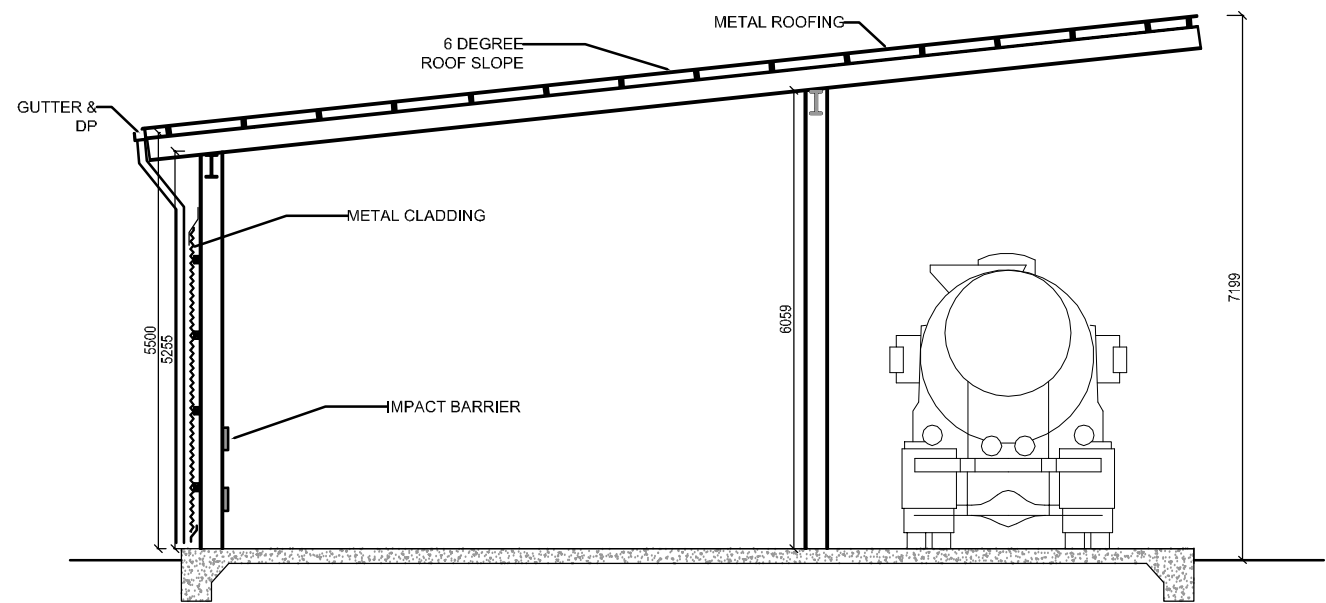
SOUTH ELEVATION
SCALE 1:100 @ A3



WEST ELEVATION
SCALE 1:100 @ A3

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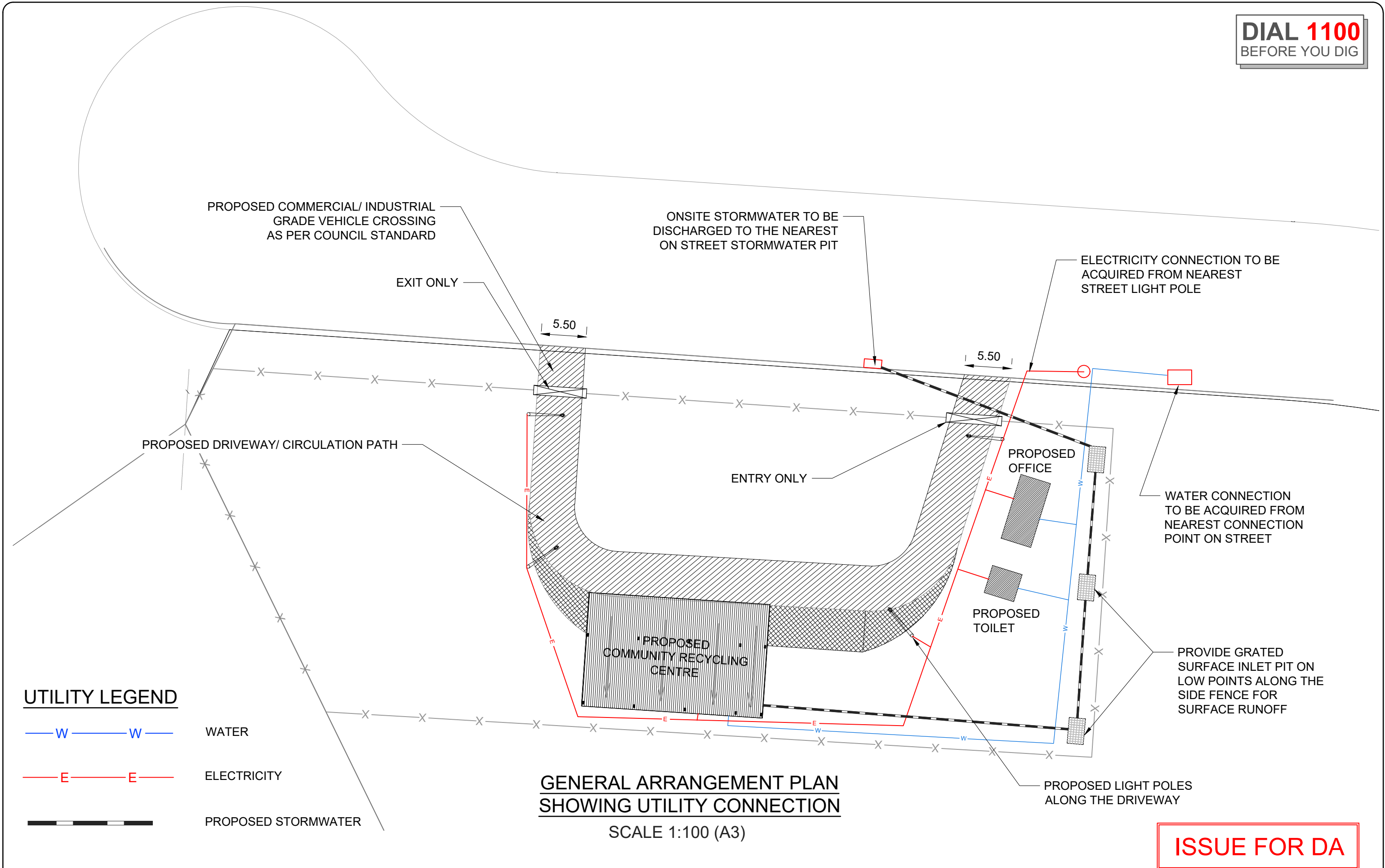
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	17.04.2019	DA ISSUE										
	15.04.2019	CONCEPT 02										
	11.04.2019	CONCEPT 01										
Revision	Date	Description	Approved			Signed Date	Signed Date	Signed Date	Designed: IA	Datum:	Sheet no: 06 of 07	Job no:



SECTION AA'
SCALE 1:100 @ A3

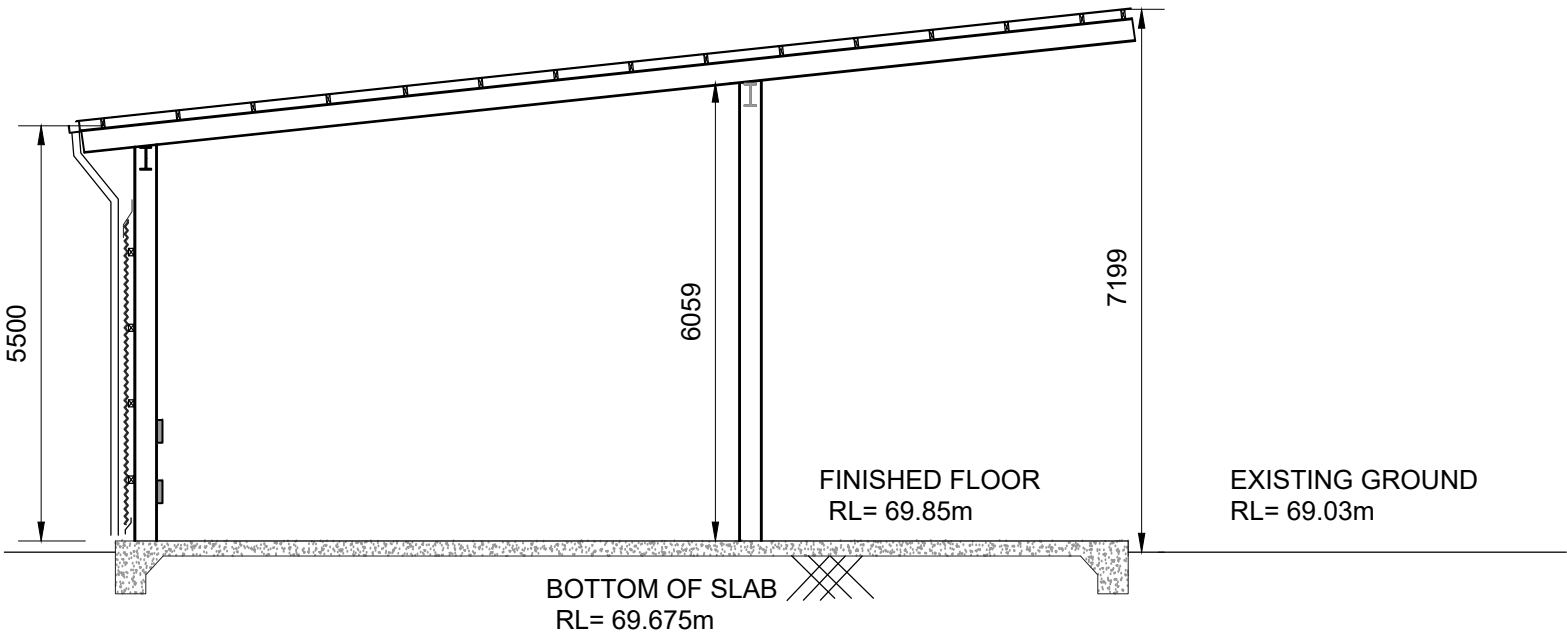
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				ideas Architects • Urban Designers iftekhar+design associates 17 Warragamba Cr, Leumeah, NSW - 2560 Ph: 02 4625 7733, Mobile: 0404 891 326 e-mail: info@ideas-design.com.au www.ideas-design.com.au ARCHITECT: IFTEKHAR ABDULLAH B. Arch., M. Urb. Des. (Sydney Univ.) Architect (Reg. 8626 NSW, 2410 ACT)	 campbelltown city council Civic Centre, Queen Street, Campbelltown, PO Box 57, Campbelltown NSW 2560 Telephone 02 4645 4000 • Facsimile 02 4645 4111 Email council@campbelltown.nsw.gov.au Web www.campbelltown.nsw.gov.au ABN 31 459 914 087	Approved Director City Delivery: K. Lynch Signed Date	Recommended Executive Manager Infrastructure: M. Wolczak Signed Date	Recommended Co-ordinator Traffic & Roads: A. Arora Signed Date	Checked: IA Drawn: AR Designed: IA	Surveyed: Date: 17.04.2019 Datum:	Project: ARCHITECTURAL DESIGN FOR Hepher Road Community Recycling Centre SECTION AA' Sheet no: 07 of 07 Job no:	
Revision	Date	Description	Approved									



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								Drawn: SN	Date:		
								Designed:	Datum:		
Revision	Date	Description	Approved							Sheet no: 01 of 02	Job no

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APPROXIMATE TOTAL FILL =975 cum

SECTION SHOWING FINISHED FLOOR LEVEL
& EXISTING GROUND LEVEL
SCALE 1:100 (A3)

ISSUE FOR DA

				 campbelltown city council Civic Centre Queen Street Campbelltown PO Box 57 Campbelltown NSW 2560 Telephone 02 4645 4000 Facsimile 02 4645 4111 Email council@campbelltown.nsw.gov.au Web www.campbelltown.nsw.gov.au ABN 31 459 914 087	Approved Director City Delivery: K.Lynch Signed Date	Recommended Executive Manager Infrastructure: M.Wolczak Signed Date	Recommended Co-ordinator Traffic & Roads: A. Arora Signed Date	Checked: AA	Surveyed:	Project: CIVIL DESIGN FOR Hepher Road Community Recycling Centre SECTION SHOWING FINISHED FLOOR LEVEL AND EXISTING GROUND LEVEL			
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								Designed:	Datum:				
Revision	Date	Description	Approved									Sheet no: 02 of 02	Job no:

SCHEDULE OF DRAWINGS

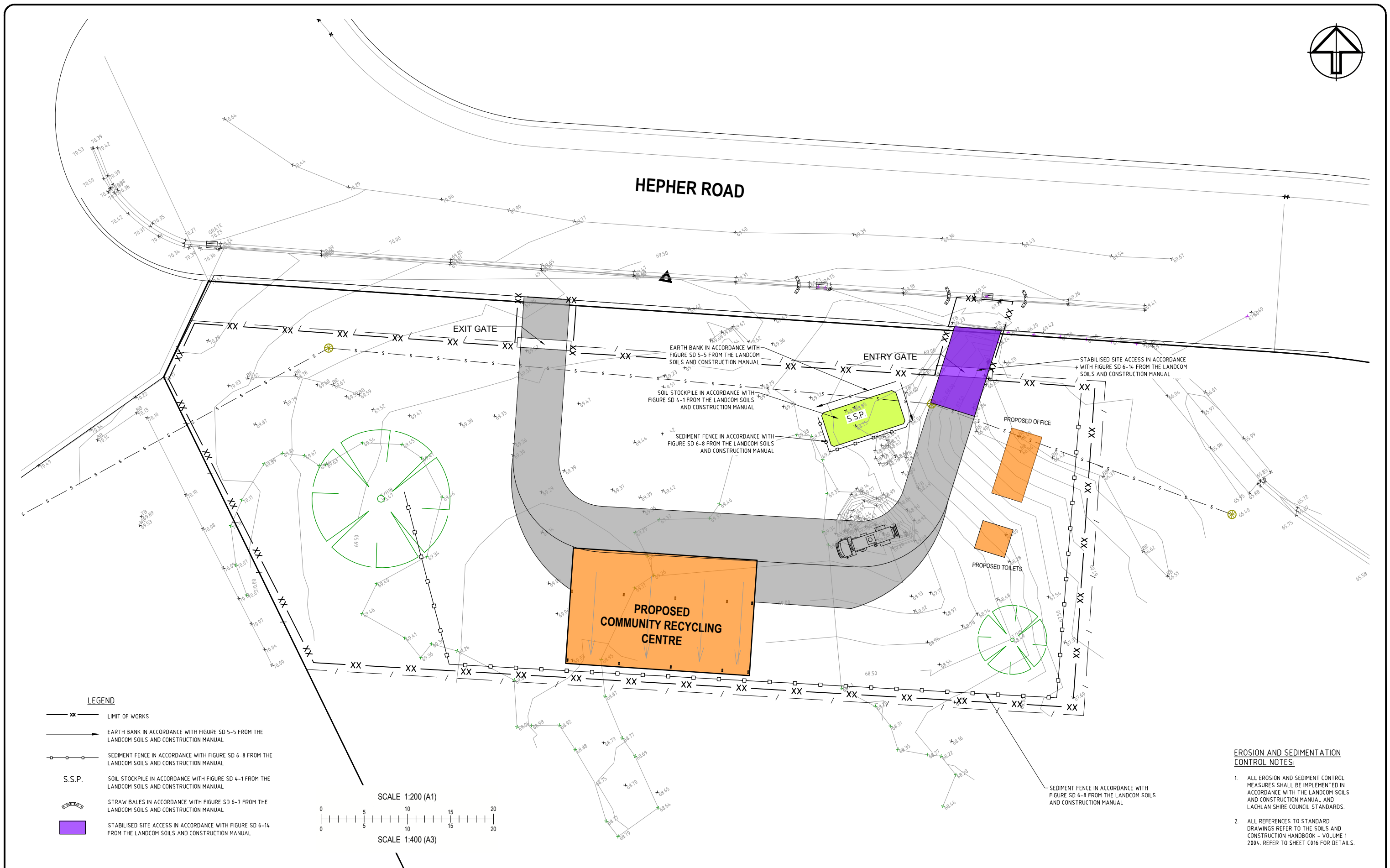
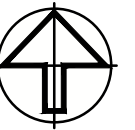
A	07/06/19	ISSUED FOR INFORMATION	DW
Revision	Date	Description	Approved



Premise



SHEET C001 OF C003 Job no: 218439



EROSION AND SEDIMENTATION CONTROL NOTES:

1. ALL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED IN ACCORDANCE WITH THE LANDCOM SOILS AND CONSTRUCTION MANUAL AND LACHLAN SHIRE COUNCIL STANDARDS.
2. ALL REFERENCES TO STANDARD DRAWINGS REFER TO THE SOILS AND CONSTRUCTION HANDBOOK - VOLUME 1 2004. REFER TO SHEET C016 FOR DETAILS.

Revision	Date	Description	Approved
A	07/06/19	ISSUED FOR INFORMATION	DW

STRUCTURAL, CIVIL, PLANNING, SURVEYING,
ARCHITECTURE & ENVIRONMENTAL



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ABN 31 459 914 087

Approved

Signed
Date

Recommended

Signed
Date

Checked: #

Drawn: GT

Designed: #

Surveyed: #

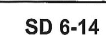
Date: 07/06/19

Datum: #

Project:
HEPHER ROAD COMMUNITY

RECYCLING CENTRE
ESCP SITE PLAN

SHEET C002 OF C003 Job no: 218439



Project:
 HEPHER ROAD COMMUNITY
 RECYCLING CENTRE
 ESCP FIGURES

SHEET C003 OF C003	Job no: 218439
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HEPHER

ROAD



LEGEND

- BOUNDARY
- PROPOSED SECURITY FENCE
- PROPOSED CONCRETE VEHICLE CROSSOVER
- PROPOSED DRIVEWAY FOR CARS
- PROPOSED CONCRETE DRIVEWAY
- PROPOSED LAWN AREA
- PROPOSED GRAVELLED AREA
- PROPOSED LARGE TREE
- PROPOSED MEDIUM TREE
- PROPOSED SMALL TREE
- PROPOSED LARGE SHRUB PLANTING
- PROPOSED MEDIUM SHRUB PLANTING
- PROPOSED SMALL SHRUB AND ACCENT PLANTING
- PROPOSED GROUNDCOVER AND GRASSES
- EXISTING TREE TO BE RETAINED

NOTE:
- ALL LANDSCAPE WORKS SHALL COMPLY WITH ALL RELEVANT BCA
- AUSTRALIAN STANDARDS AS/NZS 4486.1:1997 & AS/NZS 4422:1996
- ALL WORKS SHALL BE CONSTRUCTED TO BEST TRADE PRACTICES

A	9/5/19	For Review	BW
Revision	Date	Description	Approved



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ABN: 31 459 914 087

Approved	Recommended	Checked: BW	Surveyed: -	Project: CRC FACILITY, HEPHER ROAD, CAMPBELLTOWN CONCEPT LANDSCAPE PLAN GENERAL ARRANGEMENT PLAN		
Signed Date	Signed Date	Drawn: BW	Date: 09/05/19			
		Designed: BW	Datum: -			
				Sheet no: 2 of 4	Job no: IDEAS -DESIGN	

Appendix A

SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS



Mr David Walker
Senior Town Planning
Geolyse Pty Ltd
PO Box 1963
ORANGE NSW 2663

RECEIVED
19 SEP 2018

SEAR 1251

Dear Mr Walker

**Waste Management Facility
Hepher Road, Campbelltown, Campbelltown LGA (Lot 104 DP 1056782)
Secretary's Environmental Assessment Requirements (SEAR) 1251**

Thank you for your request for the Secretary's Environmental Assessment Requirements (SEARs) for the preparation of an Environmental Impact Statement (EIS) for the above development proposal. I have attached a copy of these requirements.

In support of your application, you indicated that your proposal is both designated and integrated development under Part 4 of the *Environmental Planning and Assessment Act 1979* and requires an approval under the *Protection of the Environment Operations Act 1997*. In preparing the SEARs, the Department has consulted with the Environment Protection Authority (EPA), the Office of Environment and Heritage (OEH), and the Department of Primary Industries (DPI).

Unfortunately, the OEH was unable to respond in time. You must undertake direct consultation with them and address their requirements in the EIS.

If other integrated approvals are identified before the Development Application (DA) is lodged, you must undertake direct consultation with the relevant agencies, and address their requirements in the EIS.

If your proposal contains any actions that could have a significant impact on matters of National Environmental Significance, then it will require an additional approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This approval is in addition to any approvals required under NSW legislation. If you have any questions about the application of the EPBC Act to your proposal, you should contact the Commonwealth Department of the Environment and Energy on (02) 6274 1111.

Should you have any further enquiries, please contact John Booth, Planning Services, at the Department on the details above.

Yours sincerely

Chris Ritchie
Director
Industry Assessments
as delegate of the Secretary

14/9/18.

Environmental Assessment Requirements

Section 4.12(8) of the *Environmental Planning and Assessment Act 1979*.

Designated Development

SEAR Number	1251
Proposal	Construction of a waste management facility to be used as a community recycling facility with the capacity to receive approximately 5,000 tonnes of waste per year.
Location	Hepher Road, Campbelltown, Campbelltown LGA – Lot 104 DP 1056782
Applicant	Campbelltown City Council
Date of Issue	13/09/2018
General Requirements	The Environmental Impact Statement (EIS) must meet the minimum form and content requirements in clauses 6 and 7 of Schedule 2 of the <i>Environmental Planning and Assessment Regulation 2000</i> .
Key Issues	The EIS must include an assessment of all potential impacts of the proposed development on the existing environment (including cumulative impacts if necessary) and develop appropriate measures to avoid, minimise, mitigate and/or manage these potential impacts. As part of the EIS assessment, the following matters must also be addressed: • strategic context – including: – a detailed justification for the proposal and suitability of the site for the development; – a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies; and – a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out. • suitability of the site – including: – a detailed justification that the site can accommodate the proposed processing capacity, having regard to the scope of operations and its environmental impacts and relevant mitigation measures; and – floor plans depicting the proposed internal layout including the location of machinery and equipment. • waste management – including: – details of the type, quantity and classification of waste to be received at the site; – details of the resource outputs and any additional processes for residual waste; – details of waste handling including, transport, identification, receipt, stockpiling and quality control; and – the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the <i>NSW Waste Avoidance and Resource Recovery Strategy 2014-21</i>. • hazards and risk – including: – a preliminary risk screening completed in accordance with <i>State Environmental Planning Policy No. 33 – Hazardous and Offensive Development</i> and <i>Applying SEPP 33</i> (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with <i>Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis</i> (DoP,

	2011) and <i>Multi-Level Risk Assessment</i> (DoP, 2011); and - fire risk management and containment. • air quality – including: - a description of all potential sources of air and odour emissions; - an air quality impact assessment in accordance with relevant Environment Protection Authority guidelines; and - a description and appraisal of air quality impact mitigation, management and monitoring measures. • noise and vibration – including: - a description of all potential noise and vibration sources during construction and operation, including road traffic noise; - a noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines; and - a description and appraisal of noise and vibration mitigation, management and monitoring measures. • soil and water – including: - a description of local soils, topography, drainage and landscapes; - details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the <i>Water Act 1912</i> and/or the <i>Water Management Act 2000</i>; - an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment; - details of sediment and erosion controls; - a detailed site water balance; - an assessment of potential impacts on the quality and quantity of surface and groundwater resources; - details of the proposed stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts; - a description and appraisal of impact mitigation, management and monitoring measures. • traffic and transport – including: - details of road transport routes and access to the site; - road traffic predictions for the development during construction and operation; and - an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development. • biodiversity – including: - accurate predictions of any vegetation clearing on site or for any road upgrades; - details of weed management during construction and operation in accordance with existing State, regional or local weed management plans or strategies; and - a detailed description of the measures to avoid, minimise, mitigate and offset biodiversity impacts. • visual – including an impact assessment at private receptors and public vantage points. • heritage – including Aboriginal and non-Aboriginal cultural heritage.
Environmental Planning Instruments and other policies	The EIS must assess the proposal against the relevant environmental planning instruments, including but not limited to: • <i>State Environmental Planning Policy (Infrastructure) 2007</i>; • <i>State Environmental Planning Policy (State and Regional Development) 2011</i>; • <i>State Environmental Planning Policy No. 19 – Bushland in Urban Areas</i> • <i>State Environmental Planning Policy No 33–Hazardous and Offensive Development</i>; • <i>State Environmental Planning Policy No 44–Koala Habitat Protection</i>; • <i>State Environmental Planning Policy No 55–Remediation of Land</i>; • <i>State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017</i>;

	• <i>Campbelltown Local Environmental Plan 2015</i>; and • relevant development control plans and section 94 plans.
Guidelines	During the preparation of the EIS you should consult the Department's Register of Development Assessment Guidelines which is available on the Department's website at planning.nsw.gov.au under Development Proposals/Register of Development Assessment Guidelines. Whilst not exhaustive, this Register contains some of the guidelines, policies, and plans that must be taken into account in the environmental assessment of the proposed development.
Consultation	During the preparation of the EIS, you must consult the relevant local, State and Commonwealth government authorities, service providers and community groups, and address any issues they may raise in the EIS. In particular, you should consult with the: • Environment Protection Authority; • Office of Environment and Heritage; • Department of Primary Industries; • Roads and Maritime Services; • Campbelltown Council; and • the surrounding landowners and occupiers that are likely to be impacted by the proposal. Details of the consultation carried out and issues raised must be included in the EIS.
Further consultation after 2 years	If you do not lodge an application under Section 4.12(8) of the <i>Environmental Planning and Assessment Act 1979</i> within 2 years of the issue date of these SEARs, you must consult with the Secretary in relation to any further requirements for lodgement.

John Booth

From: John Galea <john.galea@dpi.nsw.gov.au>
Sent: Thursday, 23 August 2018 3:31 PM
To: John Booth
Cc: Landuse Ag
Subject: DPI Agriculture nil response - Request for Input: Waste Management Facility – Hephher Road, Campbelltown, Campbelltown LGA (Lot 104 DP 1056782) – SEAR 1251

Hello John,

NSW DPI Agriculture has a nil response to this referral.
The development is to occur in an area zoned SP2, surrounded by land zone IN2.

There are no impacts to agricultural producers or resources through this development.

Regards
John
J.G.

John Galea

Agriculture Land Use Planning Officer
DPI Agriculture | Agriculture Land Use Planning

NSW Department of Primary Industries
Level 12 | 10 Valentine Avenue | Parramatta NSW

<https://maps.google.com/?q=Level+12+%7C+10+Valentine+Avenue+%7C+Parramatta+NSW&entry=gmail&source=g>
2124

T: +61 427 647 642 | +61 8838 7520

E DPI: landuse.enquiries@dpi.nsw.gov.au

W: www.industry.nsw.gov.au

Agriculture Land Use Planning information and guidelines are available at:

<http://www.dpi.nsw.gov.au/agriculture/lup>

<<http://www.dpi.nsw.gov.au/agriculture/resources/lup>>

Plan, Resource, Grow

Building thriving, sustainable Agriculture for tomorrow's communities

From: carolyn.hendry@dpi.nsw.gov.au [mailto:carolyn.hendry@dpi.nsw.gov.au] **On Behalf Of** Landuse Ag

Sent: Wednesday, 22 August 2018 3:16 PM

To: John Galea

Cc: Landuse Ag

Subject: Fwd: FW: Request for Input: Waste Management Facility – Hephher Road, Campbelltown, Campbelltown LGA (Lot 104 DP 1056782) – SEAR 1251

Hi John

For your response if required.
I have entered onto the correspondence register in CM9.

Thanks
Carolyn

John Booth

From: Mohammed Rahman <mohammed.rahman@crownland.nsw.gov.au>
Sent: Monday, 27 August 2018 2:41 PM
To: Lands Ministerials; Elizabeth Currey; John Booth; Daniel Cross; Mohammed Rahman
Subject: Fwd: [13 Planning and Assessment] Fwd: FW: Request for Input: Waste Management Facility – Hephher Road, Campbelltown, Campbelltown LGA (Lot 104 DP 1056782) – SEAR 1251

Hi - Lands Ministerials,

A Land status investigation on Waste Management Facility shows that there is no crown Land.

Therefore, Department of Industry - Lands has no comments.

Thank you.

Regards,

Mohammed H Rahman | Natural Resources Management Officer Sydney
Regional Services

Department of Industry, Lands and Water Division

PO Box 2185 DANGAR NSW 2309

T: 02 9842 8331 | F: 02 8836 5365 | E: mohammed.rahman@crownland.nsw.gov.au

W: www.crownland.nsw.gov.au

----- Forwarded message -----

From: **Metro Crownlands at Crown Lands** <wrike@wrike.com>

Date: 16 August 2018 at 17:00

Subject: [13 Planning and Assessment] Fwd: FW: Request for Input: Waste Management Facility – Hephher Road, Campbelltown, Campbelltown LGA (Lot 104 DP 1056782) – SEAR 1251

To: mohammed.rahman@crownland.nsw.gov.au

**Fwd: FW: Request for Input: Waste
Management Facility – Hephher
 Road, Campbelltown,
Campbelltown LGA (Lot 104 DP
1056782) – SEAR 1251**

ACTIVE

13 Planning a...

Good afternoon,

Can you please arrange for review of the attached information to determine if
DoI Crown Lands needs to provide a response.



Department of Planning & Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Mr John Booth

Notice Number 1568992
File Number EF18/33532
Date 28-Aug-2018

**Request for Secretary's Environmental Assessment Requirements (SEARs)
Proposed Community Recycling Facility - Lot 104 DP 1056782, Hephher Road, Campbelltown**

I refer to your request for the Environment Protection Authority's (EPA) requirements for the environmental assessment in regard to the above proposal received by EPA on 15 August 2018.

The EPA has considered the details of the proposal as provided by the Department of Planning and Environment and has identified the information it requires to issue its general terms of approval in Attachment A. In summary, the EPA's key information requirements for the proposal include an adequate assessment of:

1. Baseline conditions that exist at the site of the proposed development;
2. Potential environmental impacts arising from the proposed development and its ongoing activities, including air, odour, noise and water issues; and
3. Possible management and mitigation processes that will be implemented to protect the environment from these impacts.

In carrying out the assessment, the proponent should refer to the relevant guidelines as listed in Attachment B and any relevant industry codes of practice and best practice management guidelines.

Please note that this response does not cover biodiversity or Aboriginal cultural heritage issues, which are the responsibility of the Office of Environment and Heritage.

The thresholds for requiring an environment protection licence are included in *Schedule 1 of the Protection of the Environment Operations Act* (POEO Act). The Proponent should be made aware that if these thresholds are likely to be exceeded, they must apply for an environment protection licence.

If you have any questions in relation to this matter, please contact Marc Cooper on (02) 4224 4126.



Yours sincerely

A handwritten signature in blue ink, appearing to read "mwhelan".

MEGAN WHELAN

Unit Head Waste Compliance

Environment Protection Authority

(by Delegation)

ATTACHMENT A: EIS REQUIREMENTS FOR

Proposed Community Recycling Facility

Lot 104 DP 1056782 - Hephher Road, Campbelltown

How to use these requirements

The EPA requirements have been structured in accordance with the DIPNR EIS Guidelines, as follows. It is suggested that the EIS follow the same structure:

- A. Executive summary
- B. The proposal
- C. The location
- D. Identification and prioritisation of issues
- E. The environmental issues
- F. List of approvals and licences
- G. Compilation of mitigation measures
- H. Justification for the proposal

A Executive summary

The executive summary should include a brief discussion of the extent to which the proposal achieves identified environmental outcomes.

B The proposal

1. Objectives of the proposal

- The objectives of the proposal should be clearly stated and refer to:
 - a) the size and type of the operation, the nature of the processes and the products, by-products and wastes produced
 - b) a life cycle approach to the production, use or disposal of products
 - c) the anticipated level of performance in meeting required environmental standards and cleaner production principles
 - d) the staging and timing of the proposal and any plans for future expansion
 - e) the proposal's relationship to any other industry or facility.

2. Description of the proposal

General

- Outline the production process including:
 - a) the environmental "mass balance" for the process – quantify in-flow and out-flow of materials, any points of discharge to the environment and their respective destinations (sewer, stormwater, atmosphere, recycling, landfill etc)
 - b) any life-cycle strategies for the products.
- Outline cleaner production actions, including:
 - a) measures to minimise waste (typically through addressing source reduction)
 - b) proposals for use or recycling of by-products
 - c) proposed disposal methods for solid and liquid waste
 - d) air management systems including all potential sources of air emissions, proposals to re-use or treat emissions, emission levels relative to relevant standards in regulations, discharge points
 - e) water management system including all potential sources of water pollution, proposals for re-use, treatment etc, emission levels of any wastewater discharged, discharge points, summary of options explored to avoid a discharge, reduce its frequency or reduce its impacts, and rationale for selection of option to discharge.
 - f) soil contamination treatment and prevention systems.
- Outline construction works including:
 - a) actions to address any existing soil contamination
 - b) any earthworks or site clearing; re-use and disposal of cleared material (including use of spoil on-site)
 - c) construction timetable and staging; hours of construction; proposed construction methods

- d) environment protection measures, including noise mitigation measures, dust control measures and erosion and sediment control measures.
- Include a site diagram showing the site layout and location of environmental controls.

Air

- Identify all sources or potential sources of air emissions from the development.

Note: emissions can be classed as either:

- *point (e.g. emissions from stack or vent) or*
- *fugitive (from wind erosion, leakages or spillages, associated with loading or unloading, conveyors, storage facilities, plant and yard operation, vehicle movements (dust from road, exhausts, loss from load), land clearing and construction works).*
- Provide details of the project that are essential for predicting and assessing air impacts including:
 - a) the quantities and physio-chemical parameters (e.g. concentration, moisture content, bulk density, particle sizes etc) of materials to be used, transported, produced or stored
 - b) an outline of procedures for handling, transport, production and storage
 - c) the management of solid, liquid and gaseous waste streams with potential to generate emissions to air.

Noise and vibration

- Identify all noise sources, or potential sources, from the development (including both construction and operation phases). Detail all potentially noisy activities including ancillary activities such as transport of goods and raw materials.
- Specify the times of operation for all phases of the development and for all noise producing activities.
- For projects with a significant potential traffic noise impact provide details of road alignment (include gradients, road surface, topography, bridges, culverts etc), and land use along the proposed road and measurement locations – diagrams should be to a scale sufficient to delineate individual residential blocks.

Water

- Provide details of the project that are essential for predicting and assessing impacts to waters including:
 - a) the quantity and physio-chemical properties of all potential water pollutants and the risks they pose to the environment and human health, including the risks they pose to Water Quality Objectives in the ambient waters (as defined on <http://www.environment.nsw.gov.au/ieo/index.htm>, using technical criteria derived from the *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*, ANZECC 2000)
 - b) the management of discharges with potential for water impacts
 - c) drainage works and associated infrastructure; land-forming and excavations; working capacity of structures; and water resource requirements of the proposal.

- Outline site layout, demonstrating efforts to avoid proximity to water resources (especially for activities with significant potential impacts e.g. effluent ponds) and showing potential areas of modification of contours, drainage etc.
- Outline how total water cycle considerations are to be addressed showing total water balances for the development (with the objective of minimising demands and impacts on water resources). Include water requirements (quantity, quality and source(s)) and proposed storm and wastewater disposal, including type, volumes, proposed treatment and management methods and re-use options.

Waste and chemicals

- Provide details of the quantity and type of both liquid waste and non-liquid waste generated, handled, processed or disposed of at the premises. Waste must be classified according to the EPA's *Waste Classification Guidelines* (<http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm>).
- Provide details of liquid waste and non-liquid waste management at the facility, including:
 - a) the transportation, assessment and handling of waste arriving at or generated at the site
 - b) any stockpiling of wastes or recovered materials at the site
 - c) any waste processing related to the facility, including reuse, recycling, reprocessing (including composting) or treatment both on- and off-site
 - d) the method for disposing of all wastes or recovered materials at the facility
 - e) the emissions arising from the handling, storage, processing and reprocessing of waste at the facility
 - f) the proposed controls for managing the environmental impacts of these activities.
- Provide details of spoil disposal with particular attention to:
 - a) the quantity of spoil material likely to be generated
 - b) proposed strategies for the handling, stockpiling, reuse/recycling and disposal of spoil
 - c) the need to maximise reuse of spoil material in the construction industry
 - d) identification of the history of spoil material and whether there is any likelihood of contaminated material, and if so, measures for the management of any contaminated material
 - e) designation of transportation routes for transport of spoil.
- Provide details of procedures for the assessment, handling, storage, transport and disposal of all hazardous and dangerous materials used, stored, processed or disposed of at the site, in addition to the requirements for liquid and non-liquid wastes.
- Provide details of the type and quantity of any chemical substances to be used or stored and describe arrangements for their safe use and storage.

Reference should be made to the EPA's *Waste Classification Guidelines* (<http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm>).

ESD

- Demonstrate that the planning process and any subsequent development incorporates objectives and mechanisms for achieving ESD, including:

C The location

1. General

- Provide an overview of the affected environment to place the proposal in its local and regional environmental context including:
 - a) meteorological data (e.g. rainfall, temperature and evaporation, wind speed and direction)
 - b) topography (landform element, slope type, gradient and length)
 - c) surrounding land uses (potential synergies and conflicts)
 - d) geomorphology (rates of landform change and current erosion and deposition processes)
 - e) soil types and properties (including erodibility; engineering and structural properties; dispersibility; permeability; presence of acid sulfate soils and potential acid sulfate soils)
 - f) ecological information (water system habitat, vegetation, fauna)
 - g) availability of services and the accessibility of the site for passenger and freight transport.

2. Air

- Describe the topography and surrounding land uses. Provide details of the exact locations of dwellings, schools and hospitals. Where appropriate provide a perspective view of the study area such as the terrain file used in dispersion models.
- Describe surrounding buildings that may effect plume dispersion.
- Provide and analyse site representative data on following meteorological parameters:
 - a) temperature and humidity
 - b) rainfall, evaporation and cloud cover
 - c) wind speed and direction
 - d) atmospheric stability class

3. Noise and vibration

- Identify any noise sensitive locations likely to be affected by activities at the site, such as residential properties, schools, churches, and hospitals. Typically the location of any noise sensitive locations in relation to the site should be included on a map of the locality.
- Identify the land use zoning of the site and the immediate vicinity and the potentially affected areas.

4. Water

- Describe the catchment including proximity of the development to any waterways and provide an assessment of their sensitivity/significance from a public health, ecological and/or economic perspective. The Water Quality and River Flow Objectives on the website: <http://www.environment.nsw.gov.au/ieo/index.htm> should be used to identify the agreed environmental

values and human uses for any affected waterways. This will help with the description of the local and regional area.

5. Soil Contamination Issues

- Provide details of site history – if earthworks are proposed, this needs to be considered with regard to possible soil contamination, for example if the site was previously a landfill site or if irrigation of effluent has occurred.

D Identification and prioritisation of issues / scoping of impact assessment

- Provide an overview of the methodology used to identify and prioritise issues. The methodology should take into account:
 - a) relevant NSW government guidelines
 - b) industry guidelines
 - c) EISs for similar projects
 - d) relevant research and reference material
 - e) relevant preliminary studies or reports for the proposal
 - f) consultation with stakeholders.
- Provide a summary of the outcomes of the process including:
 - a) all issues identified including local, regional and global impacts (e.g. increased/ decreased greenhouse emissions)
 - b) key issues which will require a full analysis (including comprehensive baseline assessment)
 - c) issues not needing full analysis though they may be addressed in the mitigation strategy
 - d) justification for the level of analysis proposed (the capacity of the proposal to give rise to high concentrations of pollution compared with the ambient environment or environmental outcomes is an important factor in setting the level of assessment).

E The environmental issues

1. General

- The potential impacts identified in the scoping study need to be assessed to determine their significance, particularly in terms of achieving environmental outcomes, and minimising environmental pollution.
- Identify gaps in information and data relevant to significant impacts of the proposal and any actions proposed to fill those information gaps so as to enable development of appropriate management and mitigation measures. This is in accordance with ESD requirements.

Describe baseline conditions

- Provide a description of existing environmental conditions for any potential impacts.

Assess impacts

- For any potential impacts relevant for the assessment of the proposal provide a detailed analysis of the impacts of the proposal on the environment including the cumulative impact of the proposal on the receiving environment especially where there are sensitive receivers.
- Describe the methodology used and assumptions made in undertaking this analysis (including any modelling or monitoring undertaken) and indicate the level of confidence in the predicted outcomes and the resilience of the environment to cope with the predicted impacts.
- The analysis should also make linkages between different areas of assessment where necessary to enable a full assessment of environmental impacts e.g. assessment of impacts on air quality will often need to draw on the analysis of traffic, health, social, soil and/or ecological systems impacts; etc.
- The assessment needs to consider impacts at all phases of the project cycle including: exploration (if relevant or significant), construction, routine operation, start-up operations, upset operations and decommissioning if relevant.
- The level of assessment should be commensurate with the risk to the environment.

Describe management and mitigation measures

- Describe any mitigation measures and management options proposed to prevent, control, abate or mitigate identified environmental impacts associated with the proposal and to reduce risks to human health and prevent the degradation of the environment. This should include an assessment of the effectiveness and reliability of the measures and any residual impacts after these measures are implemented.
- Proponents are expected to implement a 'reasonable level of performance' to minimise environmental impacts. The proponent must indicate how the proposal meets reasonable levels of performance. For example, reference technology based criteria if available, or identify good practice for this type of activity or development. A 'reasonable level of performance' involves adopting and implementing technology and management practices to achieve certain pollutant emissions levels in economically viable operations. Technology-based criteria evolve gradually over time as technologies and practices change.
- Use environmental impacts as key criteria in selecting between alternative sites, designs and technologies, and to avoid options having the highest environmental impacts.

- Outline any proposed approach (such as an Environmental Management Plan) that will demonstrate how commitments made in the EIS will be implemented. Areas that should be described include:
 - a) operational procedures to manage environmental impacts
 - b) monitoring procedures
 - c) training programs
 - d) community consultation
 - e) complaint mechanisms including site contacts
 - f) strategies to use monitoring information to improve performance
 - g) strategies to achieve acceptable environmental impacts and to respond in event of exceedences.

4. Air

Describe baseline conditions

- Provide a description of existing air quality and meteorology, using existing information and site representative ambient monitoring data.

Assess impacts

- Identify all pollutants of concern and estimate emissions by quantity (and size for particles), source and discharge point.
- Estimate the resulting ground level concentrations of all pollutants. Where necessary (e.g. potentially significant impacts and complex terrain effects), use an appropriate dispersion model to estimate ambient pollutant concentrations. Discuss choice of model and parameters with the EPA.
- Describe the effects and significance of pollutant concentration on the environment, human health, amenity and regional ambient air quality standards or goals.
- Describe the contribution that the development will make to regional and global pollution, particularly in sensitive locations.
- For potentially odorous emissions provide the emission rates in terms of odour units (determined by techniques compatible with EPA procedures). Use sampling and analysis techniques for individual or complex odours and for point or diffuse sources, as appropriate.
- Reference should be made to *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* (EPA, 2016); *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW* (DEC, 2007).

Describe management and mitigation measures

- Outline specifications of pollution control equipment (including manufacturer's performance guarantees where available) and management protocols for both point and fugitive emissions. Where possible, this should include cleaner production processes.

Noise and vibration

Describe baseline conditions

- Determine the existing background (LA90) and ambient (LAeq) noise levels, as relevant, in accordance with the *NSW Noise Policy for Industry*.
- Determine the existing road traffic noise levels in accordance with the *NSW Road Noise Policy*, where road traffic noise impacts may occur.
- The noise impact assessment report should provide details of all monitoring of existing ambient noise levels including:
 - a) details of equipment used for the measurements
 - b) a brief description of where the equipment was positioned
 - c) a statement justifying the choice of monitoring site, including the procedure used to choose the site, having regards to the definition of 'noise sensitive locations(s)' and 'most affected locations(s)' described in Section 3.1.2 of the *NSW Industrial Noise Policy*
 - d) details of the exact location of the monitoring site and a description of land uses in surrounding areas
 - e) a description of the dominant and background noise sources at the site
 - f) day, evening and night assessment background levels for each day of the monitoring period
 - g) the final Rating Background Level (RBL) value
 - h) graphs of the measured noise levels for each day should be provided
 - i) a record of periods of affected data (due to adverse weather and extraneous noise), methods used to exclude invalid data and a statement indicating the need for any re-monitoring under Step 1 in Section B1.3 of the *NSW Industrial Noise Policy*
 - j) determination of LAeq noise levels from existing industry.

Assess impacts

- Determine the project noise trigger levels for the site. For each identified potentially affected receiver, this should include:
 - a) determination of the project intrusive noise level for each identified potentially affected receiver
 - b) selection and justification of the appropriate amenity category for each identified potentially affected receiver
 - c) determination of the project amenity noise level for each receiver
 - d) determination of the appropriate maximum noise level event assessment (sleep disturbance) trigger level.
- Maximum noise levels during night-time period (10pm-7am) should be assessed to analyse possible affects on sleep. Where LA1(1min) noise levels from the site are less than 15 dB above the background LA90 noise level, sleep disturbance impacts are unlikely. Where this is not the case, further analysis is required. Additional guidance is provided in Appendix B of the *NSW Environmental Criteria for Road Traffic Noise*.

- Determine expected noise level and noise character (eg tonality, impulsiveness, vibration, etc) likely to be generated from noise sources during:
 - a) site establishment
 - b) construction
 - c) operational phases
 - d) transport including traffic noise generated by the proposal
 - e) other services.

Note: The noise impact assessment report should include noise source data for each source in 1/1 or 1/3 octave band frequencies including methods for references used to determine noise source levels. Noise source levels and characteristics can be sourced from direct measurement of similar activities or from literature (if full references are provided).

- Determine the noise levels likely to be received at the most sensitive locations (these may vary for different activities at each phase of the development). Potential impacts should be determined for any identified significant adverse meteorological conditions. Predicted noise levels under calm conditions may also aid in quantifying the extent of impact where this is not the most adverse condition.
- The noise impact assessment report should include:
 - a) a plan showing the assumed location of each noise source for each prediction scenario
 - b) a list of the number and type of noise sources used in each prediction scenario to simulate all potential significant operating conditions on the site
 - c) any assumptions made in the predictions in terms of source heights, directivity effects, shielding from topography, buildings or barriers, etc
 - d) methods used to predict noise impacts including identification of any noise models used.
 - e) the weather conditions considered for the noise predictions
 - f) the predicted noise impacts from each noise source as well as the combined noise level for each prediction scenario
 - g) for developments where a significant level of noise impact is likely to occur, noise contours for the key prediction scenarios should be derived
 - h) an assessment of the need to include modification factors as detailed in Fact Sheet C of the *NSW Noise Policy for Industry*.
- Discuss the findings from the predictive modelling and, where relevant noise criteria have not been met, recommend additional feasible and reasonable mitigation measures.
- The noise impact assessment report should include details of any mitigation proposed including the attenuation that will be achieved and the revised noise impact predictions following mitigation.
 - a) Where relevant noise/vibration levels cannot be met after application of all feasible and reasonable mitigation measures the residual level of noise impact needs to be quantified
- For the assessment of existing and future traffic noise, details of data for the road should be included such as assumed traffic volume; percentage heavy vehicles by time of day; and details of the calculation process. These details should be consistent with any traffic study carried out in the EIS.

Describe management and mitigation measures

- Determine the most appropriate noise mitigation measures and expected noise reduction including both noise controls and management of impacts for both construction and operational noise. This will include selecting quiet equipment and construction methods, noise barriers or acoustic screens, location of stockpiles, temporary offices, compounds and vehicle routes, scheduling of activities, etc.
- For traffic noise impacts, provide a description of the ameliorative measures considered (if required), reasons for inclusion or exclusion, and procedures for calculation of noise levels including ameliorative measures. Also include, where necessary, a discussion of any potential problems associated with the proposed ameliorative measures, such as overshadowing effects from barriers. Appropriate ameliorative measures may include:
 - a) use of alternative transportation modes, alternative routes, or other methods of avoiding the new road usage
 - b) control of traffic (eg: limiting times of access or speed limitations)
 - c) resurfacing of the road using a quiet surface
 - d) use of (additional) noise barriers or bunds
 - e) treatment of the façade to reduce internal noise levels buildings where the night-time criteria is a major concern
 - f) more stringent limits for noise emission from vehicles (i.e. using specially designed 'quite' trucks and/or trucks to use air bag suspension
 - g) driver education
 - h) appropriate truck routes
 - i) limit usage of exhaust brakes
 - j) use of premium muffles on trucks
 - k) reducing speed limits for trucks
 - l) ongoing community liaison and monitoring of complaints
 - m) phasing in the increased road use.

4. Water

Describe baseline conditions

- Describe existing surface and groundwater quality – an assessment needs to be undertaken for any water resource likely to be affected by the proposal and for all conditions (e.g. a wet weather sampling program is needed if runoff events may cause impacts).
Note: Methods of sampling and analysis need to conform with an accepted standard (e.g. Approved Methods for the Sampling and Analysis of Water Pollutants in NSW (DEC 2004) or be approved and analyses undertaken by accredited laboratories).
- Provide site drainage details and surface runoff yield.
- State the ambient Water Quality and River Flow Objectives for the receiving waters. These refer to the community's agreed environmental values and human uses endorsed by the Government as goals for the ambient waters. These environmental values are published on the website: <http://www.environment.nsw.gov.au/ieo/index.htm>. The EIS should state the environmental values listed for the catchment and waterway type relevant to your proposal. NB: A consolidated and approved list of environmental values are not available for groundwater resources. Where groundwater may be affected the EIS should identify appropriate groundwater environmental values and justify the choice.
- State the indicators and associated trigger values or criteria for the identified environmental values. This information should be sourced from the ANZECC 2000 *Guidelines for Fresh and Marine Water Quality* (<http://www.environment.gov.au/water/publications/quality/nwqms-guidelines-4-vol1.html>) (Note that, as at 2004, the NSW Water Quality Objectives booklets and website contain technical criteria derived from the 1992 version of the ANZECC Guidelines. The Water Quality Objectives remain as Government Policy, reflecting the community's environmental values and long-term goals, but the technical criteria are replaced by the more recent ANZECC 2000 Guidelines). NB: While specific guidelines for groundwater are not available, the ANZECC 2000 Guidelines endorse the application of the trigger values and decision trees as a tool to assess risk to environmental values in groundwater.
- State any locally specific objectives, criteria or targets, which have been endorsed by the government e.g. the Healthy Rivers Commission Inquiries or the NSW Salinity Strategy (DLWC, 2000) (<http://www.environment.nsw.gov.au/salinity/government/nswstrategy.htm>).
- Where site specific studies are proposed to revise the trigger values supporting the ambient Water Quality and River Flow Objectives, and the results are to be used for regulatory purposes (e.g. to assess whether a licensed discharge impacts on water quality objectives), then prior agreement from the EPA on the approach and study design must be obtained.
- Describe the state of the receiving waters and relate this to the relevant Water Quality and River Flow Objectives (i.e. are Water Quality and River Flow Objectives being achieved?). Proponents are generally only expected to source available data and information. However, proponents of large or high risk developments may be required to collect some ambient water quality / river flow / groundwater data to enable a suitable level of impact assessment. Issues to include in the description of the receiving waters could include:
 - a) lake or estuary flushing characteristics
 - b) specific human uses (e.g. exact location of drinking water offtake)
 - c) sensitive ecosystems or species conservation values
 - d) a description of the condition of the local catchment e.g. erosion levels, soils, vegetation cover, etc

- e) an outline of baseline groundwater information, including, but not restricted to, depth to watertable, flow direction and gradient, groundwater quality, reliance on groundwater by surrounding users and by the environment
- f) historic river flow data where available for the catchment.

Assess impacts

- No proposal should breach clause 120 of the *Protection of the Environment Operations Act 1997* (i.e. pollution of waters is prohibited unless undertaken in accordance with relevant regulations).
- Identify and estimate the quantity of all pollutants that may be introduced into the water cycle by source and discharge point including residual discharges after mitigation measures are implemented.
- Include a rationale, along with relevant calculations, supporting the prediction of the discharges.
- Describe the effects and significance of any pollutant loads on the receiving environment. This should include impacts of residual discharges through modelling, monitoring or both, depending on the scale of the proposal. Determine changes to hydrology (including drainage patterns, surface runoff yield, flow regimes, wetland hydrologic regimes and groundwater).
- Describe water quality impacts resulting from changes to hydrologic flow regimes (such as nutrient enrichment or turbidity resulting from changes in frequency and magnitude of stream flow).
- Identify any potential impacts on quality or quantity of groundwater describing their source.
- Identify potential impacts associated with geomorphological activities with potential to increase surface water and sediment runoff or to reduce surface runoff and sediment transport. Also consider possible impacts such as bed lowering, bank lowering, instream siltation, floodplain erosion and floodplain siltation.
- Identify impacts associated with the disturbance of acid sulfate soils and potential acid sulfate soils.
- Containment of spills and leaks shall be in accordance with EPA's guidelines section 'Bunding and Spill Management' at <http://www.epa.nsw.gov.au/mao/bundingspill.htm> and the most recent versions of the Australian Standards referred to in the Guidelines. Containment should be designed for no-discharge.
- The significance of the impacts listed above should be predicted. When doing this it is important to predict the ambient water quality and river flow outcomes associated with the proposal and to demonstrate whether these are acceptable in terms of achieving protection of the Water Quality and River Flow Objectives. In particular the following questions should be answered:
 - a) will the proposal protect Water Quality and River Flow Objectives where they are currently achieved in the ambient waters; and
 - b) will the proposal contribute towards the achievement of Water Quality and River Flow Objectives over time, where they are not currently achieved in the ambient waters.
- Consult with the EPA as soon as possible if a mixing zone is proposed (a mixing zone could exist where effluent is discharged into a receiving water body, where the quality of the water being discharged does not immediately meet water quality objectives. The mixing zone could result in dilution, assimilation and decay of the effluent to allow water quality objectives to be met further downstream, at the edge of the mixing zone). The EPA will advise the proponent under what conditions a mixing zone will and will not be acceptable, as well as the information and modelling requirements for assessment.

Note: The assessment of water quality impacts needs to be undertaken in a total catchment management context to provide a wide perspective on development impacts, in particular cumulative impacts.

- Where a licensed discharge is proposed, provide the rationale as to why it cannot be avoided through application of a reasonable level of performance, using available technology, management practice and industry guidelines.
- Where a licensed discharge is proposed, provide the rationale as to why it represents the best environmental outcome and what measures can be taken to reduce its environmental impact.
- Reference should be made to *Managing Urban Stormwater: Soils and Construction* (DECC, 2008), *Guidelines for Fresh and Marine Water Quality* (ANZECC 2000).

Describe management and mitigation measures

- Outline stormwater management to control pollutants at the source and contain them within the site. Also describe measures for maintaining and monitoring any stormwater controls.
- Outline erosion and sediment control measures directed at minimising disturbance of land, minimising water flow through the site and filtering, trapping or detaining sediment. Also include measures to maintain and monitor controls as well as rehabilitation strategies.
- Describe waste water treatment measures that are appropriate to the type and volume of waste water and are based on a hierarchy of avoiding generation of waste water; capturing all contaminated water (including stormwater) on the site; reusing/recycling waste water; and treating any unavoidable discharge from the site to meet specified water quality requirements.
- Outline pollution control measures relating to storage of materials, possibility of accidental spills (e.g. preparation of contingency plans), appropriate disposal methods, and generation of leachate.
- Describe hydrological impact mitigation measures including:
 - a) site selection (avoiding sites prone to flooding and waterlogging, actively eroding or affected by deposition)
 - b) minimising runoff
 - c) minimising reductions or modifications to flow regimes
 - d) avoiding modifications to groundwater.
- Describe groundwater impact mitigation measures including:
 - a) site selection
 - b) retention of native vegetation and revegetation
 - c) artificial recharge
 - d) providing surface storages with impervious linings
 - e) monitoring program.
- Describe geomorphological impact mitigation measures including:
 - a) site selection
 - b) erosion and sediment controls
 - c) minimising instream works
 - d) treating existing accelerated erosion and deposition

- e) monitoring program.
- Any proposed monitoring should be undertaken in accordance with the *Approved Methods for the Sampling and Analysis of Water Pollutants in NSW* (DEC 2004).

5. Soils and contamination

Describe baseline conditions

- Provide any details (in addition to those provided in the location description - Section C) that are needed to describe the existing situation in terms of soil types and properties and soil contamination.

Assess impacts

- Identify any likely impacts resulting from the construction or operation of the proposal, including the likelihood of:
 - a) disturbing any existing contaminated soil
 - b) contamination of soil by operation of the activity
 - c) subsidence or instability
 - d) soil erosion
 - e) disturbing acid sulfate or potential acid sulfate soils.
- Reference should be made to *Contaminated Sites – Guidelines for Consultants Reporting on Contaminated Sites* (OEH, 2011); *Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997* (EPA, 2015).

Describe management and mitigation measures

- Describe and assess the effectiveness or adequacy of any soil management and mitigation measures during construction and operation of the proposal including:
 - a) erosion and sediment control measures
 - b) proposals for site remediation – see *Managing Land Contamination, Planning Guidelines SEPP 55 – Remediation of Land* (Department of Urban Affairs and Planning and Environment Protection Authority, 1998)
 - c) proposals for the management of these soils – see *Acid Sulfate Soil Manual* (Acid Sulfate Soil Advisory Committee 1998) and *Acid Sulfate Soils Assessment Guidelines* (Acid Sulfate Soil Advisory Committee 1998).

6. Waste and chemicals

Describe baseline conditions

- Describe any existing waste or chemicals operations related to the proposal.
- Details of the layout of the facility and how incoming waste material will be handled and stored at the premises.
- Details of the quantity and type of waste generated, handled, processed or disposed of at the premises.
- The details of any waste products intended to be produced at the premises under a resource Recovery Order.
- Details of the waste management at the facility, including:
 - the transportation, assessment and handling of waste arriving at or generated at the site.
 - any stockpiling of waste or recovered materials at the site
 - any waste processing related to the facility, including re-use, recycling, reprocessing, or treatment both on and off the premises.
 - the method for disposing of all wastes or recovered materials at the facility.
 - the emissions arising from the handling, storage, processing and reprocessing of waste.
 - the proposed controls for managing environmental impacts of these activities
 - the quantities of each type of waste proposed to be received at the Premises
 - the details of the maximum volume of each waste type proposed to be stockpiled at the premises at any one time and the annual throughput of each waste type
 - a description of waste processing procedures for each waste type proposed to be received at the premises.

Assess impacts

- Assess the adequacy of proposed measures to minimise natural resource consumption and minimise impacts from the handling, transporting, storage, processing and reprocessing of waste and/or chemicals.
- Reference should be made to: the EPA's *Waste Classification Guidelines 2014*

Describe management and mitigation measures

- Outline measures to minimise the consumption of natural resources.
- Outline measures to avoid the generation of waste and promote the re-use and recycling and reprocessing of any waste.
- Outline measures to support any approved regional or industry waste plans.

7. Cumulative impacts

- Identify the extent that the receiving environment is already stressed by existing development and background levels of emissions to which this proposal will contribute.
- Assess the impact of the proposal against the long term air, noise and water quality objectives for the area or region.
- Identify infrastructure requirements flowing from the proposal (e.g. water and sewerage services, transport infrastructure upgrades).
- Assess likely impacts from such additional infrastructure and measures reasonably available to the proponent to contain such requirements or mitigate their impacts (e.g. travel demand management strategies).

F. List of approvals and licences

- Identify all approvals and licences required under environment protection legislation including details of all scheduled activities, types of ancillary activities and types of discharges (to air, land, water).

G. Compilation of mitigation measures

- Outline how the proposal and its environmental protection measures would be implemented and managed in an integrated manner so as to demonstrate that the proposal is capable of complying with statutory obligations under EPA licences or approvals (e.g. outline of an environmental management plan).
- The mitigation strategy should include the environmental management and cleaner production principles which would be followed when planning, designing, establishing and operating the proposal. It should include two sections, one setting out the program for managing the proposal and the other outlining the monitoring program with a feedback loop to the management program.

H. Justification for the Proposal

- Reasons should be included which justify undertaking the proposal in the manner proposed, having regard to the potential environmental impacts.

ATTACHMENT B: GUIDANCE MATERIAL

Title	Web address
Relevant Legislation	
<i>Contaminated Land Management Act 1997</i>	http://www.legislation.nsw.gov.au/#/view/act/1997/140
<i>Environmentally Hazardous Chemicals Act 1985</i>	http://www.legislation.nsw.gov.au/#/view/act/1985/14
<i>Environmental Planning and Assessment Act 1979</i>	http://www.legislation.nsw.gov.au/#/view/act/1979/203
<i>Protection of the Environment Operations Act 1997</i>	http://www.legislation.nsw.gov.au/#/view/act/1997/156
<i>Water Management Act 2000</i>	http://www.legislation.nsw.gov.au/#/view/act/2000/92
Licensing	
Guide to Licensing	www.epa.nsw.gov.au/licensing/licenceguide.htm
Air Issues	
Air Quality	
Approved methods for modelling and assessment of air pollutants in NSW (2016)	http://www.epa.nsw.gov.au/air/appmethods.htm
POEO (Clean Air) Regulation 2010	http://www.legislation.nsw.gov.au/#/view/regulation/2010/428
Noise and Vibration	
NSW Noise Policy for Industry	http://www.epa.nsw.gov.au/your-environment/noise/industrial-noise/noise-policy-for-industry-(2017)
Interim Construction Noise Guideline (DECC, 2009)	http://www.epa.nsw.gov.au/noise/constructnoise.htm
Assessing Vibration: a technical guideline (DEC, 2006)	http://www.epa.nsw.gov.au/noise/vibrationguide.htm
NSW Road Noise Policy (DECCW, 2011)	http://www.epa.nsw.gov.au/your-environment/noise/transport-noise
NSW Rail Infrastructure Noise Guideline (EPA, 2013)	http://www.epa.nsw.gov.au/your-environment/noise/transport-noise
Human Health Risk Assessment	

Environmental Health Risk Assessment: Guidelines for assessing human health risks from environmental hazards (enHealth, 2012)	http://www.eh.org.au/documents/item/916
Waste, Chemicals and Hazardous Materials and Radiation	
Waste	
Environmental Guidelines: Solid Waste Landfills (EPA, 2016)	http://www.epa.nsw.gov.au/waste/landfill-sites.htm
Draft Environmental Guidelines - Industrial Waste Landfilling (April 1998)	http://www.epa.nsw.gov.au/resources/waste/envguidlms/industrialfill.pdf
EPA's Waste Classification Guidelines 2014	http://www.epa.nsw.gov.au/wasteregulation/classify-guidelines.htm
Resource recovery orders and exemptions	http://www.epa.nsw.gov.au/wasteregulation/orders-exemptions.htm
European Unions Waste Incineration Directive 2000	http://ec.europa.eu/environment/archives/air/stationary/wid/legislation.htm
EPA's Energy from Waste Policy Statement	http://www.epa.nsw.gov.au/wastestrategy/energy-from-waste.htm
NSW Waste Avoidance and Resource Recovery Strategy 2014-2021	http://www.epa.nsw.gov.au/wastestrategy/warr.htm
Chemicals subject to Chemical Control Orders	
Chemical Control Orders (regulated through the EHC Act)	http://www.epa.nsw.gov.au/pesticides/CCOs.htm
National Protocol - Approval/Licensing of Trials of Technologies for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
National Protocol for Approval/Licensing of Commercial Scale Facilities for the Treatment/Disposal of Schedule X Wastes - July 1994	Available in libraries
Water and Soils	
Acid sulphate soils	
Coastal acid sulfate soils guidance material	http://www.environment.nsw.gov.au/acidsulfatesoil/ and http://www.epa.nsw.gov.au/mao/acidsulfatesoils.htm
Acid Sulfate Soils Planning Maps	http://www.environment.nsw.gov.au/acidsulfatesoil/riskmaps.htm
Contaminated Sites Assessment and Remediation	
Managing land contamination: Planning Guidelines – SEPP 55 Remediation of Land	http://www.epa.nsw.gov.au/clm/planning.htm

Guidelines for Consultants Reporting on Contaminated Sites (EPA, 2000)	http://www.epa.nsw.gov.au/resources/clm/20110650consultantsguidelines.pdf
Guidelines for the NSW Site Auditor Scheme - 2nd edition (DEC, 2006)	http://www.epa.nsw.gov.au/resources/clm/auditorguidelines06121.pdf
Sampling Design Guidelines (EPA, 1995)	http://www.epa.nsw.gov.au/resources/clm/95059sampingdline.pdf
National Environment Protection (Assessment of Site Contamination) Measure 1999 (or update)	http://www.scew.gov.au/nepms/assessment-site-contamination
Soils – general	
Managing land and soil	http://www.environment.nsw.gov.au/soils/landandsoil.htm
Managing urban stormwater for the protection of soils	http://www.environment.nsw.gov.au/stormwater/publications.htm
Landslide risk management guidelines	http://australiangeomechanics.org/admin/wp-content/uploads/2010/11/LRM2000-Concepts.pdf
Site Investigations for Urban Salinity (DLWC, 2002)	http://www.environment.nsw.gov.au/resources/salinity/booklet3siteinvestigationsforurbansalinity.pdf
Local Government Salinity Initiative Booklets	http://www.environment.nsw.gov.au/salinity/solutions/urban.htm
Water	
Water Quality Objectives	http://www.environment.nsw.gov.au/ieo/index.htm
ANZECC (2000) Guidelines for Fresh and Marine Water Quality	http://www.environment.gov.au/water/publications/quality/nwgms-guidelines-4-vol1.html
Applying Goals for Ambient Water Quality Guidance for Operations Officers - Mixing Zones	Contact the EPA on 131555
Approved Methods for the Sampling and Analysis of Water Pollutant in NSW (2004)	http://www.environment.nsw.gov.au/resources/legislation/approvedmethods-water.pdf



REQUEST FOR INPUT INTO SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Development Proposal: Waste Management Facility

To: Sydney West Region

File: SEAR 1251

From: Industry Assessment

Date: 15/08/18

Office of Sustainable Development Contact Officer:

Name: John Booth

Phone No: (02) 8275 1281

Secretary's Environmental Assessment Requirements or relevant information has been requested for the preparation of the following (tick applicable):

☒ Environmental Impact Statement	☐ Statement of Environmental Effects	☐ Review of Environmental Factors
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Date Information Required By: 29/08/18

[Note: Only fill out responses relevant to your section]

1. LEGISLATIVE FRAMEWORK

Please provide advice on whether the proposed development requires approval/concurrence under one or more of the following:

☒ E P & A Act Part 4 Consent	☐ Native Vegetation Conservation Act
☐ E P & A Act Part 5 Approval	☐ Heritage Act
☐ POEO Act	☐ EPBC Act (Cwth)
☐ Water Management Act	☐ Roads Act
☐ Coastal Protection Act	☐ Mine Subsidence Act
☐ Hunter Water (Special Areas) Regs	☐ Rural Fires Act
☐ NPWS Act	

2. PLANNING INSTRUMENTS, POLICIES & STRATEGIES

2.1. List applicable State, Regional & Local EPIs, DCPs, Policies, or Strategies (including drafts), Water Sharing Plans, Regional Vegetation Management Plans that apply and any particularly relevant provisions

State Environmental Planning Policy (Infrastructure) 2007

State Environmental Planning Policy (State and Regional Development) 2011

State Environmental Planning Policy No.19 – Bushland in Urban Areas

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 44 – Koala Protection

State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017

Campbelltown Local Environmental Plan 2015

Campbelltown (Sustainable City) Development Control Plan 2015

2.2. Is the proposal permissible?

☐

Yes

☐

No

Provide details on the relevant zoning provisions or permissibility. Also, where a project is not clearly in one category, please provide details:

The site is zoned SP2 Infrastructure: Drainage under the Campbelltown Local Environmental Plan 2015. Waste Management Services is neither permissible without consent or with consent. However, State Environmental Planning Policy (Infrastructure) 2007 Division 23 Clause 120 identifies SP2 Infrastructure as a prescribed zone. Clause 121 permits development with consent in a prescribed zone.

The effects of flooding will be the largest determinant of permissibility. Effects on biodiversity will also be key issues.

Note: a zoning map showing the site should be attached

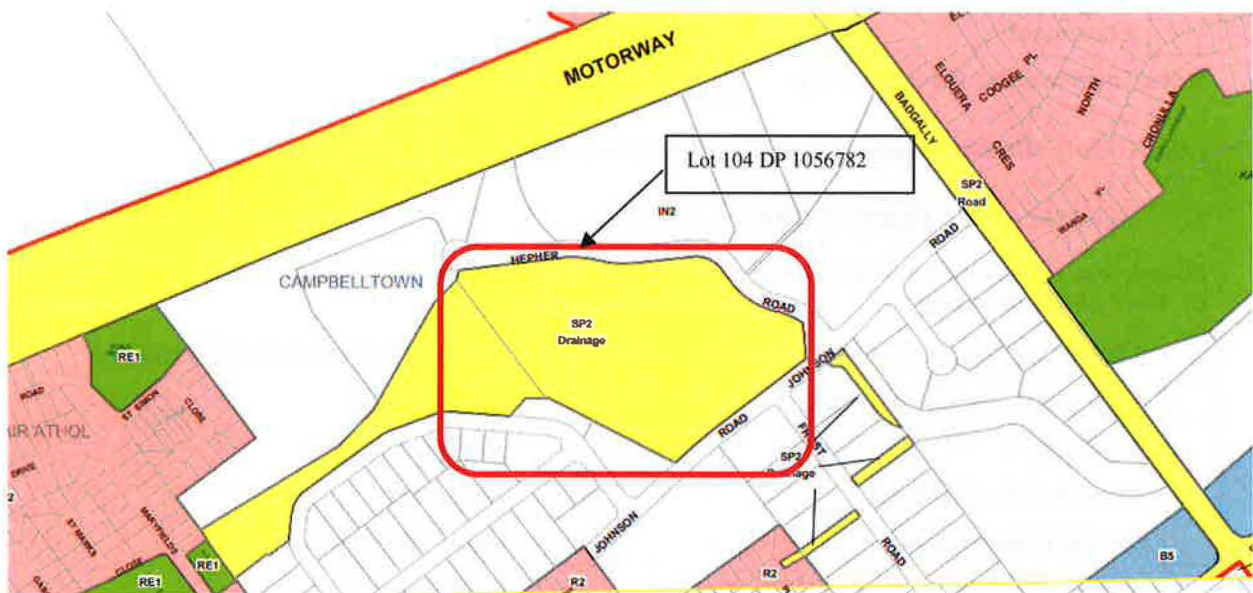


Figure 1: Land zoning map

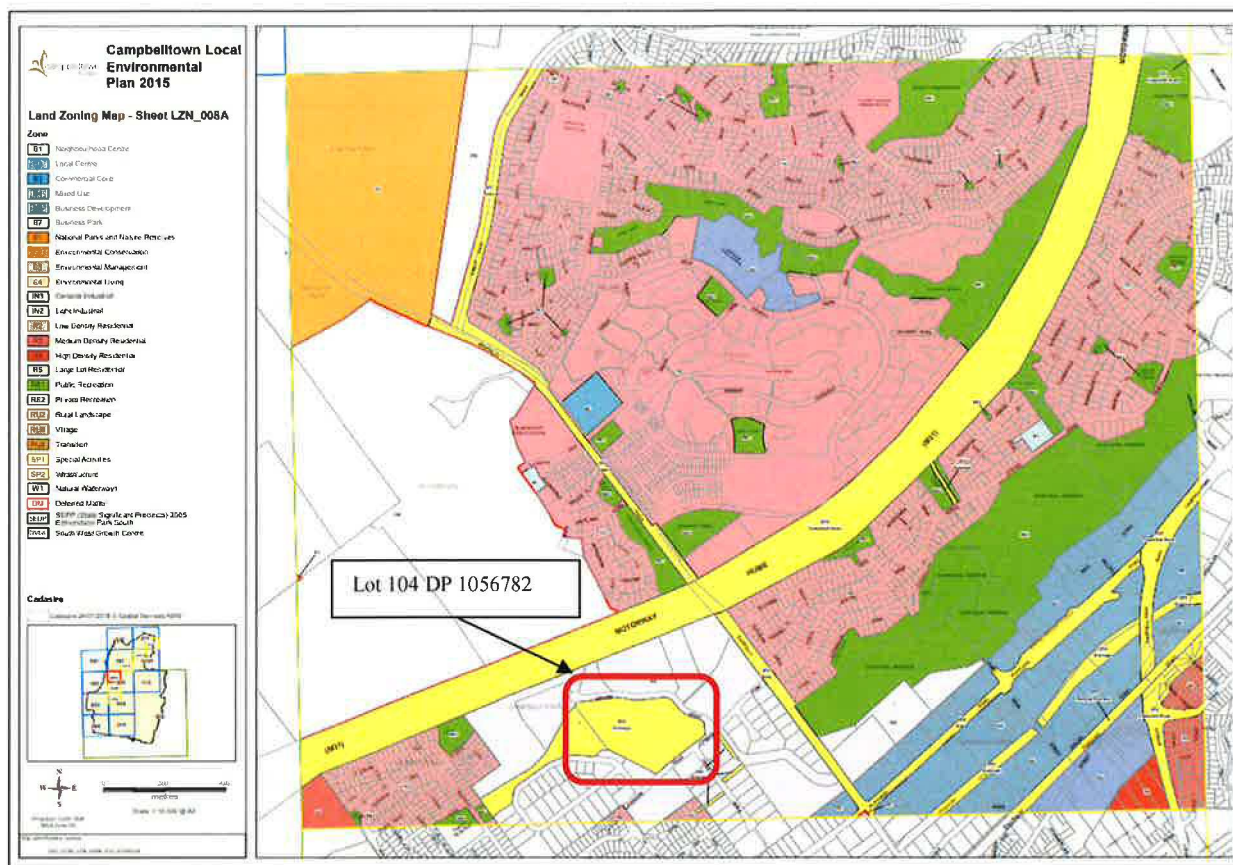


Figure 2: Land Zoning Map - Sheet LZN_008A

Division 23 Waste or resource management facilities

120 Definitions

In this Division:

prescribed zone means any of the following land use zones or a land use zone that is equivalent to any of those zones:

- (a) RU1 Primary Production,
- (b) RU2 Rural Landscape,
- (c) IN1 General Industrial,
- (d) IN3 Heavy Industrial,
- (e) SP1 Special Activities,
- (f) SP2 Infrastructure.

resource recovery facility, *waste disposal facility*, *waste or resource management facility* and *waste or resource transfer station* have the same meanings as in the Standard Instrument.

121 Development permitted with consent

- (1) Development for the purpose of waste or resource management facilities, other than development referred to in subclause (2), may be carried out by any person with consent on land in a prescribed zone.

Figure 3: Extract from SEPP (Infrastructure) 2007

- 2.3. List any relevant concurrence / consultation requirements? (If yes, please identify the instrument and provisions):

See Environmental Protection License under the Protection of the Environment Operation Act 1997 (POEO) & The Protection of the Environment Operations (General) Regulation 2009 (POEO Regulation 2009)

See Biodiversity Banking and offsets Scheme under the Threatened Species Conservation Act 1995 OR Biodiversity Offsets Scheme under the Biodiversity Conservation Act 2016

- 2.4. List any relevant Planning Strategies / Studies or relevant current work items:

A Metropolis of Three Cities – The Greater Sydney Region Plan

Western City District Plan

Campbelltown Local Planning Strategy

3. NATURAL RESOURCE STRATEGIES & PLANS

- 3.1. List applicable NSW State Natural Resource Management Policies, Strategies, & Plans (eg Catchment BluePrints, Estuary Management Plans, Coastal Management Plans & Flood Prone Risk Management Plans), NSW Coastal Policy & Flood Prone Land Policy that may apply to the proposal or any relevant provisions:

4. KEY ISSUES

- 4.1. What are likely to be the key issues? Prioritise – high, important, other, and list any specific information including modelling, maps, plans and data collection, that should be considered to address the issue. Information may be attached to this form.

Note: The Office of Sustainable Development has prepared a number of EIS Guidelines for certain types of proposals, activities and issues. A list of the current EIS Guidelines is provided at the end of this Form. If this Form relates to a type of proposal, activity or issue that has an EIS Guideline, it is not necessary for your requirements to duplicate the information covered in the Guideline. However you may still provide a list of the key issues you consider as being important for the proposal or activity to address.

Biodiversity – Threatened ecological communities, threatened species and migratory species occur in the area. All three items are MNES (Matter of National Environmental Significance). The assessment identifies that remnant vegetation will be cleared which will impact biodiversity.

Flooding – a number of creek lines and water bodies either cross this lot or are in close proximity. As identified in the assessment, there is potential for impact from flood waters. Requiring consideration of final floor levels and the effect of waste being washed away. Risk is added by the proposed site being positioned directly on top of a creek.

Traffic: increased road use and transportation of 'problem wastes' via public road ways / through local areas.

Close proximity to the Campbelltown – Macarthur Centre Regional City Centre (map: Centres Map – Sheet CEN_008)

Potentially hazardous / offensive – noise and odour

Waste management

- 4.2. In your opinion, is the proposal likely to be of local, regional or State interest? Please provide details.

Both Local and State due to the consideration of biodiversity and flooding. Traffic concerns will also be off a local nature.

4.3. For Part 5, where DIPNR is a determining authority, has it considered the need for an EIS

☐ Yes

☐ No

If yes, please detail:

N/A

4.4. Does the site have a history that is of relevance to this proposal?

☐ Yes

☐ No

If yes, please detail:

Not known

5. CONSULTATION

5.1. Please list any agencies, councils, community group, or other interested parties with whom the proponent should consult.

Environmental Protection Authority

Office of Environment and Heritage

Roads and Maritime Services

Campbelltown City Council

Department of Industry

6. CONTACT

6.1. Please provide the name and contact details of a nominated officer for ongoing liaison with your office.

Name Matthew Black

Contact No. 02 9860 1553

Position Planning Officer

Date 21/08/2018

EIS GUIDELINES

Section A: Chemical, Petroleum, Manufacturing and Materials Processing

- Chemical facilities
- Bitumen works
- Concrete works

Section B: Extractive Industries, Mining and Mineral Processing

- Extractive industries – Quarries
- Extractive industries – Dredging and other extraction in riparian and coastal areas
- Coal Mines and Associated Infrastructure

Section C: Livestock, Agriculture, Aquaculture and Forestry Industries

- Cattle feedlots
- Piggeries
- Poultry farms
- Large Scale Irrigation in the Murray, Murrumbidgee and Darling Basin (Draft)

Section D: Transport and Energy

- Roads and related facilities
- Marinas and related facilities
- NSW Wind Energy (Draft)
- Network Electricity Systems and Related Facilities
- Railway Facilities (Draft)

Section E: Water and Waste

- Landfilling
- Composting and related facilities
- Sewerage systems
- Irrigation of sewage effluent
- Aquatic Ecology
- Aquaculture in Natural Waterbodies
- Aquaculture in Land-based Activities

Form A

Request for Secretary's Requirements for the preparation of an Environmental Impact Statement

Please provide the following information so that we can advise you promptly.

1. Provide details of the proponent

Proponent's name **Campbelltown City Council**

Postal address **PO Box 57**

State **NSW** Postcode **2560**

Contact name **Ajay Arora**

Telephone **02 4645 4919/0423 206 690** Fax **02 4645 4629**

ACN; **31459914087**

2. Describe the land to which the proposal relates

No. - Street/ road **Hepher Road**

Suburb/ town/ locality **Campbelltown**

Local government area **Campbelltown**

Real property description (e.g. lot, DP/ MPS, vol/ fol, parish, portion) **Lot 104 DP1056782 (see site details in attached preliminary environmental assessment report)**

Include a locality map clearly showing the location and boundary of the site and identifying features in the locality (e.g. roads, town, river).

3. Briefly describe the proposal

Purpose **Proposed waste management facility (community recycling centre)**

Components **Shed, hard stand, stormwater detention basin and external fencing**

Size **Land area of approximately 3-4,000 m2 and waste quantities of approximately 5,000 tonnes per year**

Employment **2-3 people**

Other (including approximate value) **Estimated cost of construction is \$480,000.00**

4. The proposal is (tick one of the boxes)

- | | |
|---|---|
| ☒ permissible with development consent | Go to question 5 |
| ☐ permissible without development consent | Go to question 8 |
| ☐ prohibited development | Go to question 8 |
| ☐ project to which Part 3A of the Act applies
(Major Project) | this form should not be used and you
should contact the Department |

DEVELOPMENT WITH CONSENT

5. a) Which environmental planning instrument(s) apply to the proposal?

(ie Council local environmental plan, regional environmental plan or State environmental planning policy)

State Environmental Planning Policy (State and Regional Development) 2011, Environmental Planning Policy 55 – Remediation of Land, Environmental Planning Policy 44 – Koala Habitat Protection, State Environmental Planning Policy (Infrastructure) 2007, Campbelltown Local Environmental Plan 2015

b) Who is the consent authority?

Sydney West Regional Planning Panel

c) Is the proposal 'designated development'?

- ☒ Yes ☐ No ☐ Do not know

If yes, what is the basis for designation?

(e.g. Sch. 3 of the *Environmental Planning and Assessment Regulation 2000* or an environmental planning instrument)

Clause 32 of Schedule 3 of the EP&A Regs

What is the category of designated development?

(e.g. extractive industry, artificial waterbody)

Waste Management Facilities or Works

You should check this with the local council.

6. Is the proposal Crown development?

- | | |
|---|------------------|
| ☒ No | Go to question 7 |
| ☐ Yes. If yes, the proposal is not integrated development. | Go to question 8 |

7. Mark the relevant boxes next to the approvals which you may require in order to carry out the proposal. If any box is marked, the proposal is integrated development.

☐ <i>Roads Act 1993</i> s. 138 (Council, Land & Property Information or RMS)	Consent to: a) erect a structure or carry out a work in, on or over a public road, or b) dig up or disturb the surface of a public road, or c) remove or interfere with a structure, work or tree on a public road, or d) pump water into a public road from any land adjoining the road, or e) connect a road (whether public or private) to a classified road	☐ <i>Protection of the Environment Operations Act 1997</i> s. 43, 47, 48, 55, 122 (NSW EPA)	Environment Protection Licence to: a) authorise the carrying out of scheduled development work at any premises (scheduled development work is listed in Schedule 1 of the <i>POEO Regulation</i>) b) authorise the carrying out of scheduled activities at any premises (excluding an activity described as a 'waste activity' but including any activity described as 'waste facility') c) control carrying out of non-scheduled activities for the purposes of regulating water pollution from the activity
Tick the relevant approval body for the Roads Act: ☐ the road works affect a freeway or tollway = RMS ☐ the road works affect a Crown road = Lands Department ☐ other road works = Council ☐ the road works affect a classified road = Council with RMS concurrence Note: If an approval is required from the Council under the Roads Act, the approval is not integrated if Council is also the consent authority		☐ <i>Rural Fires Act 1997</i> s. 100B (NSW Rural Fire Service)	Bushfire Safety Authority for: a) The subdivision of bushfire prone land* that could lawfully be used for residential or rural residential purposes b) The development of bushfire prone land* for a special fire protection purpose as defined in s. 100B of the <i>Rural Fires Act 1997</i> . * bushfire prone land is identified by a 'Bushfire Prone Land Map' prepared under s.146 of the <i>EP&A Act</i> .
☐ <i>Water Management Act 2000</i> s. 89, 90, 91 (DPI Water)	Water use approval, water management work approval or activity approval under Part 3 of Chapter 3	☐ <i>Fisheries Management Act 1994</i> s. 144 (DPI Fisheries NSW)	Aquaculture Permit
☐ <i>Heritage Act 1977</i> s. 58 (Office of Environment and Heritage)	Approval in respect of the doing or carrying out of an act, matter or thing referred to in s.57(1) of the <i>Heritage Act 1977</i>	☒ <i>Fisheries Management Act 1994</i> s. 201 (DPI Fisheries NSW)	Permit to carry out dredging or reclamation work
☐ <i>Mine Subsidence Compensation Act 1961</i> s. 15 (Mine Subsidence Board)	Approval to alter or erect improvements or to subdivide land within a Mine Subsidence District	☐ <i>Fisheries Management Act 1994</i> s. 205 (DPI Fisheries NSW)	Permit to cut, remove, damage or destroy marine vegetation on public water, land, an aquaculture lease, or on the foreshore of any such land or lease
☐ <i>Mining Act 1992</i> s. 63, 64 (DPI Resources & Energy)	Grant of mining lease	☐ <i>Fisheries Management Act 1994</i> s. 219 (DPI Fisheries NSW)	Permit to: a) set a net, netting or other material, or b) construct or alter a dam, floodgate, causeway or weir, or c) otherwise create an obstruction, across or within a bay, inlet, river or creek, or across or around a flat
☐ <i>National Parks and Wildlife Act 1974</i> s. 90 (Office of Environment and Heritage)	Grant of Aboriginal heritage impact permit	☐ <i>Petroleum (Onshore) Act 1991</i> s. 9 (DPI Resources & Energy)	Grant of production lease

8. In your opinion, is the proposed development a 'potentially hazardous industry' or a 'potentially offensive industry'?

(Refer to the Department's guideline *Applying SEPP 33*)

☐ Yes ☒ No ☐ Do not know

DEVELOPMENT WITHOUT CONSENT - Only answer the following question if you answered 'permissible WITHOUT development consent' in question 4.

9. Does the proposal include an 'activity' (as defined under Part 5 of the *Environmental Planning and Assessment Act 1979* (EP&A Act))?

☐ Yes ☐ No ☐ Do not know

If yes, what is the basis of this proposal being an 'activity'?

Name all determining authorities, as defined under section 110B of the EP&A Act.

ALL DEVELOPMENT - Provide the following information for all proposals.

10. Provide details of the person requesting the Secretary's requirements, if it is not the proponent

Name Geolyse

Postal address PO Box 1963, Orange

State NSW Postcode 2800

Contact name David Walker

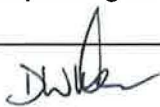
Telephone 02 6393 5000/0437 621 057 Fax 02 6393 5050

ACN 075 657 359

-
11. Signature of person requesting the Secretary's requirements

Name David Walker

Signature



Date 14 August 2018

Enquires (02) 9228 6111

Please email a scanned copy of this form to: information@planning.nsw.gov.au

Attention: Director, Industry Assessments

Or post to:

The Executive Director, Key Sites and Industry Assessments, Department of Planning
GPO Box 39, Sydney NSW 2001
Attention: Director, Industry Assessments



Office of
Environment
& Heritage

DOC18/651423
SEAR-1251

Mr John Booth
Industry Assessments
NSW Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Dear Mr Booth

**Designated Development – Construction and Operation of Waste Management Facility –
Hepler Road, Campbelltown - SEARs ID No. 1251**

Thank you for your email of 15 August 2018, requesting comments from the Office of Environment and Heritage (OEH) on the Secretary's Environmental Assessment Requirements (SEARs) for the above designated development.

As requested, please find attached OEH's EARs in Attachment A relating to biodiversity and Aboriginal cultural heritage.

OEH notes that the proposal is located within the Campbelltown local government area, which is an 'interim designated area' under the *Biodiversity Conservation (Savings and Transitional) Amendment Regulation 2018*. This means that Part 4 matters under the *Environmental Planning and Assessment Act 1979* are assessed in accordance with the provisions of the 4.15 (former Section 79C) of this Act and the repealed *Threatened Species Conservation Act 1995* until 24 November 2018. If the application is submitted after this date then the proposal will be assessed under the *Biodiversity Conservation Act 2016*.

Should you have any queries regarding this matter, please contact Janne Grose on t:8837 6017 or e: janne.grose@environment.nsw.gov.au.

Yours sincerely

S. Harrison 02/10/18

SUSAN HARRISON
Senior Team Leader Planning
Greater Sydney
Communities and Greater Sydney Division

Attachment A

Designated Development – Construction and Operation of Waste Management Facility – Hepher Road, Campbelltown - SEARs ID No. 1251

The Office of Environment and Heritage (OEH) provides the following environmental assessment requirements (EARs) relating to biodiversity and Aboriginal Cultural Heritage for the site.

Biodiversity

OEH notes the site is mapped on the Biodiversity Values Map (BV Map) along Biriwiri Creek. The BV Map identifies land with high biodiversity value, as defined by the *Biodiversity Conservation Regulation 2017*.

The PEA notes clearing of trees and vegetation may impact endangered ecological communities and threatened species (page 24). OEH notes the Sydney Metro Vegetation (v3) 2016 mapping shows River Flat Eucalypt Forest (RFEF) is mapped as occurring on the subject site and is near the site. The EIS needs to assess if RFEF occurs on the site and the potential impact of the development on the vegetation.

As the consent authority, council will need to assess whether or not the proposal will have a significant impact on threatened species, populations, or ecological communities, or their habitat. Assessment of significance should be determined in accordance with the procedures and assessment approaches contained within the *Threatened Species Assessment Guidelines: The Assessment of Significance* (DECC 2007). If council determines a significant impact is likely and a species impact statement (SIS) is required to be prepared and exhibited. The applicant needs to seek the requirements of OEH's Chief Executive for the SIS. If OEH is required to provide concurrence (including the review of the SIS), council will need to ensure documents are supplied so that the concurrence requirements of clause 59 of the Environmental Planning and Assessment Regulation 2000 are satisfied and that a \$320 administration fee – in accordance with clause 252A of the Environmental Planning and Assessment Regulation 2000 is made payable to OEH.

Landscaping

The PEA indicates vegetation would be planted along the boundary of the site. Where remnant native vegetation is to be retained at the site and/or landscaped areas are to be established:

- these areas should be planted with a diversity of native trees, shrubs and groundcover species from the relevant local native vegetation community
- any trees to be planted are to be semi mature
- any existing juvenile remnant native plants that are to be removed are translocated to the landscape areas
- seed from local native trees/vegetation that is to be removed is collected and used in the landscape areas/remnant areas to be retained.

Watercourses

The PEA notes the site is located at the confluence of three natural watercourses and is adjacent to a waterbody (page 12) and Figure 2 shows a watercourse flows through the site and watercourses are located on the subject site. It also shows an online dam/waterbody is located upstream near the western boundary of the site. The EIS needs to identify if the development proposes to remove and/or realign any of the watercourses on the site. If so, OEH recommends the EIS assesses the impact of this on native fauna and it provides adequate provisions to protect and manage native fauna and the downstream environment. OEH suggests the EIS:

- provides details on the farm dam adjacent to the site
- provides details on the watercourses effected by the works including stream order/ whether the creeks are ephemeral or perennial; the condition of the watercourses and riparian vegetation
- describes background conditions for any water resource likely to be affected by the development including hydrology, including volume, frequency and quality of discharges at proposed intake and discharge locations
- assesses the existing environmental assets provided by the farm dam and watercourses

- assesses the impact of the development on the dam and watercourses and includes:
 - details on native fauna and flora species known to occur or potentially inhabit or use the dam/ the area surrounding the dam; or the creeks and downstream environment
 - mitigation measures to mitigate impacts on native fauna including details on the location and adequacy of the proposed relocation sites for any impacted fauna
- assesses the impact of the development on water quality including:
 - the nature and degree of impact on receiving waters
 - identification of any proposed monitoring of water quality and instream habitat
- assesses the impact of the development on hydrology including:
 - effects to the downstream environment / stream channel dynamics and morphology
 - effects to downstream ecological functions / water-dependent fauna and flora
 - impacts to natural processes and functions within watercourses
 - mitigating effects of proposed stormwater and wastewater management during and after the proposed works on hydrological attributes such as volumes, flow rates, management methods and re-use options.
 - identification of proposed monitoring of hydrological attributes
- include a scaled plan which shows the location of:
 - the watercourses / dam
 - the riparian corridor widths to be established along the watercourses
 - the footprint of the proposed development
 - the site boundary.

Aboriginal Cultural Heritage

The PEA indicates given the highly disturbed and urbanised location it is not anticipated the site would contain any items or sites of Aboriginal heritage significance (page 21) and there is low potential to impact Aboriginal heritage values (page 24). No further details are provided in the PEA on previous land disturbance at the site and it is unclear if the proposed development proposes any ground disturbance.

As noted above the site is located at the confluence of three natural watercourses so depending on previous disturbance there is potential for Aboriginal cultural heritage (ACH) to occur at the site, particularly as ACH sites have been recorded to the north of the Hume Highway. The EIS must identify and describe the ACH values that exist across the whole area that will be affected by the proposal. This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the *Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW* (DECCW, 2011). The PEA notes a desktop due diligence assessment would be completed to support the EIS (page 21). Please note, the Due Diligence process is not appropriate to use as an assessment for an EIS.

Impacts on Aboriginal cultural heritage values are to be assessed and documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR). The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH.

Consultation with Aboriginal people must be undertaken and documented in accordance with the *Aboriginal cultural heritage consultation requirements for proponents 2010* (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR.

Where harm to an Aboriginal object or declared Aboriginal place cannot be avoided, an Aboriginal Heritage Impact Permit (AHIP) will be required from OEH under the National Parks and Wildlife Act

1974. You must apply to OEH for an AHIP prior to commencing works that will directly or indirectly harm an Aboriginal object or a declared Aboriginal place.

END OF SUBMISSION

Appendix B

SEARs CHECKLIST

Table B.1 – SEARs requirements

Key Issues	Summary of Issues	Section of EIS where issue addressed
Strategic Context	- a detailed justification for the proposal and suitability of the site for the development; - a demonstration that the proposal is consistent with all relevant planning strategies, environmental planning instruments, development control plans (DCPs), or justification for any inconsistencies; and - a list of any approvals that must be obtained under any other Act or law before the development may lawfully be carried out.	- 3.7 - 3 - 3.4
Suitability of the site	- a detailed justification that the site can accommodate the proposed processing capacity, having regard to the scope of operations and its environmental impacts and relevant mitigation measures; and - floor plans depicting the proposed internal layout including the location of machinery and equipment.	- 8.2 - B+E Architectural Drawings A01-A07
Waste management	- details of the type, quantity and classification of waste to be received at the site; - details of the resource outputs and any additional processes for residual waste; - details of waste handling including, transport, identification, receipt, stockpiling and quality control; and - the measures that would be implemented to ensure that the proposed development is consistent with the aims, objectives and guidelines in the NSW Waste Avoidance and Resource Recovery Strategy 2014-21	6.11.4
Hazards and risk	- a preliminary risk screening completed in accordance with State Environmental Planning Policy No. 33 - Hazardous and Offensive Development and Applying SEPP 33 (DoP, 2011), with a clear indication of class, quantity and location of all dangerous goods and hazardous materials associated with the development. Should preliminary screening indicate that the project is "potentially hazardous" a Preliminary Hazard Analysis (PHA) must be prepared in accordance with Hazardous Industry Planning Advisory Paper No. 6 - Guidelines for Hazard Analysis (DoP, 2011) and Multi-Level Risk Assessment (DoP, 2011); and - fire risk management and containment.	6.11
Air quality	- a description of all potential sources of air and odour emissions; - an air quality impact assessment in accordance with relevant Environment Protection Authority guidelines; and - a description and appraisal of air quality impact mitigation, management and monitoring measures.	6.6
Noise and vibration	- a description of all potential noise and vibration sources during construction and operation, including road traffic noise; - a noise and vibration assessment in accordance with the relevant Environment Protection Authority guidelines; and - a description and appraisal of noise and vibration mitigation, management and monitoring measures.	6.5

Soil and water	- a description of local soils, topography, drainage and landscapes; - details of water usage for the proposal including existing and proposed water licencing requirements in accordance with the Water Act 1912 and/or the Water Management Act 2000; - an assessment of potential impacts on floodplain and stormwater management and any impact to flooding in the catchment; - details of sediment and erosion controls; - a detailed site water balance; - an assessment of potential impacts on the quality and quantity of surface and groundwater resources; - details of the proposed stormwater and wastewater management systems (including sewage), water monitoring program and other measures to mitigate surface and groundwater impacts; - a description and appraisal of impact mitigation, management and monitoring measures.	Soil/geology – 6.3 Water – 6.1
Traffic and transport	- details of road transport routes and access to the site; - road traffic predictions for the development during construction and operation; and - an assessment of impacts to the safety and function of the road network and the details of any road upgrades required for the development.	•
Biodiversity	- accurate predictions of any vegetation clearing on site or for any road upgrades; - details of weed management during construction and operation in accordance with existing State, regional or local weed management plans or strategies; and - a detailed description of the measures to avoid, minimise, mitigate and offset biodiversity impacts.	6.7.5
Visual	- including an impact assessment at private receptors and public vantage points.	6.4
Heritage	- including Aboriginal and non-Aboriginal cultural heritage.	Aboriginal – 6.9 Non- Aboriginal - 6.10

Additional OEH comments:	- OEH notes that the proposal is located within the Campbelltown local government area, which is an 'interim designated area' under the Biodiversity Conservation (Savings and Transitional) Amendment Regulation 2018. This means that Part 4 matters under the Environmental Planning and Assessment Act 1979 are assessed in accordance with the provisions of the 4.15 (former Section 79C) of this Act and the repealed Threatened Species Conservation Act 1995 until 24 November 2018. If the application is submitted after this date then the proposal will be assessed under the Biodiversity Conservation Act 2016. OEH notes the site is mapped on the Biodiversity Values Map (BV Map) along Biriwiri Creek. The BV Map identifies land with high biodiversity value, as defined by the Biodiversity Conservation Regulation 2017. The PEA notes clearing of trees and vegetation may impact endangered ecological communities and threatened species (page 24). OEH notes the Sydney Metro Vegetation (v3) 2016 mapping shows River Flat Eucalypt Forest (RFEF) is mapped as occurring on the subject site and is near the site. The EIS needs to assess if RFEF occurs on the site and the potential impact of the development on the vegetation. As the consent authority, council will need to assess whether or not the proposal will have a significant impact on threatened species, populations, or ecological communities, or their habitat. Assessment of significance should be determined in accordance with the procedures and assessment approaches contained within the Threatened Species Assessment Guidelines: The Assessment of Significance (DECC 2007). If council determines a significant impact is likely and a species impact statement (SIS) is required to be prepared and exhibited. The applicant needs to seek the requirements of OEH's Chief Executive for the SIS. If OEH is required to provide concurrence (including the review of the SIS), council will need to ensure documents are supplied so that the concurrence requirements of clause 59 of the Environmental Planning and Assessment Regulation 2000 are satisfied and that a \$320 administration fee- in accordance with clause 252A of the Environmental Planning and Assessment Regulation 2000 is made payable to OEH.	6.8
	Landscaping The PEA indicates vegetation would be planted along the boundary of the site. Where remnant native vegetation is to be retained at the site and/or landscaped areas are to be established: - these areas should be planted with a diversity of native trees, shrubs and groundcover species from the relevant local native vegetation community - any trees to be planted are to be semi mature - any existing juvenile remnant native plants that are to be removed are translocated to the landscape areas - seed from local native trees/vegetation that is to be removed is collected and used in the landscape areas/remnant areas to be retained.	Refer Landscaping Drawings

	Watercourses The PEA notes the site is located at the confluence of three natural watercourses and is adjacent to a waterbody (page 12) and Figure 2 shows a watercourse flows through the site and watercourses are located on the subject site. It also shows an online dam/waterbody is located upstream near the western boundary of the site. The EIS needs to identify if the development proposes to remove and/or realign any of the watercourses on the site. If so, OEH recommends the EIS assesses the impact of this on native fauna and it provides adequate provisions to protect and manage native fauna and the downstream environment. OEH suggests the EIS: - provides details on the farm dam adjacent to the site - provides details on the watercourses effected by the works including stream order/ whether the creeks are ephemeral or perennial; the condition of the watercourses and riparian vegetation describes background conditions for any water resource likely to be affected by the development including hydrology, including volume, frequency and quality of discharges at proposed intake and discharge locations - assesses the existing environmental assets provided by the farm dam and watercourses - assesses the impact of the development on the dam and watercourses and includes: - o details on native fauna and flora species known to occur or potentially inhabit or use the dam/ the area surrounding the dam; or the creeks and downstream environment - o mitigation measures to mitigate impacts on native fauna including details on the location and adequacy of the proposed relocation sites for any impacted fauna - assesses the impact of the development on water quality including: - o the nature and degree of impact on receiving waters - o identification of any proposed monitoring of water quality and instream habitat - assesses the impact of the development on hydrology including: - o effects to the downstream environment I stream channel dynamics and morphology - o effects to downstream ecological functions I water-dependent fauna and flora - o impacts to natural processes and functions within watercourses - o mitigating effects of proposed stormwater and wastewater management during and after - o the proposed works on hydrological attributes such as volumes, flow rates, management - o methods and re-use options. - o identification of proposed monitoring of hydrological attributes - include a scaled plan which shows the location of: - o the watercourses I dam	6.1
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	○ the riparian corridor widths to be established along the watercourses ○ the footprint of the proposed development ○ the site boundary.	
	Aboriginal Cultural Heritage The PEA indicates given the highly disturbed and urbanised location it is not anticipated the site would contain any items or sites of Aboriginal heritage significance (page 21) and there is low potential to impact Aboriginal heritage values (page 24). No further details are provided in the PEA on previous land disturbance at the site and it is unclear if the proposed development proposes any ground disturbance. As noted above the site is located at the confluence of three natural watercourses so depending on previous disturbance there is potential for Aboriginal cultural heritage (ACH) to occur at the site, particularly as ACH sites have been recorded to the north of the Hume Highway. The EIS must identify and describe the ACH values that exist across the whole area that will be affected by the proposal. This may include the need for surface survey and test excavation. The identification of cultural heritage values should be guided by the Guide to investigating, assessing and reporting on Aboriginal Cultural Heritage in NSW (DECCW, 2011). The PEA notes a desktop due diligence assessment would be completed to support the EIS (page 21). Please note, the Due Diligence process is not appropriate to use as an assessment for an EIS. Impacts on Aboriginal cultural heritage values are to be assessed and documented in an Aboriginal Cultural Heritage Assessment Report (ACHAR). The ACHAR must demonstrate attempts to avoid impact upon cultural heritage values and identify any conservation outcomes. Where impacts are unavoidable, the ACHAR must outline measures proposed to mitigate impacts. Any objects recorded as part of the assessment must be documented and notified to OEH. Consultation with Aboriginal people must be undertaken and documented in accordance with the Aboriginal cultural heritage consultation requirements for proponents 2010 (DECCW). The significance of cultural heritage values for Aboriginal people who have a cultural association with the land must be documented in the ACHAR. Where harm to an Aboriginal object or declared Aboriginal place cannot be avoided, an Aboriginal Heritage Impact Permit (AHIP) will be required from OEH under the National Parks and Wildlife Act 1974. You must apply to OEH for an AHIP prior to commencing works that will directly or indirectly harm an Aboriginal object or a declared Aboriginal place.	6.9

Appendix C

ECOLOGICAL ASSESSMENT

12 June 2019

David Walker
Senior Town Planner
Premise (NSW) Pty Ltd
154 Peisley Street
Orange NSW 2800

Dear David

Re: Flora and Fauna Assessment for new Community Recycling Centre at Hepher Road, Campbelltown NSW
Project no. 28340

Biosis Pty Ltd was commissioned by Premise to complete a flora and fauna assessment to support the proposed Community Recycling Facility at Hepher Road, Campbelltown NSW (the study area) (see Figure 1). The proposed development is being assessed under Part 4 of the NSW *Environmental Planning and Assessment Act* (EP&A Act). The proposal has been deemed designated development due to its proximity to natural waterbodies and an Environmental Impact Statement (EIS) is required to support the project.

The study area is located within the *Western Sydney Interim Designated Area* and therefore, and in accordance with the NSW *Biodiversity Conservation (Savings and Transitional) Regulation 2017*, Part 7, Section 27 Clause (f), the following is noted for this project:

- Flora and fauna assessments are to be assessed under the provisions of the former NSW *Threatened Species Conservation Act 1995* (TSC Act).
- The transitional arrangements only apply to development consents made on or before the 24 November 2019.
- The transitional arrangements only apply if a Species Impact Statement submitted in connection with the application is submitted on or before 24 May 2020 (if applicable).

Purpose

The purpose of this flora and fauna assessment is to assess the ecological values of the study area. This assessment will also aim to determine the presence of any threatened ecological communities (TECs) within the study area and, where possible, assess the potential impacts of the project on any threatened species, populations and/or ecological communities (biota), or their habitat, listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or the former NSW *Threatened Species Conservation Act 1995* (TSC Act).

Study area

The study area is located south of the Hume Highway within the City of Campbelltown Local Government Area (LGA). Surrounding land use is predominantly industrial with large-scale factory sheds bordering the site to the north and south. In the broader landscape, residential suburbs occupy areas south of the study area, with Campbelltown Central Business District (CBD) located 1.3 kilometres to the south. North of the

Hume Highway there are large areas of cleared, undeveloped rural land. The vegetated riparian corridor of Biriwiri Creek is also located to the north of the study area (Figure 1).

The study area is approximately 8.93 hectares in area, consisting of Lot 104 DP1056782, being separated into two sections by Hepher Road (Figure 2). The proposed development footprint, covering 0.29 hectares, is located in the southern portion of Lot 104 DP1056782 and includes a waste management facility, car parks and other ancillary facilities (the subject site) (see Figure 2).

Method

Database and literature review

Prior to completing a field investigation, information provided by Premise as well as other key information was reviewed, including:

- Commonwealth Department of the Environment and Energy (DEE) Protected Matters Search Tool for matters protected by the EPBC Act.
- NSW Office of Environment and Heritage (OEH) BioNet Atlas of NSW Wildlife, for items listed under the TSC Act.
- NSW DPI *Biosecurity Act 2015* for Priority listed weeds for the Greater Sydney Local Land Services (LLS) area.
- OEH Vegetation Information System (VIS) mapping, including:
 - *Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands* (SCIVI) (Tozer et al. 2010).
 - *The Native Vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities* (Tozer 2003).

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999*
- *Environmental Planning and Assessment Act 1979*
- *Former Threatened Species Conservation Act 1995*
- *Biodiversity Conservation (Savings and Transitional) Regulation 2017*
- *Water Management Act 2000*
- *Biosecurity Act 2015*

Field investigation

A field investigation of the study area was undertaken on 19 February 2019 by Kayla Asplet (Project Zoologist) and Bianca Klein (Project Botanist). Vegetation within the study area was surveyed using a combination of the Biodiversity Assessment Method (OEH 2017a) plots/transects and the random meander technique (Cropper 1993) over 10 person hours.

A habitat-based assessment was completed to determine the presence of suitable habitat for threatened species previously recorded (OEH 2019) or predicted to occur (Commonwealth of Australia 2019) within a 5 kilometre radius of the study area. This list was filtered according to species descriptions, life history, habitat preference and soil preference to determine those species most likely to be present within the study area.

Results

General environment

Regional soil landscape mapping indicates that the study area occurs on the Blacktown (bt) soils landscape of the Wianamatta Group: a combination of Ashfield Shale – laminite and dark grey siltstone, with the occasional calcareous claystone, laminite and coal. Soils associated with this landscape are shallow to moderately deep red - brown podzolic soils on crests, upper slopes and well-drained areas, with deep yellow soils on lower slopes and in drainage depressions. Vegetation is typically almost completely cleared tall open forest and woodland, with traces of remnant Cumberland Plain Woodland remaining. The composition of the soil is highly influential on the vegetation communities observed.

In general, the study area is in poor condition, with evidence of historical vegetation and soil disturbances, which have encouraged the recruitment of weeds. The centre of the study area forms a bowl-like basin, which is prone to inundation. The proposed development footprint has been located above the flood prone areas of the study area (see Figure 2).

The study area contains two tributaries of Biriwiri Creek, which flow from the north (fourth order) and northwest (third order), before joining and flowing to the south east as a fourth order stream. Within the study area these creeklines have been highly modified and lack functional habitat for aquatic flora and fauna.

Vegetation communities

Prior to the field investigation, Biosis reviewed the native vegetation communities that have been mapped in the broader landscape (Tozer 2003, Tozer et al. 2010). Four TECs have been mapped, including:

- *Moist Shale Woodland in the Sydney Basin Bioregion* (Endangered, BC Act), and listed as *Western Sydney Dry Rainforest and Moist Woodland on Shale* (Critically Endangered, EPBC Act).
- *Cumberland Plain Woodland in the Sydney Basin Bioregion* (Critically Endangered, BC Act), and a component of *Cumberland Plain Shale-Gravel Transition Forest* (Critically Endangered, EPBC Act).
- *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner bioregions* (Swamp Oak Floodplain Forest) (Endangered, BC Act), and listed as *Coastal Swamp Oak Floodplain Forest of the New South Wales and South East Queensland ecological community* (Endangered, EPBC Act).
- *River-flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregion* (Endangered, BC Act), currently under assessment for listing under the EPBC Act.

A key focus of the field investigation was to assess the vegetation of the study area against the final determinations for the above listed TECs to determine presence or absence.

The native vegetation of the study area was found to consist of two communities, Swamp Oak Floodplain Forest and Freshwater Wetlands (Figure 2). The remainder of the vegetation of the study area consists of native plantings and exotic grasslands. The structure, floristic composition and condition of these communities are described below.

Swamp Oak Floodplain Forest

A total of 1.81 hectares of Swamp Oak Floodplain Forest (Endangered, BC Act) is present as two patches within the study area, with 0.07 hectares of this community occurring within the subject site (see Figure 2).

Within the study area this community has been subject to weed infestation and is considered to be in poor condition. The canopy largely consists of a monoculture of Swamp Oak *Casuarina glauca*, with Spotted Gum *Corymbia maculata* and Rough-barked Apple *Angophora floribunda* present as scattered trees. The mid storey stratum is limited as a result of historical under-scrubbing, and contains juvenile Swamp Oak plants only. Very few native species are present in the ground layer, the most common being Kangaroo Grass *Themeda australis* and Weeping Grass *Microlaena stipoides* var. *stipoides*, occurring in scattered patches. The dominant exotic flora species were Asparagus Fern *Asparagus asparagoides*, African Boxthorn *Lycium ferocissimum*, and grasses including Rhodes Grass *Chloris gayana* and Paspalum *Paspalum dilatatum* (Plate 1).

One floristic plot/transect was completed within this community in accordance with the BAM. Analysis of the floristic cover and abundance data determined that the patch of Swamp Oak Floodplain Forest aligns with the BC Act final determination for this community, but does not meet the EPBC condition thresholds of the Commonwealth conservation advice (DEE 2018). This assessment is detailed in Table 1 and Table 2 below.

In order to be considered a Matter of National Environmental Significance (MNES), areas of the ecological community must meet both:

- The key diagnostic characteristics (see Table 1).
- At least the minimum condition thresholds for 'Category C' (see Table 2).

Table 1 Key diagnostic characteristic assessment

Key diagnostic characteristic	Characteristic present	Notes
Occurs from south-east Queensland to southern NSW within the South Eastern Queensland, NSW North Coast, Sydney Basin, or South East Corner bioregions	Yes	Study area is within the Sydney Basin Bioregion
Occurs in coastal catchments at elevations up to 50 m ASL, typically less than 20 m ASL, on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. There are also minor occurrences on coastal dune swales or flats, particularly deflated dunes and dune soaks.	No	The elevation ranges from 68-70 metres above sea level across the study area.
Occurs on soils derived from unconsolidated sediments (including alluvium), typically hydrosols (grey-black clay-loam and/or sandy loam soils) and sometimes organosols (peaty soils). It may occur in transitional soils (or catenas) where shallow unconsolidated sediments border lithic substrates.	Yes	Study area occurs on the Blacktown soils landscape of the Cumberland Plain, where residual, sandy soils are present.
Has an open woodland, woodland, forest, or closed forest structure, with a tree canopy that has a total crown cover of at least 10 per cent.	Yes	Vegetation is of an open forest structure.
Has a canopy of trees dominated by <i>Casuarina glauca</i> (swamp-oak, swamp she-oak).	Yes	Swamp Oak was the only canopy species present within the surveyed

area.

Table 2 Condition threshold assessment

Condition thresholds					Study area
Patch size/quality	Large patch*: The patch is at least 5 ha	Medium patch: The patch is at least 2 ha and less than 5 ha	Small contiguous patch: The patch is at least 0.5 ha and less than 2 ha, and is connected to a larger area of native vegetation of at least 5 ha	Small patch: The patch is at least 0.5 ha and less than 2 ha	Small patch. The patch at the study area is not connected to >5ha of native vegetation in the locality.
High Quality Predominantly native understorey Non-native species comprise less than 20% of total understorey vegetation cover	CATEGORY A A large patch that meets key diagnostics and has a predominantly native understorey.	CATEGORY B A medium patch that meets key diagnostics and has a predominantly native understorey OR A small patch that meets key diagnostics and has a predominantly native understorey and is contiguous with another large area of native vegetation.		CATEGORY C A small patch that meets key diagnostics and has a predominantly native understorey	The small patch meets all but one key diagnostic but has understorey that is predominantly exotic

* A patch is a discrete and mostly continuous area of the ecological community, as defined by the key diagnostics, but can include small-scale variations, gaps and disturbances. The edge of the patch extends to the outer edge of swamp oak tree canopy. Where the canopy is sparse or interrupted, the edge of the patch is defined by the shortest distance between the outer edges of the canopies of each of the outermost trees. When it comes to defining a patch of the ecological community allowances are made for “breaks” up to 30 metres between areas that meet the key diagnostics. Such breaks may be the result of watercourses or drainage lines, tracks, paths, roads, gaps made by exposed areas of soil, and areas of localised variation in vegetation that do not meet the key diagnostics.

Based on the assessments shown in Table 1 and Table 2, the patch of Swamp Oak Floodplain Forest at the study area does not meet the specified thresholds for protection as a MNES under the EPBC Act. The patch is considered a ‘small patch’ with a predominantly exotic understorey. Consequently, impacts to this community at the study area will not require referral to the Commonwealth Minister for the Environment.

Freshwater Wetlands

A total of 1.3 hectares of the BC Act listed community; *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* is present within the study area. The Freshwater Wetlands community occurs as small patches within the study area, both north and south of Hephher Road (Figure 2). The predominant species present include Broad-leaved Cumbungi *Typha orientalis*, Slender Knotweed *Persicaria decipiens*, *Amphibromus nervosus* and Common Couch *Cynodon dactylon*. The community occurs in both a moderate and low condition state (see Figure 2), with low condition being more degraded and consisting of more exotic species relative to the moderate condition patch. Exotic flora

species recorded within the Freshwater Wetland were primarily within the ground layer stratum and included Purple top *Verbena bonariensis* and Paspalum. Exotic vegetation, consisting of mainly exotic grasses is present throughout the remainder of the study area. No threatened species were encountered during the field investigation.

Threatened species

Flora

Background searches identified 21 threatened flora species and 59 threatened fauna species recently recorded (OEH 2019) or predicted to occur (DEE 2019) within a 10 kilometre radius of the study area. Marginal habitat for the following threatened flora species is present:

- Native Pear *Marsdenia viridiflora* subsp. *viridiflora* (Endangered, BC Act)
- Spiked Rice-flower *Pimelea spicata* (Endangered, BC Act and EPBC Act)

Native Pear has previously been recorded within 5 kilometres of the study area. It grows in a variety of habitats including woodland communities on the Cumberland Plain.

Spiked Rice-flower has previously been recorded within 5 kilometres of the study area as recently as 2018. Like Native Pear, this small shrub is also associated with woodland communities on the Cumberland Plain. Potential habitat for these species within the study area was considered to be areas of Swamp Oak Floodplain Forest, however no threatened flora were recorded during the field investigation and the survey effort is considered sufficient for the potential detection of these two species.

Fauna

One threatened fauna species, Green and Golden Bell Frog *Litoria aurea*, listed as Endangered under the BC Act and Vulnerable under the EPBC Act, was considered to have potential to occur within the study area. Threatened species recorded within 5 kilometres or predicted to occur by background searches have been assessed for their potential to occur (see Appendix 3). Those species considered most likely to occur in the study area are considered to occur on occasion for foraging only. Habitat features present for threatened species are discussed in further detail below.

The wetland in the north of the study area is separated from the subject site by Hephher Road. This wetland occurs as a shallow depression containing aquatic vegetation with limited open water and surrounded by exotic grassland. This area provides potential habitat for Green and Golden Bell Frog, which breeds in shallow, slow flowing ephemeral pools exposed to sunlight (Pyke & White 1996, Pyke et al. 2002). There are three previous records of Green and Golden Bell Frog within 500 metres of the study area. These records are located to the west, within vegetation connected to the study area by Biriwiri creek. There is a wetland to the west of the study area that could provide refuge for these species during times of drought, but is unlikely to support breeding given that it consists of a deep, shaded pool with trees fringing the edges and limited emergent aquatic vegetation. Surrounding areas of exotic grassland may provide dispersal opportunities for Green and Golden Bell Frog. An assessment of the potential impacts of the proposal on Green and Golden Bell Frog is provided in Appendix 3.

The wetland in the north of the study area and pond to the west of the study area may provide habitat for common wetland birds such as ducks, egrets and cormorants. Habitat within these areas is considered unlikely to support threatened species or populations due to the small size, degraded condition and habitat features present. These areas will not be directly impacted by the proposed development and are unlikely to undergo indirect impacts such as altered hydrology, as the proposed development is downstream of the northern wetland, and water flow from the subject site flows to the south east, away from the pond to the

west of the study area. In addition, runoff controls and mitigation to ensure protection of these areas will be included as management measures for this proposal.

Two hollow-bearing trees, each with one medium sized hollow, were recorded during field investigations. These provide potential roosting or nesting resources for threatened parrot species such as Little Lorikeet *Glossopsitta pusilla* and microchiropteran bats such as Southern Myotis *Myotis macropus*. One of the hollow-bearing trees occurs to the west of the study area adjacent to the open pond, the other occurs to the south of the subject site. No hollow-bearing trees will be removed by the proposed development and hollow-dependant fauna are considered unlikely to be impacted.

A small number of Eucalyptus trees occurring within the study area may provide foraging resources on occasion for nectar-feeding species such as Grey-headed Flying-fox *Pteropus poliocephalus*, Gang-gang Cockatoo *Callocephalon fimbriatum* and Little Lorikeet *Glossopsitta pusilla*. Although these species may occur on occasion throughout the study area, the area of impact is only 0.07 hectares. All other trees will remain with the study area and there are larger areas of higher quality habitat surrounding the Georges River and Heathcote National Park to the east.

Swamp Oak *Casuarina glauca* may occasionally provide foraging resources for cockatoo species, including Glossy Black-cockatoo *Calyptorhynchus lathami*, which feed primarily on Allocasuarina and Casuarina species. The trees of the study area may occasionally be utilised by Glossy Black-cockatoos, however, there were no foraging signs observed on site and the study area is considered unlikely to support a local population of this species.

Open exotic grassland of the study area may provide foraging for birds of prey. This habitat will be retained as part of the proposal.

Fauna recorded in the study area during the field investigation were common species generally associated with open areas and a small number of common waterbirds. Fauna species recorded within the study area included:

- Australian Magpie *Cracticus tibicen*
- Australian Pelican *Pelecanus conspicillatus*
- Australian Raven *Corvus coronoides*
- Australian Wood Duck *Chenonetta jubata*
- Black Swan *Cygnus atratus*
- Brown Thornbill *Acanthiza pusilla*
- Common Myna *Sturnus tristis*
- Crimson Rosella *Platycercus elegans*
- Eurasian Coot *Fulica atra*
- Grey Butcherbird *Cracticus torquatus*
- Magpie-lark *Grallina cyanoleuca*
- Masked Woodswallow *Artamus personatus*
- Red Wattlebird *Anthochaera carunculata*
- Sulphur-crested Cockatoo *Cacatua galerita*
- Willie Wagtail *Rhipidura leucophrys*

Priority weeds

The Biosecurity Act outlines biosecurity risks and impacts, which in relation to the current assessment includes those risks and impacts associated with weeds. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes the introduction, presence, spread or increase of a pest into or within the State or any part of the State. A pest plant has the potential to out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight and /or harm or reduce biodiversity.

A priority weed is any weed identified in a local strategic plan, for a region that includes that land or area, as a weed that is or should be prevented, managed, controlled or eradicated in the region. Where a local strategic plan means a local strategic plan approved by the Minister under Division 2 of Part 4 of the LLS Act.

The General Biosecurity Duty states:

- *All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.*

Six priority weed species were recorded within the study area and are listed in Table 4 along with their associated biosecurity duty.

Table 3 Priority weeds and associated biosecurity duty

Scientific name	Common name	General Biosecurity Duty
<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	Mandatory measure <i>Must not be imported into the State or sold</i>
<i>Lycium ferocissimum</i>	African Boxthorn	Mandatory measure <i>Must not be imported into the State or sold</i>
<i>Senecio madagascariensis</i>	Fireweed	Prohibition on dealings <i>Must not be imported into the State or sold</i>
<i>Rubus fruticosus</i> spp. <i>aggregate</i>	Blackberry	Mandatory measure <i>Must not be imported into the State or sold</i>
<i>Asparagus aethiopicus</i>	Ground asparagus	Prohibition on dealings <i>Must not be imported into the State or sold</i>
<i>Asparagus asparagoides</i>	Bridal Creeper	Prohibition on dealings <i>Must not be imported into the State or sold</i>

As such to prevent the above listed biosecurity impacts from occurring as a result of the presence of the above listed Priority Weeds within the study area, all practical steps should be taken to control and eradicate the weeds from the study area prior to vegetation removal.

Water Management Act

Campbelltown City Council is regarded as a public authority and therefore exempt from Section 91E (1) of the Act in relation to all controlled activities that it carries out in, on or under waterfront land.

SEPP No. 44 – Koala Habitat Protection

The study area occurs within Campbelltown Local Government Area and as such, SEPP 44 applies. The study area supports Forest Red Gum *Eucalyptus teriticornis*, a Koala feed tree species as defined in Schedule 1 of the SEPP. Koala feed trees, identified above, do not make up 15 % of the total number of trees in the upper or lower strata of the tree component. Therefore the vegetation within the study area is not considered potential Koala habitat as defined under SEPP No. 44.

No further consideration is required.

Impact assessment

The proposed waste management facility will involve the following impacts to ecological features:

- Removal of 0.07 hectares of Swamp Oak Floodplain Forest EEC.
- Removal of 0.07 hectares of low quality foraging habitat for Glossy Black Cockatoo.
- Indirect impacts to Freshwater Wetlands and Green and Golden Bell Frog habitat as a result of altered hydrology.

A test of significance has been prepared to assess the potential for impacts of the proposed development on Swamp Oak Floodplain Forest and Green and Golden Bell Frog in accordance with the BC Act. A Significant Impact Criteria Assessment has also been undertaken for Green and Golden Bell Frog in accordance with the EPBC Act. These assessments are provided in Appendix 4 and Appendix 5.

The assessment determined that the development would not be considered a significant impact to Swamp Oak Floodplain Forest as it will result in the removal of 0.07 hectares of low condition vegetation. The study area contains a further 12.9 hectares of similar condition Swamp Oak Floodplain Forest, the project will result in the removal of 0.54% of the total community within the study area.

Recommendations

Given there are requirements for removal of some native vegetation including canopy trees, the focus of the following recommendations is to minimise disturbance to any surrounding native vegetation and fauna habitat. These recommendations are:

- To the fullest extent practicable, minimise disturbance to any native vegetation surrounding the study area.
- Where possible, retained trees should be protected in accordance with Australian Standard AS4970 – 2009 *Protection of Trees on Development Sites*, during construction, operation and decommissioning of the site compound.
- Appropriate erosion and sediment control measures should be installed surrounding the impact site to avoid sedimentation of receiving water bodies or other indirect impacts to surrounding biodiversity values.
- Temporary frog exclusion fencing should be erected to the north of Hephher Road to divert any dispersing frogs around the construction site and towards Biriwiri creek.
- In the unlikely event that unexpected threatened species are identified during the project, works should cease and an ecologist should be contacted immediately.

- Soil transportation should be minimised within, into or out of the study area to reduce the spread of weeds.
- Six priority weeds were identified within the study area (Table 4). Appropriate measures should be implemented to minimise the spread of these species.

I trust that this advice is of assistance to you however please contact me if you would like to discuss any elements of this ecological advice further.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Sarah Allison'.

Sarah Allison
Zoologist

References

- Allied Tree Consultancy 2018. *Tree Risk Assessment*. Prepared by Brendan Gillen for the Illawarra Retirement Trust. Reference Number: D3354
- Biosis 2016. Culburra Road, Culburra: Ecological Constraints Assessment. Report for Constructive Dialogue Architects. Authors: Misdale M & Dunne C, Biosis Pty Ltd, Wollongong. Project no. 21657.
- Biosis 2017. Lot 7 DP 825697 Culburra Road flora and fauna assessment. Report for Illawarra Retirement Trust. Authors: Misdale M, Biosis Pty Ltd, Wollongong. Project no. 25502.
- Biosis 2018. Targeted surveys for Green and Golden Bell Frog Culburra Road, Culburra. Report for Illawarra Retirement Trust. Author: Misdale M, Biosis Pty Ltd, Wollongong. Project no. 26444.
- Blackash Bushfire Consulting 2019. Special Fire Protection Purpose Development – Proposed alterations and additions to existing aged care development for Illawarra Retirement Trust. Author: Shorty, L, Blackash Bushfire Consulting, Wahrenonga. Version 1.2.
- CoA 2009. Significant impact guidelines for the vulnerable Green and Golden Bell Frog (*Litoria aurea*). Department of the Environment, Water, Heritage and the Arts.
- Daly 2014. *From rags to riches and back again: fluctuations in the Green and Golden Bell Frog Litoria aurea population at Nowra on the south coast of New South Wales*. Australian Zoologist, volume 37, pg. 157 – 172.
- Department of Environment and Climate Change 2007. *Management plan for the Green and Golden Bell Frog within the Crookhaven River floodplain*. Department of Environment and Climate Change (NSW), Sydney.
- Department of the Environment, Water, Heritage & the Arts 2018. *Protected Matters Search Tool*. Australian Government, Canberra. Accessed 03/10/2018 at <https://www.environment.gov.au/epbc/protected-matters-search-tool>.
- Department of the Environment and Energy (DoEE) (2018). Conservation advice (incorporating listing advice) for the Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community. Canberra: Department of the Environment and Energy.
- DPI 2019. NSW WeedWise: South East Local Area.
- Hazelton PA. and Tille PJ. 1990, *Soil Landscapes of the Wollongong-Port Hacking 1:100,000 Sheet map and report*, Soil Conservation Service of NSW, Sydney
- OEH 2019. BioNet the website for the Atlas of NSW Wildlife.
- OEH 2019. Spatial Information eXchange (SIX) Vegetation Map Viewer.
- OEH 2017. Biodiversity Offset Scheme Entry Threshold Tool. NSW Government.
- Pyke GH and White AW 1996. *Habitat requirements for the Green and Golden Bell Frog Litoria aurea (Anura: Hylidae)*. Australian Zoologist 30. 224 – 232.
- Pyke A and White A 2001. *A review of the biology of the Green and Golden Bell Frog Litoria aurea*. Australian Zoologist 31, 563 -598.

Tozer MG, Turner K, Keith DA, Tindall D, Pennay C, Simpson C, MacKenzie B, Beukers P 2010. Native vegetation of southeast NSW: a revised classification and map for the coast and eastern tablelands. *Cunninghamia*, 11, 359-406

Tozer,M. 2003 The Native Vegetation of the Cumberland Plain, western Sydney: systematic classification and field identification of communities. *Cunninghamia*, 8, 1-75.

Appendices

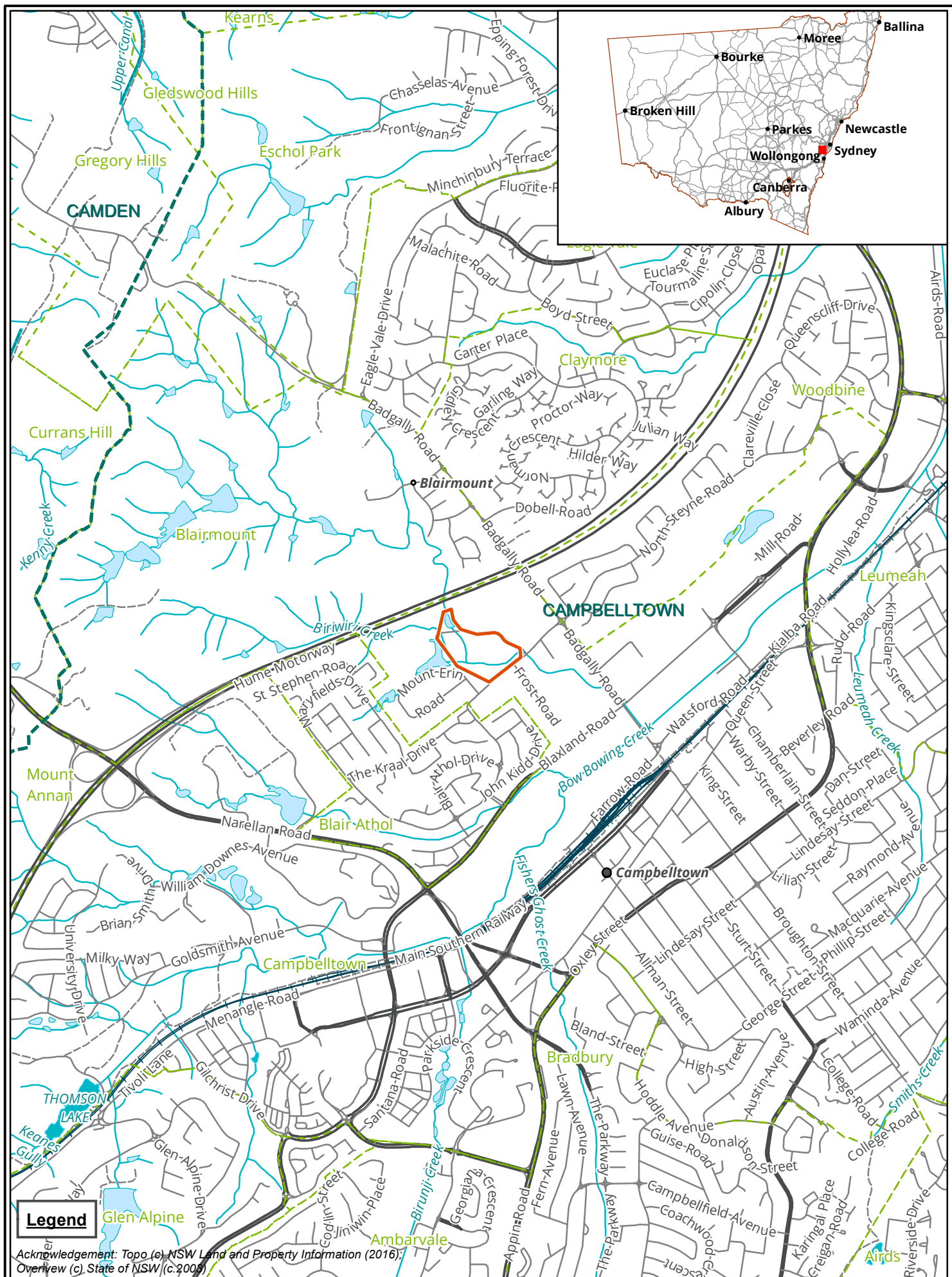


Figure 1 Location of the study area



Legend

- Study area
- Flood extend (client data)
- Waste facility footprint (subject site)
- Hollow-bearing trees

Strahler Order

- 1
- 3
- 4

Weed Species

- Rubus fruticosus - *Blackberry complex*

Plant Community Type - Condition

- 1800 - Swamp Oak open forest on riverflats of the Cumberland Plain and Hunter valley - Low
- 781 - Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion - Low
- 781 - Coastal freshwater lagoons of the Sydney Basin Bioregion and South East Corner Bioregion, Moderate
- Urban Native/Exotic - Other
- Exotic grassland

Figure 2 Study Area and Subject Site

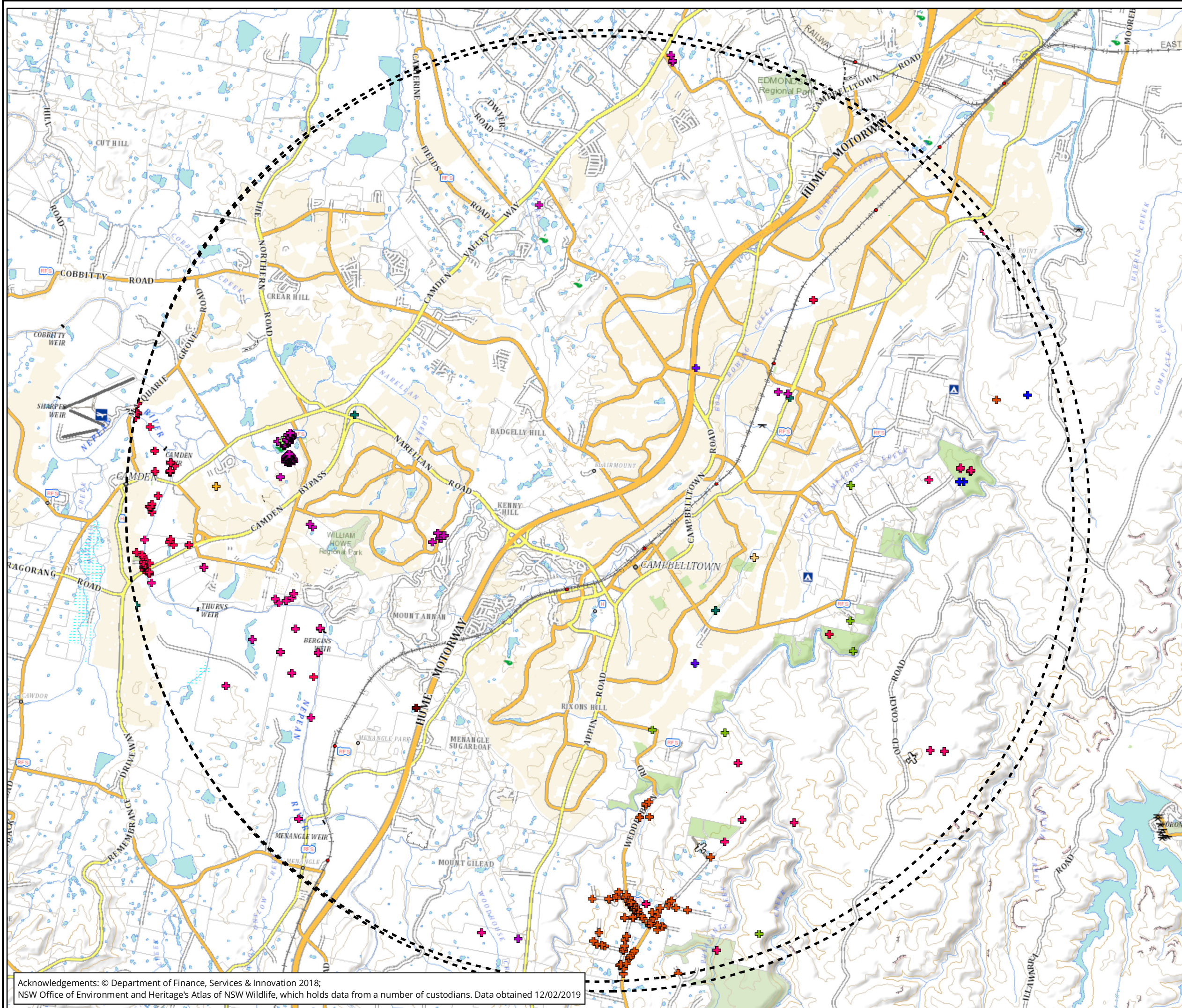
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Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 28340
Date: 17 May 2019,
Checked by: KAA, Drawn by: DK, Last edited by: dkazemi
Location: P:\28300s\28340\Mapping\28340_F2_StudyArea



Legend

- Study area
- Search area

Threatened Flora

- 10009 - *Grevillea parviflora* subsp. *parviflora*
- 10896 - *Marsdenia viridiflora* subsp. *viridiflora*
- 11422 - *Hibbertia puberula*
- 1822 - *Lepidium hyssopifolium*
- 2473 - *Persicaria elatior*
- 2579 - *Maundia triglochinos*
- 2618 - *Leucopogon exolasius*
- 3860 - *Acacia pubescens*
- 4055 - *Eucalyptus benthamii*
- 4134 - *Eucalyptus nicholii*
- 4248 - *Melaleuca deanei*
- 5494 - *Clematis fawcettii*
- 5573 - *Pomaderris brunnea*
- 5871 - *Thesium australe*
- 6190 - *Pimelea spicata*
- 7963 - *Isotoma fluviatilis* subsp. *fluviatilis*
- 8675 - *Allocasuarina glareicola*
- 8907 - *Eucalyptus scoparia*
- 9569 - *Leucopogon fletcheri* subsp. *fletcheri*
- 4007 - *Callistemon linearifolius**
- 4464 - *Genoplesium baueri**
- 5458 - *Persoonia hirsuta**
- 9411 - *Gyrostemon thesioides**
- 9615 - *Pterostylis saxicola**

* Record is listed as sensitive under OEH's Sensitive Species Data Policy and cannot be shown at this scale

Threatened flora records within 10000m of the 28340 _Hepher Road Campbelltown FFA study

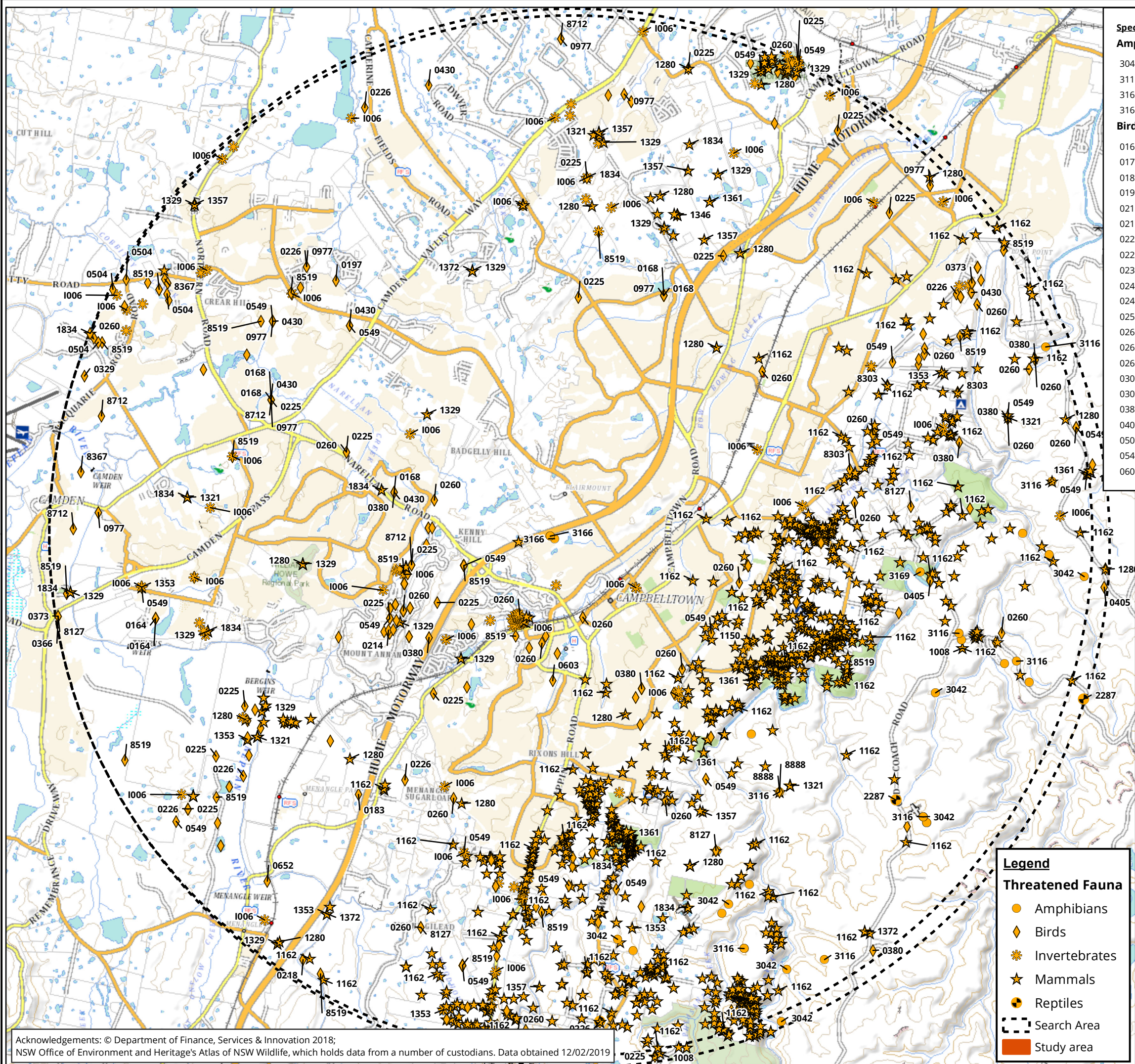
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Biosis Pty Ltd
Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 28340 _Hepher Road Campbelltown FFA
Date: 12 February 2019
Checked by: 12/02/2019, Drawn by: Last edited by: bdale
Location: P:\28300s\28340\Mapping\28340_F4_ThrFlora_autoGen

Acknowledgements: © Department of Finance, Services & Innovation 2018;
NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained 12/02/2019



Species list

Amphibians

- 3042 - Giant Burrowing Frog
- 3116 - Red-crowned Toadlet
- 3166 - Green and Golden Bell Frog
- 3169 - Green-thighed Frog

Birds

- 0164 - Red Knot
- 0174 - Bush Stone-curlew
- 0183 - Black-necked Stork
- 0197 - Australasian Bittern
- 0214 - Freckled Duck
- 0218 - Spotted Harrier
- 0225 - Little Eagle
- 0226 - White-bellied Sea-Eagle
- 0230 - Square-tailed Kite*
- 0246 - Barking Owl*
- 0248 - Powerful Owl*
- 0250 - Masked Owl*
- 0260 - Little Lorikeet
- 0265 - Glossy Black-Cockatoo*
- 0268 - Gang-gang Cockatoo*
- 0302 - Turquoise Parrot*
- 0309 - Swift Parrot*
- 0380 - Scarlet Robin
- 0405 - Olive Whistler
- 0504 - Speckled Warbler
- 0549 - Varied Sittella
- 0603 - Regent Honeyeater

- 0652 - Diamond Firetail
- 268 - Gang-gang Cockatoo*
- 6 - Gang-gang Cockatoo*
- 8127 - Brown Treecreeper (eastern subspecies)
- 8303 - Black-chinned Honeyeater (eastern subspecies)
- 8367 - Hooded Robin (south-eastern form)
- 8519 - Dusky Woodswallow
- 8888 - Red-crowned Parakeet (Lord Howe Is. subsp.)

Mammals

- 1008 - Spotted-tailed Quoll
- 1133 - Greater Glider
- 1136 - Yellow-bellied Glider
- 1137 - Squirrel Glider
- 1150 - Eastern Pygmy-possum
- 1162 - Koala
- 1280 - Grey-headed Flying-fox
- 1321 - Yellow-bellied Sheath-tail-bat
- 1329 - Eastern Freetail-bat
- 1346 - Little Bentwing-bat
- 1353 - Large-eared Pied Bat
- 1357 - Southern Myotis
- 1361 - Greater Broad-nosed Bat
- 1372 - Eastern False Pipistrelle
- 1834 - Eastern Bentwing-bat

Reptiles

- 2287 - Rosenberg's Goanna
- 2676 - Broad-headed Snake*

* Record is listed as sensitive under OEHS Sensitive Species Data Policy and cannot be shown at this scale

Threatened fauna records within 10000m of the 28340 Hepar Road Campbelltown FFA study

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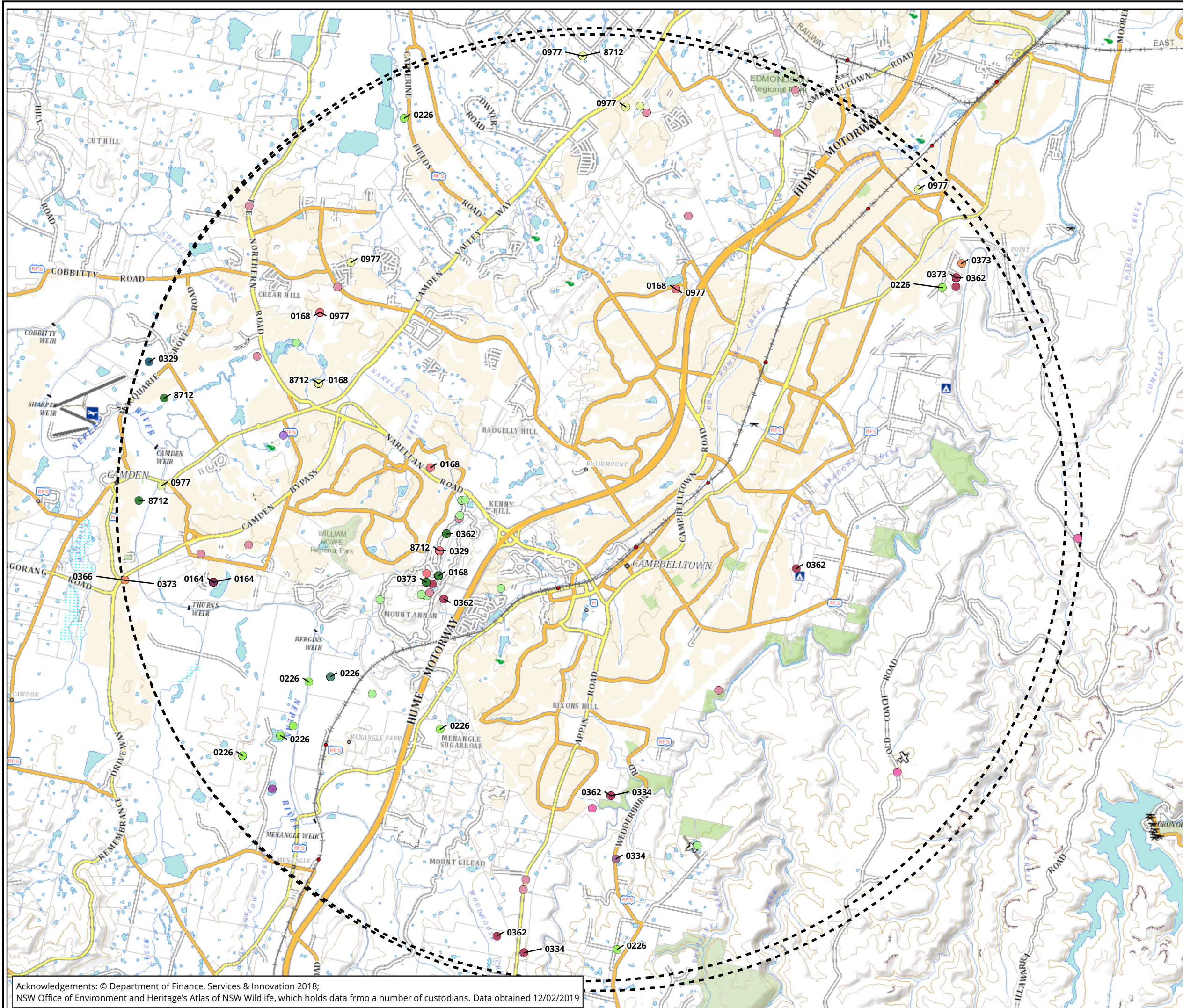
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Albury, Ballarat, Melbourne, Newcastle, Sydney, Wangaratta & Wollongong

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Acknowledgements: © Department of Finance, Services & Innovation 2018; NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained 12/02/2019



Legend

Study Area

Search Area

Migratory fauna

- 0164 - Red Knot
- 0168 - Latham's Snipe
- 0226 - White-bellied Sea-Eagle
- 0329 - Rainbow Bee-eater
- 0334 - White-throated Needletail
- 0362 - Rufous Fantail
- 0366 - Satin Flycatcher
- 0373 - Black-faced Monarch
- 0977 - Cattle Egret
- 8712 - Eastern Great Egret
- None - Barn Swallow
- None - Cattle Egret
- None - Latham's Snipe
- None - Rainbow Bee-eater
- None - Sharp-tailed Sandpiper
- None - White-throated Needletail

* Record is listed as sensitive under OEHS Sensitive Species Data Policy and cannot be shown at this scale

Figure 6: Migratory Fauna within xkm of the Study Area

0 750 1,500 2,250 3,000 3,750

Metres

Scale: 1:75,000 @ A3

Coordinate System: GDA 1994 MGA Zone 55

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Ballarat, Brisbane, Canberra, Melbourne, Sydney, Wangaratta & Wollongong

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Date: 12 February 2019
Checked by: 12/02/2019, Drawn by: SMV, Last edited by: bdale
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Acknowledgements: © Department of Finance, Services & Innovation 2018; NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained 12/02/2019

Appendix 3 Threatened species likelihood of occurrence

A3.1 Threatened flora species

The following table includes a list of the threatened flora species and ecological communities that have potential to occur within the study area. The list of species is sourced from the NSW BioNet Wildlife Atlas and the Protected Matters Search Tool (DEE; accessed on 12/02/2019).

Examples of criteria for determining the likelihood of occurrence for threatened biota as a guide for writing the rationale for likelihood have been listed below.

Likelihood of occurrence	Potential criteria
High	- Species/ecological communities recorded in study area during current or previous assessment/s. - Aquatic species recorded from connected waterbodies in close proximity to the study area during current or previous assessment/s. - Sufficient good quality habitat is present in study area or in connected waterbodies in close proximity to the study area (aquatic species). - Study area is within species natural distributional range (if known). - Species has been recorded within five kilometres or from the relevant catchment/basin.
Medium	- Records of terrestrial biota within <five kilometres or 10 kilometres> of the study area or of aquatic species in the relevant basin/neighbouring basin. - Habitat limited in its capacity to support the species due to extent, quality, or isolation.
Low	- No records within five kilometres of the study area or for aquatic species, the relevant basin/neighbouring basin. - Marginal habitat present (low quality & extent). - Substantial loss of habitat since any previous record(s).
Negligible	- Habitat not present in study area - Habitat for aquatic species not present in connected waterbodies in close proximity to the study area. - Habitat present but sufficient targeted survey has been conducted at an optimal time of year and species wasn't recorded.

Table A.1 Threatened flora species recorded / predicted to occur within 5 kilometres of the study area

Scientific name	Common name	Conservation status		Most recent record	Other sources	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		BC	EPBC					
<i>Acacia pubescens</i>	Downy Wattle	V	VU	2008		Low	Not detected during field survey.	A spreading shrub primarily confined to the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers at Barden Ridge, Oakdale and Mountain Lagoon. Grows in Cooks/River Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland, usually within roadside and bushland remnants. Grows on shale, sandstone, alluvium and gravelly soils, often including ironstone.
<i>Eucalyptus scoparia</i>	Wallangarra White Gum	E1	VU	2017		Low	Not detected during field survey.	Small tree restricted to three populations near Tenterfield including within Bald Rock National Park. Grows on rocky outcrops, hilltops and slopes in a variety of communities including New England Dry Sclerophyll Forests, Tableland Clay Grassy Woodlands, Northern Tableland Wet

Scientific name	Common name	Conservation status		Most recent record	Other sources	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		BC	EPBC					
								Sclerophyll Forests and Northern Escarpment Dry Sclerophyll Forests. Grows on granite or rhyolite substrates in well drained soils.
<i>Genoplesium baueri</i>	Bauer's Midge Orchid	E1	EN	1967		Low	Flood prone-land, species prefers well-drained soils and sandstone substrates not present within the study area. Topology geomorphology and location considered not suitable.	Terrestrial orchid with 13 populations totalling 2 plants distributed between Ulladulla and Port Stephens. Grows on moss gardens in a variety of communities including Sydney Coastal Dry sclerophyll Forests, Sydney Coastal Heaths, Sydney Montane Heaths, Southern Lowland Wet Sclerophyll Forests and Sydney Hinterland Dry Sclerophyll Forests. Grows on sandstone substrates.
<i>Hibbertia puberula</i>		E1		2016		Low	Not detected during field survey. This species occurs on sandy soil associated with sandstone. Therefore, the soil and landscape position (floodplain) present in the study area is unlikely to support this species.	Small shrub with a distribution extending from Wollemi National Park south to Morton National Park and the south coast near Nowra. Grows in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Heath Swamps, Coastal Valley

Scientific name	Common name	Conservation status		Most recent record	Other sources	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		BC	EPBC					
								Grassy Woodlands and Sydney Coastal Heaths. Grows on sandy soils, occasionally on clay soils.
<i>Lepidium hyssopifolium</i>	Aromatic Peppercress	E1	EN	2008		Low	Not detected during field survey. This species is known to be an opportunist and colonises bare areas following disturbance. Bare, open ground is not present within the study area.	Erect, perennial herb confined to three populations, one at Bathurst, one at Bungendore and one near Crookwell. An individual was collected from Armidale in 1945 and 1958. Grows in a variety of communities including Temperate Montane Grasslands, Southern Tableland Grassy Woodlands, New England Grassy Woodlands and Western Slopes Grassy Woodlands.
<i>Leucopogon exolasius</i>	Woronora Beard-heath	V	VU	2011		Low	Not detected during field survey. Soil landscape not considered consistent with habitat.	Erect shrub confined to the upper Georges River area and Heathcote National Park. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Sydney Montane Dry Sclerophyll Forests, Eastern Riverine Forests, and Sydney Coastal Heaths. Grows on sandstone substrates.
<i>Pimelea spicata</i>	Spiked Rice-flower	E1	EN			Low	This species was not	Small erect or spreading shrub

Scientific name	Common name	Conservation status		Most recent record	Other sources	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		BC	EPBC					
							detected during field survey, however there are records within 5 kilometres of the study area. On the Cumberland Plain, this species commonly co-occurs with Grey Box <i>Eucalyptus moluccana</i> , Forest Red Gum <i>E. tereticornis</i> and Stringybark <i>E. eugenoides</i> , with a predominantly native groundcover. The study area does not support the vegetation as described.	with populations occurring in two disjunct areas, one occurring on the Cumberland Plain from Marayong and Prospect Reservoir south to Narellan and Douglas Park, and the other occurring in the Illawarra from Landsdowne to Shellharbour and north Kiama. Grows in Maritime Grasslands and Coastal Valley Grassy Woodlands including Cumberland Plain Woodlands and Moist Shale Woodlands within the Cumberland Basin and in Coast Banksia Open Woodland Coastal Grasslands in the Illawarra region. Grows on well-structured clay soils.
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	E1	EN			Low	This species was not detected during field survey, however there are records within 5 kilometres of the study area. This species typically occurs in close association with sandstone rock	Deciduous terrestrial orchid restricted to a few small populations located in Western Sydney between Freemans Reach in the north and Picton in the south including Georges River National Park. Found growing near streams in depression on sandstone rock shelves above cliff lines faces,

Scientific name	Common name	Conservation status		Most recent record	Other sources	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		BC	EPBC					
							shelves and platforms. Habitat for this species is not present within the study area.	moist, sheltered ridges and creek banks on mossy rocks in Temperate Montane Grasslands, Northern Warm Temperate Rainforests, Southern Warm Temperate Rainforests and Southern Tableland Wet Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over sandstone substrates.

* - habitat descriptions have been adapted by qualified ecologists from the DEE Species Profile and Threats (SPRAT) Database, OEH Threatened Species online profiles and the NSW Scientific Committee final determinations for listed species, references within the above table are provided within the report reference list.

A3.2 Threatened Fauna species

The following table includes a list of the significant fauna species that have potential to occur within the study area. The list of species is sourced from the NSW BioNet Wildlife Atlas, BirdLife Australia data search and the Protected Matters Search Tool (DEE; accessed on 12/06/2019).

Notes to table:

#	species predicted to occur by the DEE database (not recorded on other databases)
##	species predicted to occur based on natural distributional range and suitable habitat despite lack of records in the databases searched
Year	recorded on databases listed above
2018	recorded during current survey

Likelihood of occurrence	Potential criteria
High	- Species recorded in study area during current or previous assessment/s. - Aquatic species recorded from connected waterbodies in close proximity to the study area during current or previous assessment/s. - Sufficient good quality habitat is present in study area or in connected waterbodies in close proximity to the study area (aquatic species). - Study area is within species natural distributional range (if known). - Species has been recorded within 5 kilometres or from the relevant catchment/basin.
Medium	- Records of terrestrial species within 5 kilometres of the study area or of aquatic species in the relevant basin/neighbouring basin. - Habitat limited in its capacity to support the species due to extent, quality, or isolation.
Low	- No records within 5 kilometres of the study area or for aquatic species, the relevant basin/neighbouring basin. - Marginal habitat present (low quality & extent). - Substantial loss of habitat since any previous record(s).
Negligible	- Habitat not present in study area - Habitat for aquatic species not present in connected waterbodies in close proximity to the study area. - Habitat present but sufficient targeted survey has been conducted at an optimal time of year and species wasn't recorded.

Table A.2 Threatened fauna species recorded, or predicted to occur, within 5 kilometres of the study area

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
Mammals								
<i>Cercartetus nanus</i>	Eastern Pygmy-possum		V		1997	Negligible	The study area does not support sufficient foraging resources in the form of both native flowering canopy and understory species. There are two hollows within the study area and no other habitat features such as hollow logs, hollow stumps or other refugia known to be used by the species (Rock crevices, Xanthorrhoea species or Banksia species) were recorded. Records within the locality are >20 years old.	Patchily distributed from the coast to the Great Dividing Range, and as far as Pillaga, Dubbo, Parkes and Wagga Wagga on the western slopes. Inhabits rainforest through to sclerophyll forest and tree heath. Banksias and myrtaceous shrubs and trees are a favoured food source. Soft fruits are eaten when flowers are unavailable and it also feeds on insects. Will often nest in tree hollows, but can also construct its own nest. Because of its small size it is able to utilise a range of hollow sizes including very small hollows. Individuals will use a number of different hollows and an individual has been recorded using up to 9 nest sites within a 0.5 ha area over a 5 month period.
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle		V		2015	Low	May occasionally occur within the study area. Marginal foraging habitat, potential roosting habitat occurs within two hollow-bearing trees which will not be impacted.	Distribution extending east of the Great Dividing Range throughout the coastal regions of NSW, from the Queensland border to the Victorian border. Prefers wet high-altitude sclerophyll and coastal mallee

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
								habitat, preferring wet forests with a dense understorey but being found in open forests at lower altitudes. Apparently hibernates in winter. Roosts in tree hollows and sometimes in buildings in colonies of between 3 and 80 individuals. Often change roosts every night. Forages for beetles, bugs and moths below or near the canopy in forests with an open structure, or along trails. Has a large foraging range, up to 136 ha. Records show movements of up to 12 km between roosting and foraging sites.
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat		V		2017	Low	May occasionally forage within the study area, no suitable roosts within the study area.	Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
								and forages for flying insects (particularly moths) above the tree canopy and along waterways.
<i>Mormopterus norfolkensis</i>	Eastern Freetail-bat		V		2017	Low	May roost in tree hollows, foraging habitat is marginal. The development will not result in impacts to roosting habitat.	Distribution extends east of the Great Dividing Range from southern Queensland to south of Sydney. Most records are from dry eucalypt forests and woodland. Individuals tend to forage in natural and artificial openings in forests, although it has also been caught foraging low over a rocky river within rainforest and wet sclerophyll forest habitats. The species generally roosts in hollow spouts of large mature eucalypts (including paddock trees), although individuals have been recorded roosting in the roof of a hut, in wall cavities, and under metal caps of telegraph poles. Foraging generally occurs within a few kilometres of roosting sites.
<i>Myotis macropus</i>	Southern Myotis		V		2017	Low	May occasionally fly through the study area. Potential roosting in hollow-bearing trees within the study area, foraging habitat adjacent to the study area includes open water within the	Scattered, mainly coastal distribution extending to South Australia along the Murray River. Roosts in caves, mines or tunnels, under bridges, in buildings, tree hollows, and even in dense foliage. Colonies occur close to

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							freshwater wetlands to the west. No areas of roosting or foraging habitat will be impacted.	water bodies, ranging from rainforest streams to large lakes and reservoirs. They catch aquatic insects and small fish with their large hind claws, and also catch flying insects.
<i>Petauroides volans</i>	Greater Glider	VU			2009	Low	Study area is highly disturbed through past clearing and agricultural activities. Low number of hollows within the study area and part of a small patch of vegetation which is relatively poorly connected due to large roads and clearing of surrounding areas.	The distribution of the Greater Glider includes the ranges and coastal plain of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Presence and density of Greater Gliders is related to soil fertility, eucalypt tree species, disturbance history and density of suitable tree hollows. Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe.
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	VU	E1		#	Negligible	No suitable habitat.	Occurs along the Great Dividing Range south to the Shoalhaven, and also occurs in the Warrumbungles and Mt Kaputar. Habitats range from rainforest to open woodland. It is found in areas with numerous ledges, caves and crevices particularly with northern aspects. The species forages on grasses and forbs.
<i>Phascolarctos cinereus</i>	Koala	VU	V		2018	Moderate	A small number of Forest Red Gum occur within the study area. These do not comprise 15% of the	In NSW the Koala mainly occurs on the central and north coasts with some populations in the western

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							canopy species present. The surrounding area is highly modified with a major highway providing a barrier to dispersal in the north and a mix of industrial and residential development to the west, south and east isolating the study area from large areas of higher quality habitat further to the east along the Georges River and within Heathcote National Park. Riparian vegetation may provide some connectivity, however, this is degraded due to the surrounding development and clearing of canopy species. No feed trees will be removed by the proposed development.	region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include <i>Eucalyptus robusta</i> , <i>E. tereticornis</i> , <i>E. punctata</i> , <i>E. haemostoma</i> and <i>E. signata</i> . They are solitary with varying home ranges.
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	VU			#	Negligible	No suitable habitat.	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. The home range of the New

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
								Holland Mouse can range from 0.44 ha to 1.4 ha. The New Holland Mouse is a social animal, living predominantly in burrows shared with other individuals. The species is nocturnal and omnivorous, feeding on seeds, insects, leaves, flowers and fungi, and is therefore likely to play an important role in seed dispersal and fungal spore dispersal. It is likely that the species spends considerable time foraging above-ground for food, predisposing it to predation by native predators and introduced species. Breeding typically occurs between August and January, but can extend into autumn.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	VU	V		2018	Low	No camps within the study area, species is highly nomadic and may forage on flowering Eucalyptus and Melaleuca species on occasion but is unlikely to occur within the study area on a regular basis.	Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Roosts in large colonies, commonly in dense riparian vegetation.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat		V		2017	Low	May occasionally occur in the study area. One hollow-bearing	Found throughout NSW in habitats including wet and dry sclerophyll

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							tree occurs within the study area and another to the east of the boundary. These may provide roosting opportunity and will not be impacted by the proposed development. Foraging habitat is marginal and will not be significantly reduced.	forest, open woodland, acacia shrubland, mallee, grasslands and desert. They roost in tree hollows in colonies and have also been observed roosting in animal burrows, abandoned Sugar Glider nests, cracks in dry clay, hanging from buildings and under slabs of rock. Forages for insects above the canopy in forests.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat		V		2017	Low	May occasionally occur in the study area. One hollow-bearing tree occurs within the study area and another to the east of the boundary. These may provide roosting opportunity and will not be impacted by the proposed development. Foraging habitat is marginal within the study area and of higher quality in areas surrounding such as Heathcote National Park to the east.	Occurs along the Great Dividing Range and in coastal areas. Occurs in woodland and rainforest, preferring open habitats or openings in wetter forests. Often hunts along creeks or river corridors. Preys upon beetles and other large, flying insects, other bats and spiders. Roosts in hollow tree trunks and branches.
Birds								
<i>Calidris ferruginea</i>	Curlew Sandpiper	CE	E1		#	Negligible	No suitable habitat.	Inhabits sheltered intertidal mudflats. Also non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo		V		2018	Low	May occasionally occur in the study area. Low number of	In summer, occupies tall montane forests and woodlands, particularly in

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							eucalyptus trees providing potential foraging resources on occasion. Unlikely to occur on a regular basis within the study area and no suitable breeding habitat occurs within the study area.	heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.
<i>Calyptrorhynchus lathamii</i>	Glossy Black-Cockatoo		V		2015	Low	May occasionally occur in the study area.	Inhabits forest with low nutrients, characteristically with key Allocasuarina species. Tends to prefer drier forest types. Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead.
<i>Circus assimilis</i>	Spotted Harrier		V		2000	Low	Foraging habitat occurs within the study area and is considered marginal due to previous disturbance and ephemerality. No nests were located during field surveys and the proposed impact will be a small area 0.21 hectares, unlikely to significantly reduce the overall foraging area for this species.	The Spotted Harrier is found throughout Australia but rarely in densely forested and wooded habitat of the escarpment and coast. Preferred habitat consists of open and wooded country with grassland nearby for hunting. Habitat types include open grasslands, acacia and mallee remnants, spinifex, open shrublands,

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
<i>Daphoenositta chrysoptera</i>	Varied Sittella		V		2018	Low	Could occasionally occur within the study area, however, unlikely to be a resident of the study area given lack of rough-barked trees and eucalypts. Habitat is marginal due to previous land use including clearing and introduction of exotic flora species. Not recorded during field survey.	The Varied Sittella is a sedentary species which inhabits a wide variety of dry eucalypt forests and woodlands, usually with either shrubby understorey or grassy ground cover or both, in all climatic zones of Australia. Usually inhabit areas with rough-barked trees, such as stringybarks or ironbarks, but also in mallee and acacia woodlands, paperbarks or mature Eucalypts. The Varied Sittella feeds on arthropods gleaned from bark, small branches and twigs. It builds a cup-shaped nest of plant fibres and cobweb in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.
<i>Glossopsitta pusilla</i>	Little Lorikeet		V		2018	Low	May occur on occasion to forage on a low number of flowering Eucalyptus species within the study area. Small area (0.21 hectares) will be impacted by the proposed development and does not contain flowering eucalypts.	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m,

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
								mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.
<i>Grantiella picta</i>	Painted Honeyeater	VU	V		#	Low	No records within the locality, no mistletoe detected during field survey. Uncommon east of the Great Dividing Range.	Found mainly in dry open woodlands and forests, where it is strongly associated with mistletoe. Often found on plains with scattered eucalypts and remnant trees on farmlands.
<i>Hieraaetus morphnoides</i>	Little Eagle		V		2014	Low	No nests recorded during field survey. This species may occur on occasion foraging over the study area. The species forages over large home ranges and the removal of 0.21 hectares is unlikely to impact foraging resources for this species.	The Little Eagle is most abundant in lightly timbered areas with open areas nearby providing an abundance of prey species. It has often been recorded foraging in grasslands, crops, treeless dune fields, and recently logged areas. The Little Eagle nests in tall living trees within farmland, woodland and forests.
<i>Lathamus discolor</i>	Swift Parrot	CE	E1		2018	Low	May occasionally occur within the study area foraging on flowering Eucalyptus but unlikely to be supported by vegetation within the study area given the low quality, low number of eucalyptus for foraging and small area. The proposed development will remove exotic grassland and 0.07	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. Favoured feed trees include winter flowering species such

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							hectares of Swamp Oak Floodplain Forest and is unlikely to provide habitat for the Swift Parrot.	as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> and Blackbutt <i>E. pilularis</i> . This species is migratory, breeding in Tasmania and also nomadic, moving about in response to changing food availability.
<i>Lophoictinia isura</i>	Square-tailed Kite		V		2018	Low	No nests recorded during field survey. This species may occur on occasion foraging over the study area. The species forages over large home ranges and the removal of 0.21 hectares is unlikely to impact foraging resources for this species.	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW it is often associated with ridge and gully forests dominated by Eucalyptus longifolia, <i>Corymbia maculata</i> , <i>E. elata</i> , or <i>E. smithii</i> . Individuals appear to occupy large hunting ranges of more than 100 km ² . They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
<i>Neophema pulchella</i>	Turquoise Parrot		V		2012	Low	No nesting habitat occurs within the study area. The study area may provide low quality foraging habitat on occasion but is considered unlikely to support a local population given the occurrence of exotic species, previous history of land clearing and surrounding land uses.	Occurs in open woodlands and eucalypt forests with a ground cover of grasses and understorey of low shrubs. Generally found in the foothills of the Great Divide, including steep rocky ridges and gullies. Nest in hollow-bearing trees, either dead or alive; also in hollows in tree stumps. Prefer to breed in open grassy forests and woodlands, and gullies that are moist.
<i>Ninox strenua</i>	Powerful Owl		V		2017	Low	No nesting habitat occurs within the study area. This species may occur on occasion foraging over the study area. The species forages over large home ranges and the removal of 0.21 hectares is unlikely to impact foraging resources for this species.	The Powerful Owl occupies wet and dry eucalypt forests and rainforests. It may inhabit both un-logged and lightly logged forests as well as undisturbed forests where it usually roosts on the limbs of dense trees in gully areas. Large mature trees with hollows at least 0.5 m deep are required for nesting. Tree hollows are particularly important for the Powerful Owl because a large proportion of the diet is made up of hollow-dependent arboreal marsupials. Nest trees for this species are usually emergent with a diameter at breast height of at least 100 cm. It has a large home range of

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
<i>Numenius madagascariensis</i>	Eastern Curlew	CE			#	Negligible	No habitat within the study area.	between 450 and 1450 ha. Occurs in sheltered coasts, especially estuaries, embayments, harbours, inlets and coastal lagoons with large intertidal mudflats or sandflats often with beds of seagrass.
<i>Pandion cristatus</i>	Osprey		V		#	Low	No foraging or nesting habitat occurs within the study area.	Found in coastal waters, inlets, estuaries and offshore islands. Occasionally found 100 km inland along larger rivers. It is water-dependent, hunting for fish in clear, open water. The Osprey occurs in terrestrial wetlands, coastal lands and offshore islands. It is a predominantly coastal species, generally using marine cliffs as nesting and roosting sites. Nests can also be made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.
<i>Petroica boodang</i>	Scarlet Robin		V		2011	Low	Marginal foraging habitat occurs for this species as the study area does not contain logs or woody debris and is predominantly covered by weeds. This species may occur on occasion within the study area but higher quality	The Scarlet Robin inhabits dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. During autumn and winter it moves to more open and cleared areas. The Scarlet Robin forages amongst logs

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							habitat is likely to occur within vegetation along the Georges River and adjacent to was not encountered during field investigation.	and woody debris for insects. The nest is an open cup of plant fibres and cobwebs, sited in the fork of a tree.
<i>Rostratula australis</i>	Australian Painted Snipe	EN	E1		#	Low	No suitable habitat. Wetlands in the north of the study area do not contain suitable dense vegetation for this cryptic species. The ephemeral wetland may occasionally provide habitat suitable for this specie but is unlikely to support the local population. No records of this species occur within 5km.	Usually found in shallow inland wetlands including farm dams, lakes, rice crops, swamps and waterlogged grassland. They prefer freshwater wetlands, but have been recorded in brackish waters. Forages on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter.
<i>Stictonetta naevosa</i>	Freckled Duck		V		2006	Low	No suitable habitat occurs within the study area for this species. Wetlands to the west may occasionally provide refuge and foraging for this species but is unlikely to be suitable for breeding.	The Freckled Duck breeds in permanent fresh swamps that are heavily vegetated. Found in fresh or salty permanent open lakes, especially during drought. Often seen in groups on fallen trees and sand spits.
Amphibians								
<i>Litoria aurea</i>	Green and Golden Bell Frog	VU	E1		2015	Moderate	A small number of local records (3) within 300 metres of the study area. Study area provides potential habitat in the north. This area will not be impacted by the	Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south of Grafton and northern VIC. The

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							proposed development. 0.21 hectares of potential foraging and dispersal habitat will be removed for the development. Higher quality habitat exists within the surrounding landscape.	species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop, feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.
<i>Litoria raniformis</i>	Southern Bell Frog	VU	E1		#	Low	No records within 5 km. Not within species known range.	In NSW the species is known to exist only in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. Usually found in or around permanent or ephemeral swamps or billabongs with an abundance of bulrushes and other emergent vegetation along

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
								floodplains and river valleys. They are also found in irrigated rice crops, particularly where there is no available natural habitat. Outside the breeding season animals disperse away from the water and take shelter beneath ground debris such as fallen timber and bark, rocks, grass clumps and in deep soil cracks.
<i>Pseudophryne australis</i>	Red-crowned Toadlet		V		2016	Low	No suitable habitat within the study area.	Occurs on wetter ridge tops and upper slopes of sandstone formations on which the predominant vegetation is dry open forests and heaths. This species typically breeds within small ephemeral creeks characterised by a series of shallow pools that feed into larger semi-perennial streams.
Fish								
<i>Macquaria australasica</i>	Macquarie perch	EN		EN	#	Low	Waterways within the study area are not suitable for this species and are highly modified, shallow concrete lined ditches. No records occur within the locality (5km), the closest known population has been recorded in the Georges River, which occurs approximately 4 km to the south-east of the	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper

Scientific name	Common name	Conservation status			Most recent record	Likely occurrence in study area	Rationale for likelihood ranking	Habitat description*
		EPBC	BC	FM				
							study area.	reaches of rivers and their tributaries
Molluscs								
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail		E1		2017	Low	A low number of potential host trees occur within the study area (Forest Red Gum) and searches during field investigation did not detect the species. The study area is highly disturbed through previous land clearing and presence of exotic and weedy species.	Most likely restricted to Cumberland Plain, Castlereagh Woodlands and boundaries between River-flat Forest and Cumberland Plain Woodland. It is normally found beneath logs, debris and amongst accumulated leaf and bark particularly at the base of trees. May also use soil cracks for refuge.

* - habitat descriptions have been adapted by qualified ecologists from the DEE Species Profile and Threats (SPRAT) Database, OEH Threatened Species online profiles and the NSW Scientific Committee final determinations for listed species, references within the above table are provided within the report reference list.

Appendix 3.1 Migratory species (EPBC Act listed)

Includes records from the following sources:

- NSW BioNet Wildlife Atlas (refer to Section 2.1)
- DEE database (accessed on 12/06/2019)
- BirdLife Australia data search
- Current survey

Bold denotes species recorded in the study area during the current assessment.

Table A.3 Migratory fauna species recorded or predicted to occur within 10 kilometres of the study area

Scientific name	Common name	Most recent record
<i>Actitis hypoleucos</i>	Common Sandpiper	#
<i>Apus pacificus</i>	Fork-tailed Swift	#
<i>Ardea ibis</i>	Cattle Egret	2017
<i>Ardea modesta</i>	Eastern Great Egret	2006
<i>Calidris ferruginea</i>	Curlew Sandpiper	#
<i>Calidris melanotos</i>	Pectoral Sandpiper	#
<i>Cuculus optatus</i>	Oriental Cuckoo	#
<i>Gallinago hardwickii</i>	Latham's Snipe	2016
<i>Hirundapus caudacutus</i>	White-throated Needletail	2016
<i>Merops ornatus</i>	Rainbow Bee-eater	2010
<i>Monarcha melanopsis</i>	Black-faced Monarch	2008
<i>Motacilla flava</i>	Yellow Wagtail	#
<i>Numenius madagascariensis</i>	Eastern Curlew	#
<i>Pandion cristatus</i>	Osprey	#
<i>Rhipidura rufifrons</i>	Rufous Fantail	2012
<i>Symposiachrus trivirgatus</i>	Spectacled Monarch	#
<i>Tringa nebularia</i>	Common Greenshank	#

* - habitat descriptions have been adapted by qualified ecologists from the DSEWPac Species Profile for listed migratory species, references within the above table are provided within the report reference list

Appendix 4 Assessment of significance

Swamp Oak Floodplain Forest

The following description is taken from the NSW Scientific Committee determination:

Swamp Oak Floodplain Forest of the NSW North Coast, Sydney Basin and South East Corner bioregions is the name given to the ecological community associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. Swamp Oak Floodplain Forest generally occurs below 20 metres (rarely above 10 metres) elevation in the NSW North Coast, Sydney Basin and South East Corner bioregions. The structure of the community may vary from open forests to low woodlands, scrubs or reed lands with scattered trees. It generally occupies low-lying parts of floodplains, alluvial flats, drainage lines, lake margins and fringes of estuaries; habitats where flooding is periodic and soils show some influence of saline ground water. This latter habitat feature sets it apart from other floodplain communities.

The composition of Swamp Oak Floodplain Forest is primarily determined by the frequency and duration of waterlogging and the level of salinity in the groundwater. Composition also varies with latitude. The understorey is characterised by frequent occurrences of vines, *Parsonsia straminea*, *Geitonoplesium cymosum* and *Stephania japonica* var. *discolor*, a sparse cover of shrubs, and a continuous groundcover of forbs, sedges, grasses and leaf litter. The composition of the ground stratum varies depending on levels of salinity in the groundwater. On the fringes of coastal estuaries, where soils are more saline, the ground layer may include the threatened grass species, *Alexfloydia repens*, as well as *Baumea juncea*, *Juncus kraussii*, *Phragmites australis*, *Selliera radicans* and other saltmarsh species.

The Swamp Oak Floodplain Forest within the study area is subject to weed incursion and is lacking a functional midstorey as a result of historical under scrubbing. The canopy primarily consists of Swamp Oak with scattered individuals of Spotted Gum and Rough-barked Apple occurring.

The area of forest within the study area measures approximately 1.8 hectares, and within a 5 kilometres radius was measured at approximately 5 hectares (Tozer et al. 1010).

In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Not applicable.

- a) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction,***

Not applicable.

- b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:***
- i. is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or***
 - ii. is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction***

The proposal will result in the removal of 0.07 hectares of Swamp Oak Floodplain Forest from the study area, which equates to approximately 1.4 % from the locality. 1.74 hectares will be retained within the study area. The area to be removed is small and when coupled with the intended retainment of the remaining forest within the study area, it is unlikely to result in extinction of the community at the local scale. The current situation is that the forest is threatened by the ongoing invasion from exotic species.

The proposed project could influence drainage patterns currently existing at the study area. However given the spatial location of the community within the study area and the surrounding built-up land use in the local area, drainage patterns are unlikely to change significantly as a result of the project. However, safeguards should be implemented to manage runoff from the development. Therefore, the changes to landuse and levels of the land are unlikely to result in a reduction in the extent of the community such that it would be placed at risk of extinction.

It is therefore considered unlikely that the proposal will reduce the extent of the community such that its local occurrence is likely to be placed at risk of extinction because:

- The proposal will remove approximately 0.07 hectares (1.4%) of low condition community from the locality, based on previous mapping within the area (Tozer et al. 2010). This is considered a small area and unlikely to result in extinction.
- Potential indirect impacts that could affect extent (weed invasion, trampling, stormwater, flooding) will be managed and mitigated through site specific management plans.

Potential modification of the composition of the Swamp Oak Floodplain Forest has already occurred as a result of weed invasion from exotic species.

Therefore, the proposal is unlikely to result in modification to the Swamp Oak Floodplain Forest to an extent where its local occurrence is placed at risk of extinction.

c) In relation to the habitat of a threatened species, population or ecological community:

i The extent to which habitat is likely to be removed or modified as a result of the action proposed, and

ii. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and

iii. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality,

The proposal will remove 0.07 hectares of existing habitat for this community 1.74 hectares of existing Swamp Oak Floodplain Forest will be retained within the study area.

The proposal will result in the removal of an area of community on the edge of patch, and will not fragment the community in a way as to separate it into two or more discrete patches.

The habitat to be removed as a result of the proposal is currently in low condition and occurs on the edge of a larger patch of this community. Therefore it is considered of low importance to the long-term survival of the community in the locality.

d) Whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly),

No critical habitat has been declared for Swamp Oak Floodplain Forest.

e) Whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan,

No recovery plan or threat abatement plan has been approved for Swamp Oak Floodplain Forest.

f) Whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

The proposal could constitute part of the key threatening process clearing of native vegetation.

Conclusion

The proposed development is unlikely to constitute a significant impact on Swamp Oak Floodplain Forest given the following:

- The area to be removed is 1.4 % of that within the locality, which is not considered significant.
- Any indirect impacts such as changes to drainage are being managed through site-specific management plans.
- The patch would not be fragmented or further isolated by other patches of the community.

Green and Golden Bell Frog *Litoria aurea*

The Green and Golden Bell Frog is listed as Endangered under the BC Act and as Vulnerable under the EPBC Act. The species was known to be formerly distributed along the east coast from the NSW north coast near Brunswick Heads, southwards to Victoria where it extended into east Gippsland. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations (OEH 2017).

Green and Golden Bell Frog are known to inhabit marshes, dams and stream-sides, particularly those containing bullrushes or spikerushes. Optimum conditions include water-bodies that are unshaded, free of predatory fish such as Eastern Gambusia *Gambusia holbrooki* and have features such as large rocks and grassy areas (i.e. Kikuyu grass) bordering for diurnal sheltering (Pyke & White 1996, Pyke et al. 2002). Many of the remaining populations of Green and Golden Bell Frog occur in highly disturbed environments (Pyke et al. 2002). Green and Golden Bell Frog may disperse between suitable breeding habitat and refuge habitat during periods when ephemeral pools dry out, connectivity between these areas is considered important for the ongoing survival and reproductive success of the species.

OEH lists a number of key threatening processes for the Green and Golden Bell Frog. Key threatening processes acting on this species include:

- Alterations to drainage patterns and storm water run-off.
- Pathogens such as Frog Chytrid Fungus.
- Predation by feral animals and predation by predatory fish (i.e. Mosquito Fish).
- Herbicides and other weed controls.
- Alterations of habitat including changes in salinity and overgrowth of pond vegetation leading to a decline in water temperature.
- Road mortality.
- Loss of suitable breeding habitat through alteration by infilling and destruction of wetlands.
- Small population size (decreased resilience).
- Drying of breeding habitat due to climate change.
- Lack of landscape connectivity leading to isolation of small populations.
- Heavy metal pollution.
- Vehicle traffic impacting habitat.

According to OEH records, Green and Golden Bell Frog has been previously recorded in the northern portion of the study area within the Coastal Freshwater Lagoon vegetation community, just north of the subject site..

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

Impacts that could affect the life-cycle of a threatened species include destruction, isolation or degradation of breeding habitat or foraging resources that the species is reliant upon for successful breeding or survival. The proposed development will not result in the removal or isolation of breeding or foraging habitat for the Green and Golden Bell Frog. The development will result in the removal of 0.07 hectares of Swamp Oak

Floodplain Forest and 0.21 hectares of exotic grassland. Green and Golden Bell Frog may disperse across this area between potential habitat in the north of the study area and habitat to the west. Connectivity between the two areas of potential habitat is primarily through the fourth order stream, which extends from the north towards the south and branches towards potential habitat in the west. Provided the appropriate measures are implemented, it is unlikely the development will prevent dispersal between areas of potential habitat as it will not create a barrier along the fourth order stream connecting these two areas.

Habitat within the study area is considered to be marginal for this species, and given the above listed factors it is unlikely the proposed works will have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction.

(b) in the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

Not applicable.

(c) in the case of an endangered ecological community or critically endangered ecological community, whether the action proposed:

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or,

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.

Not applicable.

(d) in relation to the habitat of a threatened species, population or ecological community:

(i) the extent to which habitat is likely to be removed or modified as a result of the action proposed, and,

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action, and,

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.

Approximately 0.21 hectares of potential dispersal habitat will be removed as a result of the proposal.

Potential Green and Golden Bell Frog habitat occurs in the wetland to the north of the study area and to the west (outside of the study area). The subject site does not occur in an area of potential Green and Golden Bell Frog habitat. The subject site was positioned in an area that is not prone to flooding and will be in an area of the highest elevation within the study area (Figure 2).

The proposal will result in the removal of 0.21 hectares of vegetation which includes exotic grassland and Swamp Oak Floodplain Forest, potentially utilised for dispersal and marginal foraging habitat. Connectivity is maintained between habitats by Biriwiri creek, which has two branches running roughly north-south and west-southeast. The proposal therefore will not fragment or isolate habitat within the study area and surrounds.

The habitat to be removed is considered to contain marginal terrestrial foraging and dispersal habitat only. Habitat within the subject site is located outside of flood prone land and does not provide potential

breeding habitat. Given these factors, habitat within the subject site is considered to be marginal and unlikely to be important to the survival of the species in the locality.

e) *whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).*

There are no areas of critical habitat listed for the species. In addition the subject site does not provide breeding habitat, will not isolate or fragment habitat and is unlikely to be critical to the survival of the species.

f) *whether the action proposed is consistent with the objectives or actions of a recovery plan or threat abatement plan.*

The potential habitat to be removed from the study area would be considered of low importance when compared with higher quality dispersal habitat along Biriwiri creek and the potential foraging and breeding habitat to the north and west of the subject site. As the subject site does not support breeding or high-quality foraging habitat, this area is unlikely to be important to the long-term survival of the species.

g) *whether the action proposed constitutes or is part of a key threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.*

Key threatening processes of relevance to the project for Green and Golden Bell Frog include the reduction of landscape connectivity leading to isolation of small populations. The proposal will result in the removal of 0.21 hectares of low quality vegetation and exotic vegetation from the subject site on land outside of flood-prone land within the study area. Previous records of the species occur to the north-west within Biriwiri creek. This creek is highly modified within the study area and provides some connectivity to wetlands to the north and west of the subject site. The subject site will not impact on the connectivity provided by Biriwiri creek and is considered unlikely to result in the operation of, or increase the impact of this key threatening process.

Infection of frogs by amphibian chytrid causing the disease chytridiomycosis is also listed as a key threatening process. Chytrid fungus is widespread and commonly found in frog populations throughout New South Wales. The works will occur in an area that is currently highly disturbed with surrounding areas developed for industrial and residential use, with rural areas surrounding. Given the surrounding land use, history of disturbance and small area of impact, the proposed development is considered unlikely to introduce or spread Chytrid and is therefore unlikely to lead to the operation of or increase in this threat.

Therefore the proposed works are unlikely to contribute to key threatening processes for Green and Golden Bell Frog.

Conclusion

The study area provides marginal habitat for the Green and Golden Bell Frog, including an area of potential breeding habitat in the north. The proposed development will impact on 0.21 hectares of potential dispersal habitat and low quality potential foraging habitat for the species. It is considered unlikely that works will indirectly impact the potential breeding habitat in the north as it is upstream and is separated Hephher Road. The proposed works are considered unlikely to significantly impact the Green and Golden Bell Frog given the following factors:

- The proposed works will not have an adverse effect on the life cycle of the species such that the local population is put at risk of extinction.
- The proposed works will not impact on habitat critical to the survival of the Green and Golden Bell Frog.

The proposed works will impact on a small area (0.21 hectares) of potential dispersal and marginal foraging habitat, it will not result in fragmentation or isolation of habitat for the species and the habitat is considered to be of low importance to the survival of the species.

- The proposed works will not significantly contribute to any key threatening processes for the Green and Golden Bell Frog.

More suitable habitat is likely to occur outside of the impact area and broader study area, where a small number of records of this species exist.

The risks to Green and Golden Bell Frog can be managed by the installation of a 'frog fence' to exclude frogs from the proposed construction works and direct them towards Biriwiri creek.

Appendix 5 Significant Impact Criteria assessments

EPBC Act Significant Impact Assessment Green and Golden Bell Frog

The Green and Golden Bell Frog is listed as Endangered under the EPBC Act and also as vulnerable under Schedule 2 of the BC Act. The species was known to be formerly distributed along the east coast from the NSW north coast near Brunswick Heads, southwards to Victoria where it extended into east Gippsland. Since 1990 there have been approximately 50 recorded locations in NSW, most of which are small, coastal, or near coastal populations (OEH 2017).

Green and Golden Bell Frog are known to inhabit marshes, dams and stream-sides, particularly those containing bullrushes or spikerushes. Optimum conditions include water-bodies that are unshaded, free of predatory fish such as Eastern Gambusia *Gambusia holbrooki* and have features such as large rocks and grassy areas (i.e. Kikuyu grass) bordering for diurnal sheltering (Pyke & White 1996, Pyke et al. 2002). Many of the remaining populations of Green and Golden Bell Frog occur in highly disturbed environments (Pyke et al. 2002). Green and Golden Bell Frog may disperse between suitable breeding habitat and refuge habitat during periods when ephemeral pools dry out, connectivity between these areas is considered important for the ongoing survival and reproductive success of the species.

The study area contains 0.21 hectares of marginal dispersal habitat for the Green and Golden Bell Frog in the form of exotic grassland and 0.07 hectares of Swamp Oak Floodplain Forest.

An action is likely to have a significant impact on a vulnerable species protected under the EPBC Act if there is a real chance or possibility that it will:

- *lead to a long-term decrease in the size of an important population of a species*

Given that the species occurs mostly as isolated populations throughout its distribution, all populations of the Green and Golden Bell Frog are likely to be considered important populations.

The proposed development will not result in the removal of breeding habitat and will impact on a small area (0.21 hectares) of potential foraging and dispersal habitat only. Higher quality habitat exists adjacently west of the study area, in the form of a deep pond providing potential refuge habitat during dry periods and an ephemeral wetland to the north across Hephher Road. The proposed development will not reduce connectivity through the landscape or the study area. Potential breeding and refuge habitat is connected through Biriwiri Creek.

Given that the area to be removed does not provide significant foraging resources or breeding resources it is considered unlikely to result in the long-term decrease in the size of an important population.

- *Reduce the area of occupancy of an important population.*

Green and Golden Bell Frog is now known only from 54 locations in New South Wales following significant reductions in the species numbers. The status of these populations has changed overtime, with the status of some populations unknown or presumed extinct (DEWHA 2009).

The proposed development will remove 0.21 hectares of potential foraging and dispersal habitat, possibly utilised by adult frogs for moving between potential breeding and non-breeding sheltering habitat. Biriwiri creek connects areas of potential habitat and this connectivity will not be impacted by the proposed development. The study area provides additional areas of similar habitat and removal of this small area is considered unlikely to significantly impact dispersal through the area.

- *Fragment an existing important population into two or more populations.*

As stated above, the proposal will remove a small area of potential dispersal and foraging habitat. Connectivity between areas of higher quality habitat will be maintained through other parts of the study area along Biriwiri creek. The proposed development is unlikely to provide a significant barrier to dispersal and frog fences will be implemented to direct any frogs around the subject site. Therefore, the proposal is highly unlikely to fragment an existing important population of Green and Golden Bell Frog.

- *Adversely affect habitat critical to the survival of a species.*

The species utilises a variety of habitats at different stages of its life cycle. Suitable breeding habitat for the species consists of ponds or slow moving waterbodies that are shallow (less than 1 metre deep), exposed to sunlight and free of predatory fish (Pyke and White 1996). They also require foraging, dispersal and refuge habitat. Foraging habitat, including grassy areas adjacent to waterbodies is very important for the species (Pyke and White 1996, 2001). The species is known to be relatively mobile and can disperse over distances of 1.2 kilometres (Pyke and White 2001). The maintenance of dispersal corridors is key to the ongoing survival of the species in connectivity to key habitats. Low quality potential breeding habitat has been identified in the north of the study area. The small area of habitat within the subject site is not considered to be critical to the survival of the Green and Golden Bell Frog when compared with habitat in the study area and broader landscape.

- *disrupt the breeding cycle of an important population*

The proposed works will not impact breeding habitat and will result in removal of a small area of potential foraging/dispersal habitat considered to be of low quality. The proposal is therefore considered unlikely to disrupt the breeding cycle of an important population.

- *modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline*

The removal of the small area (0.21 hectares) of potential low quality foraging and dispersal habitat within the study area is not considered likely to modify, destroy, remove, isolate or decrease the availability of habitat to the extent that the species is likely to decline.

- *Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.*

The study area occurs as a highly disturbed patch within the broader landscape which includes existing industrial and residential areas and rural farmland to the west. Invasive species harmful to Green and Golden Bell Frog include European Fox *Vulpes vulpes* and exotic fish species like Eastern Gambusia *Gambusia holbrooki*.

These invasive species are unlikely to become established as a result of the development of 0.21 hectares of low-quality habitat within the study area.

- *Introduce disease that may cause the species to decline.*

Given the high level of disturbance and prevalence of Chytrid fungus throughout the environment, particularly in the lower-reaches of streams, it is likely that the Chytrid fungus is already existing within the study area. The proposal is unlikely to further introduce Chytrid or other disease that may cause the species to decline because the fungal disease is known to be wide-spread through most systems and there are known background levels for the disease.

- *interfere substantially with the recovery of the species*

The proposed works will remove a small area of potential low quality foraging and dispersal habitat. The remainder of the study area will remain available for dispersal of the species. Therefore the works will not interfere substantially with the recovery of the species.

Conclusion

The proposed development is unlikely to significantly impact on Green and Golden Bell Frog occurring within the study area and wider locality as the small area of impact (0.21 hectares) will reduce potential dispersal and marginal foraging habitat only. The project is considered unlikely to significantly impact on the Green and Golden Bell Frog as it will not:

- *Lead to a long-term decrease in the size of an important population of a species.*
- *Reduce the area of occupancy of an important population.*
- *Fragment an existing important population into two or more populations.*
- *Adversely affect habitat critical to the survival of a species.*
- *Disrupt the breeding cycle of an important population.*
- *Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.*
- *Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat.*
- *Introduce disease that may cause the species to decline.*
- *Interfere substantially with the recovery of the species.*

No areas of breeding habitat will be impacted and connectivity will be maintained throughout the wider study area through Biriwiri Creek. As such, a referral to the minister is not required.

Appendix 6 Plates



Plate 1 **Swamp Oak Floodplain Forest within the study area**



Plate 2 **Freshwater Wetlands within the study area**



Plate 3 **Exotic vegetation within the study area**

Appendix D

ABORIGINAL HERITAGE DUE DILIGENCE ASSESSMENT



Aboriginal Due Diligence Assessment: Hepher Road, Campbelltown

DRAFT REPORT

Prepared for Geolyse Pty Ltd on behalf of Campbelltown City Council

17 January 2019

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Contents

Glossary	iv
Summary	v
1 Introduction	1
1.1 Project background	1
1.2 Location of the study area	1
1.3 Planning approvals	1
1.4 Scope of the assessment	1
2 Desktop assessment	5
2.1 Landscape context	5
2.2 Geology, soils and landforms	5
2.3 Landscape resources	13
3 Aboriginal context	14
3.1 Ethnohistory and contact history	14
3.2 Regional context	15
3.3 Local context	17
3.3.1 Identified Aboriginal archaeological sites	19
3.4 Predictive statements	22
4 Archaeological investigation	25
4.1 Archaeological survey aims	25
4.2 Survey methods	25
4.3 Constraints to the survey	25
4.4 Visibility	26
4.5 Exposure	27
4.6 Disturbances	28
4.7 Investigation results	33
5 Discussion and recommendations	34
5.1 Discussion and conclusions	34
5.2 Recommendations	36
References	37
Appendix 1 AHIMS search results	40

Tables

Table 1	Blacktown soil landscape characteristics (Bannerman & Hazelton 1990a, pp.28–29)	7
Table 2	AHIMS sites within the study area	20

Table 3	Aboriginal site prediction statements.....	22
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Figures

Figure 1	Location of the study area	3
Figure 2	Study area detail	4
Figure 3	Geological units near the study area	8
Figure 4	Topography and hydrology	9
Figure 5	Historical aerial imagery 1963.....	10
Figure 6	Historical aerial imagery 1979.....	11
Figure 7	Soil landscapes near the study area	12
Figure 8	AHIMS sites within the vicinity of the study area	21
Figure 9	Areas of disturbance	32
Figure 10	Survey results	35

Plates

Plate 1	Diagram showing Strahler stream order (Ritter et al 1995, p. 151)	6
Plate 2	Study area facing west showing low levels of GSV	26
Plate 3	Study area facing south west showing blackberry thickets and dumped rubbish pile.....	27
Plate 4	GSV across the centre of the study area showing small area of moderate GSV.....	27
Plate 5	Area of exposure in western portion of the study area	28
Plate 6	Area of exposure in centre of the study area	28
Plate 6	Modified drainage line facing south east	29
Plate 7	Causeway and modified drainge line facing north	30
Plate 8	Study area facing south east, note manmade embankemtn in foreground and background creating an artifical basin in the centre of the study area	30
Plate 8	Study area facing south east, note manmade embankment in foreground and background creating an artifical basin in the centre of the study area	31

Glossary

AHIMS	Aboriginal Heritage Information Management System
ACHA	Aboriginal cultural heritage assessment
ADDA	Aboriginal due diligence assessment
Due diligence code	<i>Due diligence code of practice for the protection of Aboriginal objects in New South Wales</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
GSV	Ground Surface Visibility
ICOMOS	International Council on Monuments and Sites
LEP	Local Environment Plan
LGA	Local Government Area
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW	New South Wales
OEH	NSW Office of Environment and Heritage
PAD	Potential Archaeological Deposit
Study area	southern portion of Lot 104, DP 1056782
The code	<i>The Code of practice for archaeological investigation of Aboriginal objects in NSW</i>

Summary

Biosis Pty Ltd (Biosis) has been commissioned by Geolyse Pty Ltd (Geolyse), on behalf of Campbelltown City Council (Council) to undertake an Aboriginal Due Diligence Assessment (ADDA) for the proposed community recycling facility (waste management facility) at Hopher Road, Campbelltown NSW (the project).

The proposed development is a designated development due to its proximity to natural waterbodies and consequently an Environmental Impact Statement (EIS) will be required to support the project. Geolyse and Council therefore require the preparation of an ADDA to support the Secretary's Environmental Assessment Requirements (SEARs) application.

An assessment in accordance with the *Due diligence code of practice for the protection of Aboriginal objects in NSW* (DECCW 2010a) (due diligence code) has been undertaken for the study area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the *Code of practice for archaeological investigation of Aboriginal objects in NSW* (DECCW 2010b) (the code) was conducted, in order adequately map areas of archaeological sensitivity.

No previously recorded Aboriginal Heritage Management System (AHIMS) sites have been recorded in or within 1 kilometre of the study area. Background research conducted for this assessment found that artefact sites are the most commonly recorded site types in the Campbelltown region, and are most commonly identified within undisturbed crest, gentle slope or raised terrace landforms in close proximity to water sources. Biriwiri Creek and an unnamed tributary transect the study area, while a natural crest landform is present in the western portion of the study area indicating that Aboriginal people likely utilised the study area in the past. Historical aerial imagery obtained for the study area as part of the background research for this assessment indicated that the study area has undergone large amounts of previous ground disturbance and land modification.

An archaeological survey of the study area was conducted on 14 January 2019 by Biosis archaeologists Taryn Gooley and Ashleigh Keevers-Eastman. The purpose of the survey was to identify any previously unrecorded Aboriginal sites, objects or areas of archaeological potential; and to assess the level of previous ground disturbance within the study area. The survey consisted of a random meander transect which targeted all landforms present in the study area and areas of increased ground surface visibility (GSV) and exposure. No Aboriginal sites, objects or areas of archaeological potential were identified. The entire study area was found to have been heavily disturbed by the construction of a large causeway at the northern and south eastern edges of the study area, the modification of the creeklines which transect the study area, the construction of embankments along the northern, eastern and southern boundaries, bulk earthworks and vegetation clearance in the western portion of the site, and increased inundation events in the centre of the study area as a result of the modification of the creeklines and the installation of the embankments.

Based on the results of the desktop assessment and archaeological survey the study area has been assessed as having low Aboriginal archaeological potential. The proposed works are there unlikely to impact on any Aboriginal archaeological values.

The following management recommendations have been developed relevant to the study area and influenced by:

- predicted impacts to Aboriginal cultural heritage
- the planning approvals framework

- current best conservation practise, widely considered to include:
 - ethos of the Australia ICOMOS Burra Charter (2013)
 - the code.

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: No further archaeological assessment is required

No further archaeological work is required in the study area due to the entire study area assessed as having low archaeological potential.

Recommendation 2: Discovery of Unanticipated Aboriginal Objects or Aboriginal Ancestral Remains

All Aboriginal objects and Places are protected under the *National Parks and Wildlife Act 1974* (NPW Act). It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the Office of Environment and Heritage (OEH). Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains.
2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
3. Not recommence work at that location unless authorised in writing by OEH.

1 Introduction

1.1 Project background

Biosis has been commissioned by Geolyse, on behalf of Council to undertake an Aboriginal Due Diligence Assessment (ADDA) for the proposed community recycling facility (waste management facility) at Hephher Road, Campbelltown NSW (the project).

The proposed development is a designated development due to its proximity to natural waterbodies and consequently an EIS will be required to support the project. Geolyse and Council therefore require the preparation of an ADDA to support the SEARs application.

An assessment in accordance with the due diligence code has been undertaken for the study area in order to inform responsibilities with regards to Aboriginal cultural heritage in the area. In addition to the basic tasks required for a due diligence assessment, an extended background review, as well as an archaeological survey in accordance with the code was conducted, in order adequately map areas of high, moderate and low archaeological sensitivity.

1.2 Location of the study area

The study area is located within the Campbelltown Local Government Area (LGA), Parish of St Peter, County of Cumberland (refer to Figure 1). The study area incorporates the southern portion of Lot 104, DP 1056782 and is bounded by Hephher Road to the north and east, Johnson Road to the south and Lots 1, 37 and 38 of DP 1113810 and Lot 2 of DP 1190825 to the west (refer to Figure 2).

1.3 Planning approvals

The proposed development will be assessed against Part 5 of the *Environmental Planning and Assessment Act 1979 NSW* (EP&A Act). Other relevant legislation and planning instruments that will inform the assessment include:

- NPW Act
- *National Parks and Wildlife Amendment Act 2010* (NSW)
- *Campbelltown Local Environmental Plan 2015* (LEP)
- *Campbelltown Development Control Plan 2015* (DCP)

1.4 Scope of the assessment

The following is a summary of the major objectives of the assessment:

- Conduct background research in order to recognise any identifiable trends in site distribution and location, including a search of the Aboriginal Heritage Information Management System (AHIMS).
- Undertake archaeological survey as per requirement 5 of the code, with particular focus on landforms with high potential for heritage places within the study area, as identified through background research.

- Record and assess sites identified during the survey in compliance with the guidelines endorsed by the OEH.
- Determine levels of archaeological and cultural significance of the study area.
- Make recommendations to mitigate and manage any cultural heritage values identified within the study area.

DRAFT

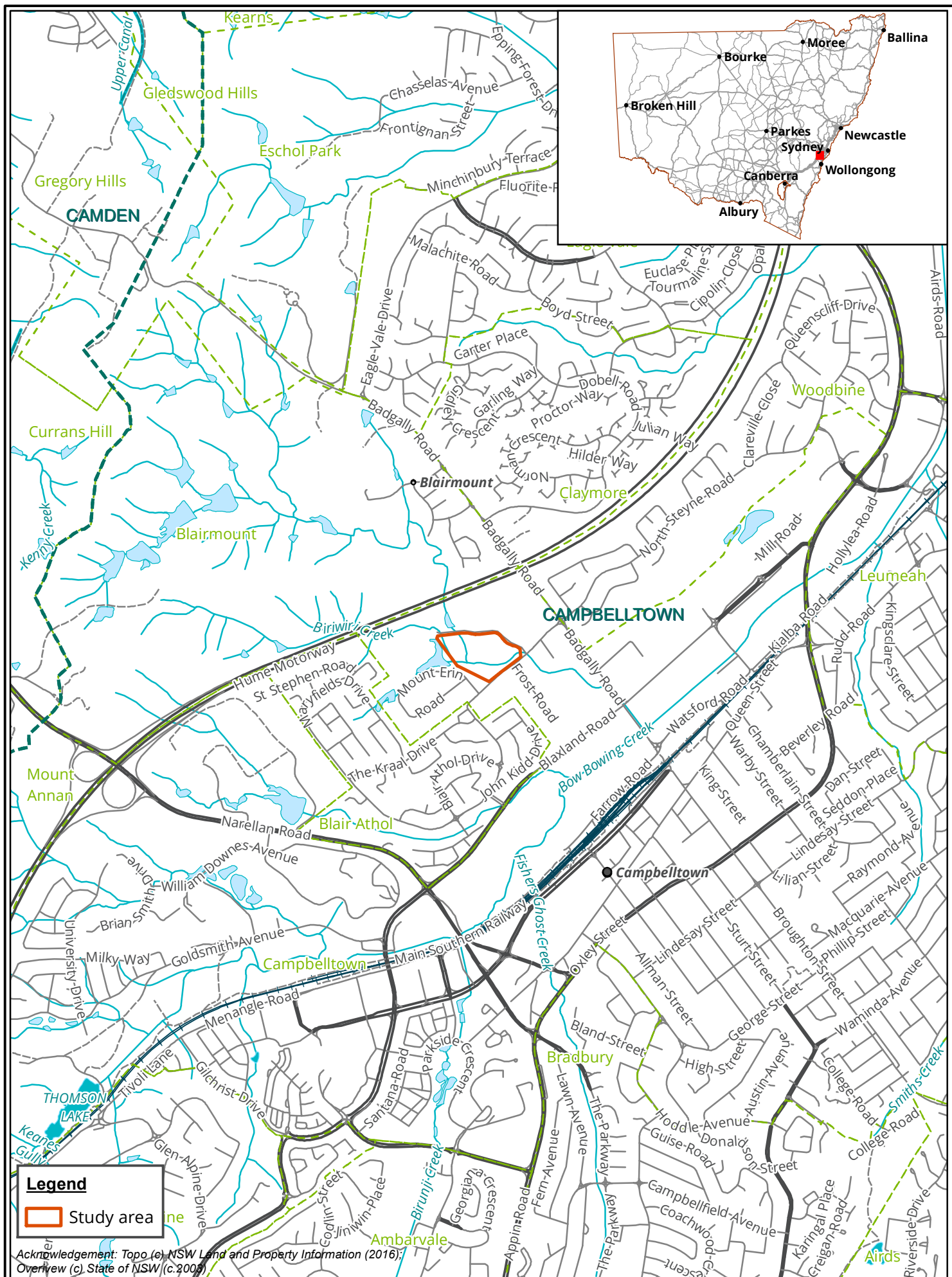
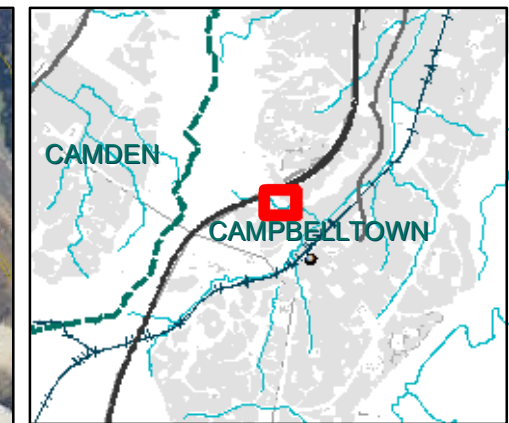


Figure 1: Location of the study area



Legend

Study area

Figure 2: Study area detail

0 20 40 60 80 100
Metres

Scale: 1:2,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Albury, Ballarat, Melbourne,
Sydney, Newcastle, Wangaratta & Wollongong

Matter: 28930,
Date: 10 January 2019,
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2 Desktop assessment

A desktop assessment has been undertaken to review existing archaeological studies for the study area and surrounding region. This information has been synthesised to develop some Aboriginal site predictive statements for the study area and identify known Aboriginal sites and/or places recorded in the study area. This desktop assessment has been prepared in accordance with requirements 1 to 4 of the code.

2.1 Landscape context

The study area is located in a peri urban environment in south-western Sydney on the outskirts of Campbelltown, surrounded by residential housing, light industrial estates and farmland. The study area lies within the Cumberland Plain landscape form (Mitchell 2002), which is a broad and shallow basin that stretches westwards from Parramatta to the Hawkesbury-Nepean River and southwards from Windsor to Thirlmere.

2.2 Geology, soils and landforms

The study area is largely situated on Quaternary Alluvium, with a small portion of the south-western portion contained within the Ashfield Shale formation, which itself is part of the Wianamatta Group geological formation. Quaternary Alluvium occurs along major watercourses and consists of quartz and lithic fluvial sand, silt and clay. The Ashfield Shale formation consists of laminate and dark grey siltstone (Bannerman & Hazelton 1990a, p.27). Aboriginal artefact scatter sites are common across this formation, as are Potential Archaeological Deposits (PADs). The lack of underlying sandstone geology in this area makes other varieties of sites such as rock shelters and engraving sites less common (Figure 3).

Topographically, the study area is located within an open depression running roughly south-east to north-west, along with lower slopes leading to crests surrounding the study area on its north-western, north-eastern and south-western sides. The north-eastern, and south-western crests present within the study area are man made embankments. Biriwiri Creek and an unnamed tributary run through the southern portion of the study area through the depression (Figure 4).

Stream order is recognised as a factor which helps the development of predictive modelling in Aboriginal archaeology in the Cumberland Plain. Predictive models which have been developed for the region have a tendency to favour permanent water courses as the locations of complex sites that have been continuously occupied, as they would have been more likely to provide a stable source of water and by extension other resources which would have been used by Aboriginal groups (Jo McDonald Cultural Heritage Management 2000a, p.19)

The stream order system used for this assessment was originally developed by Strahler (1964). It functions by adding two streams of equal order at their confluence to form a higher order stream, as shown in Plate 1. As stream order increases, so does the likelihood that the stream would be a perennial source of water.

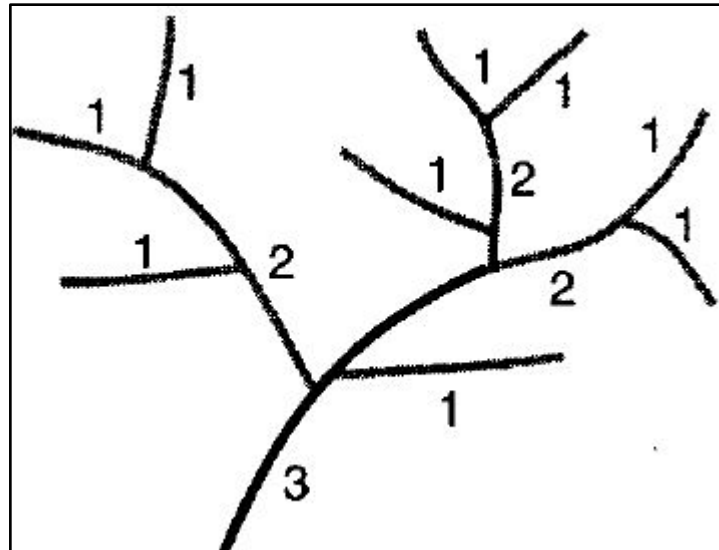


Plate 1 Diagram showing Strahler stream order (Ritter et al 1995, p. 151)

As is noted above, Biriwiri Creek is located within the study area; this non-perennial watercourse exists as a fourth order stream in the eastern part of the study area, and transitions to a third order stream at the confluence of an unnamed fourth order stream which runs roughly north-south. These hydrological features would have most likely been associated with temporary land use due to their non-perennial nature; sites are more likely to be identified within well-drained topographies such as crests and footslopes within close proximity to a water source. Historical aerial imagery of the study area shows that the two water sources present within the study area were subject to high levels of ground disturbance in the form of bulk earth works and levelling between 1963 and 1979 (Figure 5, Figure 6).

Two man-made waterbodies are located north and west of the study area, which are likely to have utilised the natural flow of Biriwiri Creek and the unnamed tributary running through the study area. Biriwiri Creek feeds into Bow Bowing Creek, a fifth order non-perennial stream, 694 metres south-east of the study area. The Georges River is located approximately 4.4 kilometres to the south-east, while the Nepean River is approximately 6.4 kilometres south-west of the study area (Figure 4).

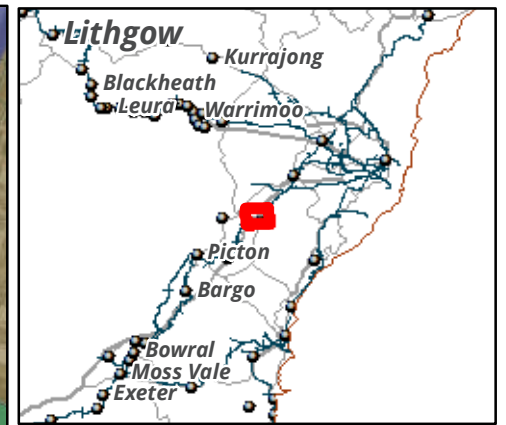
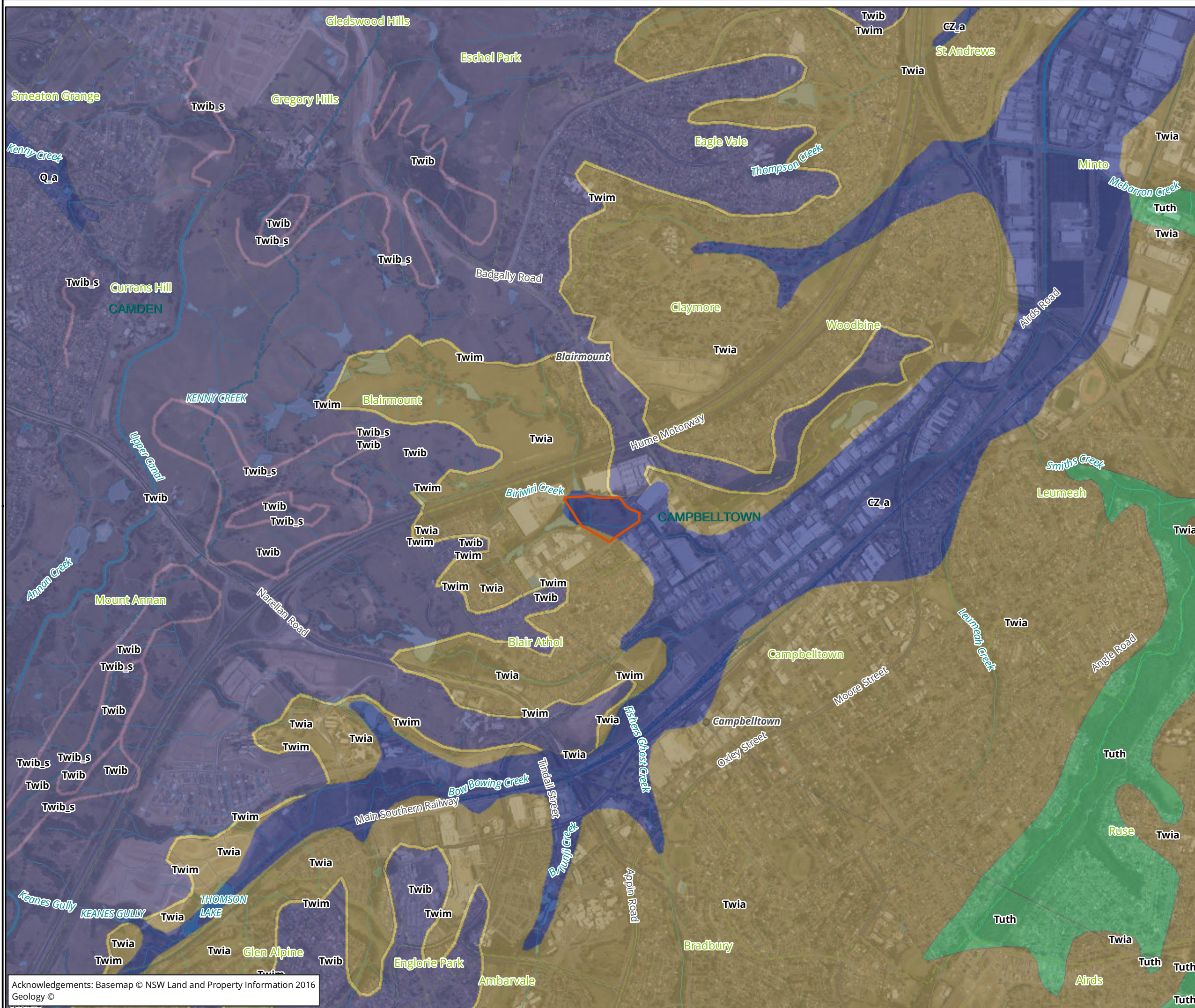
Soil landscapes have distinct morphological and topological characteristics that result in specific archaeological potential. They are defined by a combination of soils, topography, vegetation and weathering conditions. Soil landscapes are essentially terrain units that provide a useful way to summarise archaeological potential and exposure.

The study area is entirely located within the Blacktown Soil Landscape (Figure 7). It is a residual soil landscape characterised by its low reliefs and gentle slope, and is generally associated with a landform pattern of gently undulating rises. The local relief is around 10-30 metres, with slopes of 5%, but occasionally up to 10%. Crests and ridges are usually broad ranging from 200-600 metres, with rounded convex upper slopes transitioning into concave lower slopes, broad drainage depressions and valley flats, while rock outcrops are absent. Dominant soils consist of shallow to moderately deep (<150 centimetres) red and brown podzols on crests and in well drained topographies, and deep (150-300 centimetres) yellow podzolic soils and soloths on lower slopes and drainage lines (Bannerman & Hazelton 1990a, p.27). Due to their age and slow accumulation, residual soil landscapes have reasonable potential to contain archaeological deposits in an open context, such as stone artefacts derived from occupation sites. Other occupational evidence might include scarred trees where remnant vegetation occurs. However, the slow accumulation and high impact of extensive land clearing (usually associated with pastoral and civic development) often results in poor preservation of archaeological material. The soil characteristics of this landscape are described in Table 1.

Table 1 Blacktown soil landscape characteristics (Bannerman & Hazelton 1990a, pp.28–29)

Soil material	Description
bt1—Friable brownish black loam	This is a friable brownish black loam to clay loam with moderately pedal subangular blocky (2–20 mm) structure and rough-faced porous ped fabric. This material occurs as topsoil (A horizon). Colour is brownish black (10YR 2/2) but can range from dark reddish brown (5YR 3/2) to dark yellowish brown (10YR 3/4). Rounded iron indurated fine gravel-sized shale fragments and charcoal fragments are sometimes present. Roots are common.
bt2—Hardsetting brown clay loam	This is a brown clay loam to silty clay loam which is hardsetting on exposure or when completely dried out. It occurs as an A2 horizon. This material is water repellent when extremely dry. Colour is dark brown (7.5YR 4/3) but can range from dark reddish brown (2.5YR 3/3) to dark brown (10YR 3/3). Platy, iron indurated gravel-sized shale fragments are common. Charcoal fragments and roots are rarely present.
bt3—Strongly pedal, mottled brown light clay	This is a brown light to medium clay with strongly pedal polyhedral or sub-angular to blocky structure and smooth-faced dense ped fabric. This material usually occurs as subsoil (B horizon). Colour is brown (7.5YR 4/6) but may range from reddish brown (2.5YR 4/6) to brown (10YR 4/6). Frequent red, yellow or grey mottles occur often becoming more numerous with depth. Fine to coarse gravel-sized shale fragments are common and often occur in stratified bands. Both roots and charcoal fragments are rare.
bt4—Light grey plastic mottled clay	This is a plastic light grey silty clay to heavy clay with moderately pedal polyhedral to subangular blocky structure and smoothfaced dense ped fabric. This material usually occurs as deep subsoil above shale bedrock (B3 or C horizon). Colour is usually light grey (10YR 7/1) or, less commonly, greyish yellow (2.5YR 6/2). Red, yellow or grey mottles are common. Strongly weathered ironstone concretions and rock fragments are common. Gravel-sized shale fragments and roots are occasionally present. Charcoal fragments are rare.

Crests will contain up to 30 centimetres of friable greyish brown loam (bt1) overlying 10–20 centimetres of hardsetting brown clay loam (bt2), and up to 100 centimetres of strongly pedal brown mottled light clay (bt3), while friable greyish loam (bt1) can be absent. Soil horizons are generally clear, and total soil depth is <150 centimetres. Upper slopes and midslopes feature up to 30 centimetres of bt1 overlying 10–20 centimetres of bt2 and 20–50 centimetres of bt3, under which lies up to 100 centimetres of light grey plastic mottled clay (bt4), with a total soil depth greater than 200 centimetres. As with crests, bt1 may be absent and soil boundaries are usually clear. Lower sideslopes consist of up to 30 centimetres of bt1 overlying 10–30 centimetres of bt2, followed by 40–100 centimetres of bt3, and usually greater than 100 centimetres of bt4 underlying bt3. Total soil depth is greater than 200 centimetres and boundaries between soil materials are clear. Drainage depressions and other areas of poor drainage will contain up to 20 centimetres of a hardsetting loam topsoil (bt1) usually overlying mottled brownish yellow clay subsoil (bt3); these soils can occasionally become waterlogged and are usually saline, at depths of up to 2 metres (Bannerman & Hazelton 1990a, p.29).



Legend

Study areas

Geological units

- Alluvium
- Ashfield Shale
- Bringelly Shale
- Bringelly Shale - sandstone
- Hawkesbury Sandstone
- Minchinbury Sandstone

Figure 3: Geological units near the study area

0 200 400 600 800 1,000
Metres

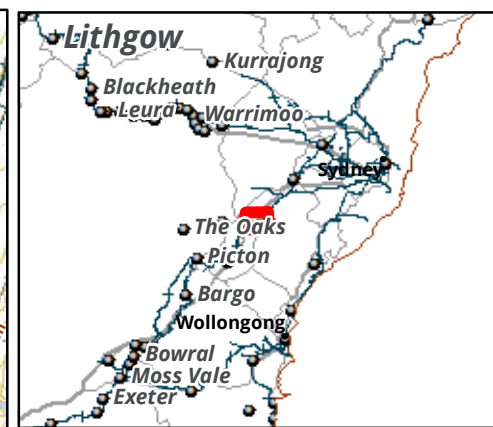
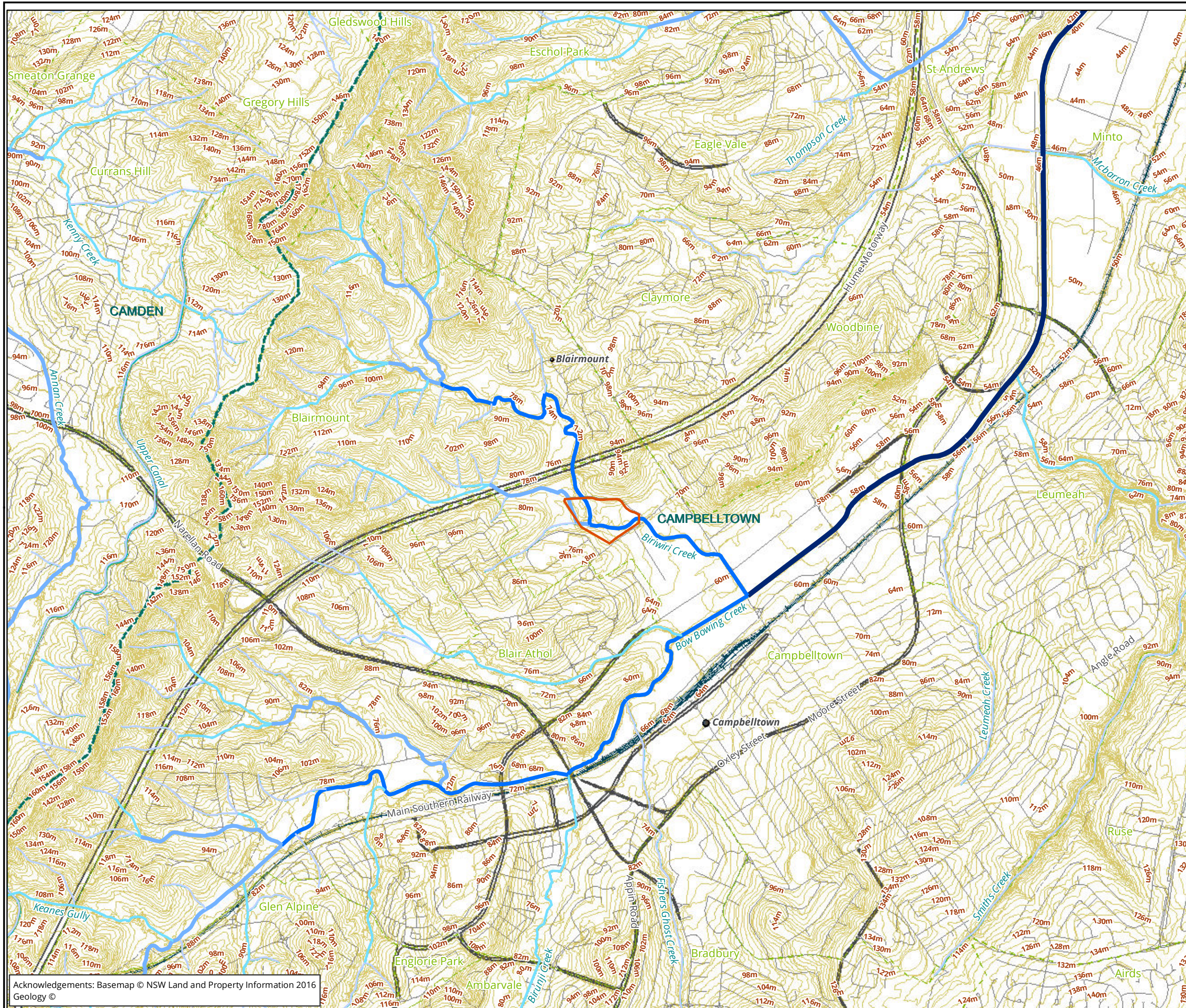
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Acknowledgements: Basemap © NSW Land and Property Information 2016
Geology ©



Legend

 Study areas

Strahler Order

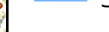
-  1
-  2
-  3
-  4
-  5

Figure 4: Topography and hydrology

0 200 400 600 800 1,000
Metres

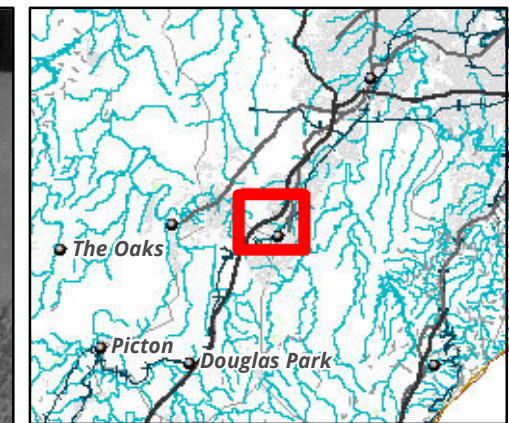
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28930_F4_Hydrology.mxd

Acknowledgements: Basemap © NSW Land and Property Information 2016
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 Study area

Figure 5: Historical aerial imagery 1963

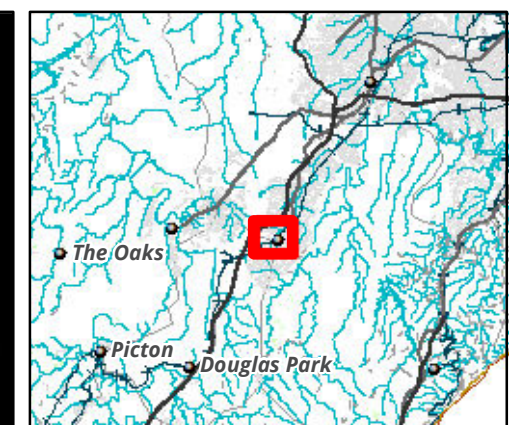
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Legend

 Study area

Figure 6: Historical aerial imagery 1979

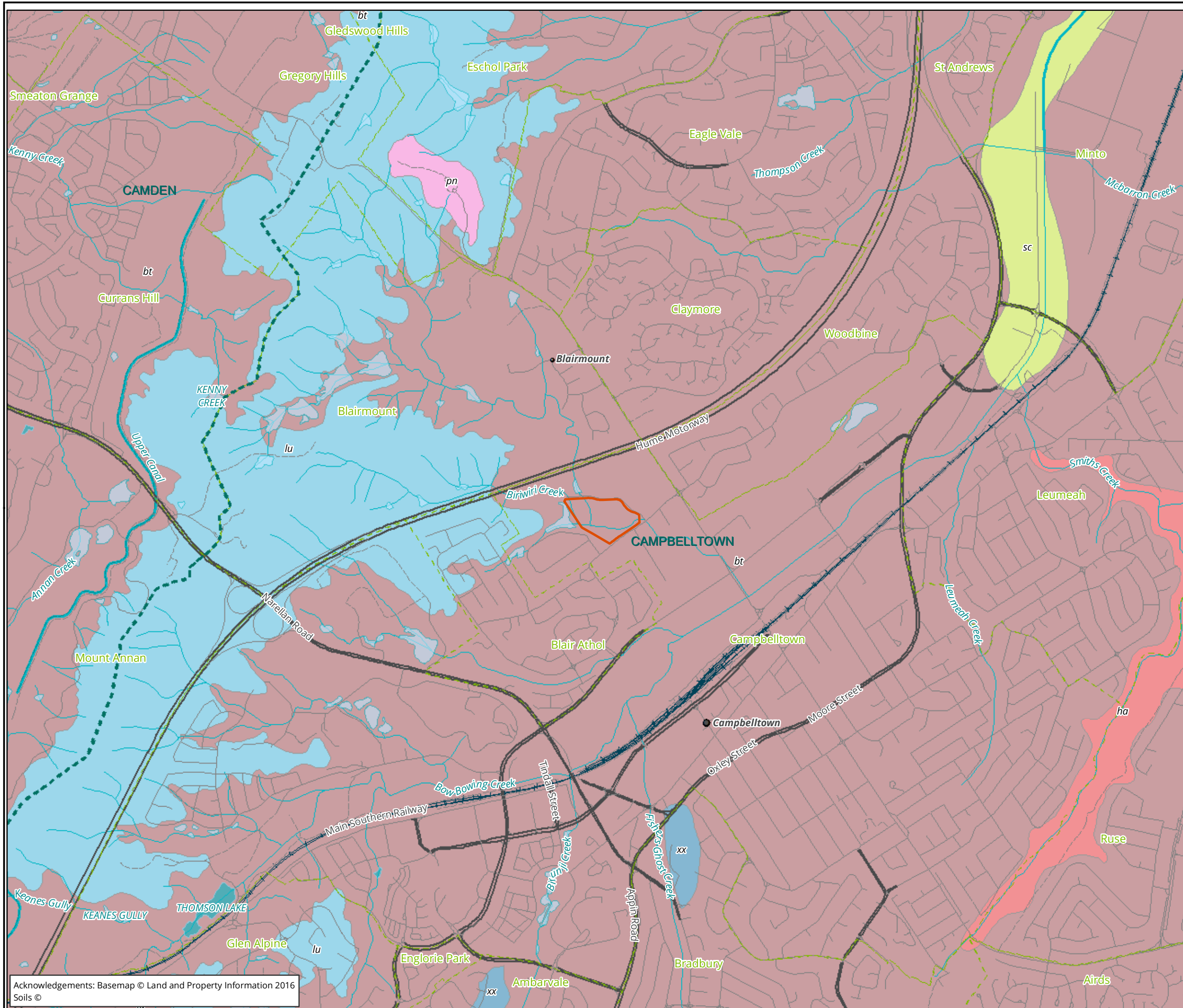
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Legend

Study area

Soil landscape units

- BLACKTOWN
- DISTURBED TERRAIN
- HAWKESBURY
- LUCAS HEIGHTS
- LUDDENHAM
- PICTON
- SOUTH CREEK

Figure 7: Soil landscapes near the study area

0 200 400 600 800 1,000

Metres
Scale: 1:20,000 @ A3
Coordinate System: GDA 1994 MGA Zone 55

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2.3 Landscape resources

Within the Cumberland subregion of the Sydney Basin Bioregion there is a variety of vegetation types present. Grey Box, Forest Red Gum, Narrow-leaved Ironbark, and Spotted Gum are present on shale hills. Hard-leaved Scribbly Gum, Rough-barked Apple, and Old Man Banksia are identified on alluvial sands and gravels. Broad-leaved Apple, Cabbage Gum, Forest Red Gum, and Swamp Oak are present on river flats. Tall Spike-rush, and Juncus with Parramatta Red Gum is noted around lagoons and swamps (Dunn & Sahukar 2003, p.193).

The Blacktown soil landscape would have typically supported open-forest and open-woodland that has been extensively cleared since European contact. Originally the Blacktown soil landscape would have featured woodland and open-forest of Forest Red Gum, narrow-leaved Ironbark, Grey Box and Spotted Gum (Bannerman & Hazelton 1990b, p.29).

Native fauna that would have inhabited the area in the vicinity of the study area may have included the Eastern Grey Kangaroo, Feathertail Glider, Australian Brushtail Possum, Eastern Bent-wing Bat and Koala. Bird species which may have been present include the Australian Magpie, Eastern Rosella, Galah and White-faced Heron, while reptiles could have included the Eastern Water-kink, Eastern Brown Snake, Water Dragon and Eastern Blue-tongue (Atlas of Living Australia n.d.).

Plant resources were used in a variety of ways. Fibres were twisted into string which was used for many purposes including the weaving of nets, baskets and fishing lines. String was also used for personal adornment. Bark from eucalypts was used in the provision of shelter; a large sheet of bark being propped against a stick to form a gunyah (Attenbrow 2002, p.105). Swamp Oak bark could be used for the making of canoes, and Smooth-barked Apple for the making of baskets and bowls.

As well as being important food sources, animal products were also used for tool making and fashioning a myriad of utilitarian and ceremonial items. For example, tail sinews are known to have been used to make fastening cord, while 'bone points', which would have functioned as awls or piercers, are often an abundant part of the archaeological record. Animals such as Brush-tailed Possums, were highly prized for their fur, with possum skin cloaks worn fastened over one shoulder and under the other (Attenbrow 2002, p.107).

3 Aboriginal context

3.1 Ethnohistory and contact history

It is generally accepted that people have inhabited the Australian landmass for at least 50,000 years (Allen & O'Connell 2003). The date of earliest occupation of the continent by Aboriginal people are subject to continued revision as more research is undertaken. The timing for the human occupation of the Sydney Basin is still uncertain. While there is some possible evidence for occupation of the region around 40,000 years ago, the earliest known radiocarbon date for the Aboriginal occupation of the Sydney Basin is associated with an archaeological deposit at Parramatta, which was dated to $30,735 \pm 407$ before present (BP) (Jo McDonald Cultural Heritage Management Pty Ltd 2005a, Jo McDonald Cultural Heritage Management Pty Ltd 2005b).

Archaeological evidence of Aboriginal occupation of the Cumberland Plains indicates that the area was intensively occupied from approximately 4000 years BP (Dallas 1982). Such 'young' dates are probably more a reflection of the conditions associated with the preservation of this evidence and the areas that have been subject to surface and subsurface archaeological investigations, rather than actual evidence of the Aboriginal people prior to this time. East of Campbelltown, a sandstone rock shelter site (known as Bull Cave) was excavated and yielded a basal date of 1820 ± 90 BP (Koettig 1985). In general, the majority of both open and rock shelter sites in the Sydney region date to within the last 3,000 to 5,000 years. Dibden (2003) attributes the increase in apparent occupation intensity to sea level stabilisation after the last ice age at around 5,000 years ago:

"Following the stabilisation of seal levels, the development of coastal estuaries, mangrove flats and sand barriers would have increased the resource diversity, predictability, and the potential productivity of coastal environments for Aborigines" (Dibden 2003, p.27).

Our knowledge of Aboriginal people and their land-use patterns and lifestyles prior to European contact is mainly reliant on documents written by non-Aboriginal people. These documents are affected by the inherent bias of the class and cultures of their authors, who were also often describing a culture that they did not fully understand - a culture that was in a heightened state of disruption given the arrival of settlers and disease. Early written records can however be used in conjunction with archaeological information and surviving oral histories from members of the Aboriginal community in order to gain a picture of Aboriginal life in the region.

Despite a proliferation of Aboriginal heritage sites there is considerable ongoing debate about the nature, territory and range of pre-contact Aboriginal language groups in the greater Sydney region. These debates have arisen largely because, by the time colonial diarists, missionaries and proto-anthropologists began making detailed records of Aboriginal people in the late 19th century; pre-European Aboriginal groups had been broken up and reconfigured by European settlement activity. The following information relating to Aboriginal people on the Cumberland Plains is based on such early records.

There is some confusion relating to group names, which can be explained by the use of differing terminologies in early historical references. Language groups were not the main political or social units in Aboriginal life. Instead, land custodianship and ownership centred on the smaller named groups that comprised the broader language grouping. There is some variation in the terminology used to categorise these smaller groups; the terms used by Attenbrow (2002) will be used here.

The project area is in the vicinity of three language groups, Dharawal, Gundungurra and the hinterland Darug. Attenbrow (2002, p.34) suggests:

- The Gundungurra covered "the southern rim of the Cumberland Plain west of the Georges River, as well as the southern Blue Mountains".

- The Dharawal covered “the south side of Botany Bay, extending as far as the Shoalhaven River; from the coast to the Georges River and Appin, possibly as far west as Camden”.
- The hinterland Darug covered the area “from Appin in the south to the Hawkesbury River in the north; west of the Georges River, Parramatta, the Lane Cove River and Berowra Creek”.

These areas are considered to be indicative only and would have changed through time.

It has been estimated that may have been 3,000-5,000 Aboriginal people living in the Sydney region at the time of the British First Fleet’s arrival in 1788. The movement of Aboriginal hunter-gatherers began to be increasingly restricted from this time. European expansion along the Cumberland Plain was swift and soon there had been considerable loss of land to agriculture. This led to violence and conflict between Europeans and Aboriginal people as both groups sought to compete for the same resources. In the Camden region, it began following the murder of an Aboriginal woman and her children, resulting in violent clashes between several Aboriginal men and European settlers between 1814 and 1816. The violence had escalated in 1816 following the outlaw proclamation by Macquarie, and concluded with the massacre of 14 Aboriginal people at Appin. This event is known as the ‘Appin Massacre’ and is historically regarded as the destruction of the Aboriginal people of the Campbelltown and Camden region. At the same time diseases such as small pox were having a devastating effect on the Aboriginal population. Death, starvation and disease were some of the disrupting factors that led to a reorganisation of the social practices of Aboriginal communities after European contact. The formation of new social groups and alliances were made as Aboriginal people sought to retain some semblance of their previous lifestyle (Attenbrow 2002, pp.16, 158–159, Liston 1988, p.50,54).

3.2 Regional context

Jo McDonald Cultural Heritage Management (1996, 2000b) has developed a predictive model for Aboriginal site distribution on the Cumberland Plain that is applicable to the study area. This has been developed using the Aboriginal occupation models proposed for the Camden area by Haglund (1989) and data collected from other areas of the Cumberland Plain where trends in the distribution of archaeological sites have been apparent. The following predictive model for the Cumberland Plain has been taken from Jo McDonald Cultural Heritage Management (2000b).

- The size (density and complexity) of archaeological features will vary according to permanence of water, landscape unit and proximity to stone resources in the following way:
 - At the headwaters of upper tributaries (first order creeks) archaeological evidence will be sparse and will comprise little more than background scatters of stone artefacts.
 - At the middle reaches of minor tributaries (second order creeks) archaeological evidence will be sparse but indicate focussed activity.
 - At the lower reaches of tributary creeks (third order creeks) archaeological evidence will indicate more frequent occupation and evidence of repeated, more concentrated activities.
 - On major creek lines and rivers (fourth order creeks) archaeological evidence will indicate more permanent occupation, which is of greater complexity.
 - Creek junctions and swamps may provide foci for site activity.
 - Ridgetop locations between drainage lines will usually contain limited archaeological evidence.
- Where sandstone features occur (overhangs or platforms), these may have provided a focus for a number of activities including camping or art production or the sharpening of axes. Sandstone

platforms may also have been used for the production of art (engravings), although these are very rare on the margins of the Cumberland Plain.

Australian Museum Business Services (1997) undertook a large scale regional Aboriginal heritage study of part of the Cumberland Plain. The assessment focused on the representativeness of Aboriginal sites on the Cumberland Plain, assessing the effectiveness of the planning framework to achieve the aims of heritage management, and producing guidelines on the recognition of silcrete artefacts. The study examined all previously recorded archaeological sites and studies completed across the region, including field survey and subsurface investigation work. The Plumpton Ridge silcrete source work completed by McDonald in 1985 was used as a case study in determining accurate identification of silcrete artefacts from naturally spalled silcrete. The report concluded:

- Previous archaeological investigation on the Cumberland Plain has not contributed significantly to a developed understanding of Aboriginal occupation and settlement patterns of the region. This was attributed to the isolated, small scale nature of the archaeological investigations dispersed throughout the region, and the use of intuitive and simple pattern recognition models and research designs. Further, where large scale research projects and models have been developed, they have not been adequately tested by ensuing investigations (Australian Museum Business Services 1997, p.i).
- Excavation projects have been limited and techniques have been restrictive and not interpreted the spatial structure of open sites adequately, as the focus of analysis has been on technology of the assemblages, limiting the interpretive potential of many archaeological investigations.
- The correct identification of silcrete artefacts is problematic, and the analysis of material excavated by McDonald (1985) at the Plumpton Ridge silcrete source revealed that a number of the artefacts did not exhibit attributes of cultural modification, but were naturally fractured or broken from farm machinery.
- Regional planning approaches are inadequate for the assessment and conservation of Aboriginal heritage throughout the region. This was attributed to development pressures, minor reserve coverage and limited opportunities for establishing new protected areas.

More recent archaeological work (AECOM 2010) has indicated that while the most recognised Cumberland Plain predictive modelling is most relevant, it is not always typical. Archaeological material tends to occur anywhere on the Cumberland Plain and that while the size and frequency of sites can be linked with stream order, the complexity of sites cannot.

Archaeological and Heritage Management Solutions Pty Ltd (AHMS) (2015) was commissioned by the Department of Planning and Environment (DPE) to undertake an Aboriginal and historic heritage gap analysis of the Greater Macarthur Investigation Area (GMIA). The purpose of the gap analysis was to identify the cultural heritage values of the area and to recommend any further investigations required. The assessment consisted of a review of existing Aboriginal and historical heritage assessments for the region, determination of areas which have been subject to minimal or no previous assessment, and the identification of areas of known Aboriginal and historical heritage significance. The assessment found that the GMIA contained a number of areas which may contain evidence of Aboriginal and European contact archaeology, particularly near Menangle and Menangle Park. A total of 323 AHIMS sites have been recorded within the GMIA, with the vast majority being recorded in areas which have been subject to previous assessment as a result of development activities. The assessment found that artefact sites are found commonly throughout the Cumberland Plain region which makes up the vast majority of the GMIA. Artefact sites are found generally within 200 metres of the larger river systems within the region, however some artefact sites were recorded up to 500 metres from a larger river system. The eastern portions of the GMIA located within the Sydney Cataract region, contained higher instances of rockshelters and other closed sites. These are frequently found along creek-lines where the sandstone geology allows for the formation of such natural features. Predictive

modelling conducted as part of the assessment found that there is high potential for Aboriginal sites and objects to be identified in close proximity to the Nepean, Cataract and Georges Rivers, and Allens, Elladale, Clemens, Cascade, and Wallandoola, creeks. The Georges River, Allens Creek, Elladale Creek and headwaters of the Cataract River (including Wallandoola creek) were assessed as having the highest potential for scientifically significant deposits due to lower levels of development in these areas along with these areas having higher elevations suggesting they have not been heavily disturbed by inundation events.

3.3 Local context

A number of Aboriginal cultural heritage investigations have been conducted within an approximately 10 kilometre buffer of the study area. These investigations are briefly summarised below. Most of these investigations were development driven and include surface and sub-surface investigations.

Crew Archaeological Consultant (1998) conducted an archaeological survey of a proposed subdivision of Lot 204 at Mount Annan located to the west of the current study area. The proposed development was situated around a small gully that was associated with Narellan Creek. This survey focused on a number of exposures that were located within the study area however no new aboriginal or heritage sites were relocated during this survey.

New South Wales Archaeology (2003) undertook a cultural heritage assessment for Sydney Gas Operations Pty Ltd (Sydney Gas) at Glenlee, Menangle Park and Menangle (south-west of the study area) as part of Camden Gas Project. The predictive model developed for the site was based on earlier local and regional archaeological assessments, and proposed that areas of low to moderate archaeological potential, particularly open stone artefact scatter sites including isolated finds but also low to moderate/high density sites and potential archaeological deposits (PAD) on low graded, elevated land in close proximity to water, were likely to be located across the site, and impacted by development works. The possibility of locating extant scar trees was also noted, with the caveat that much of the land had been previously cleared. The survey covered areas where which would have some element of ground surface impact, and identified 20 previously unrecorded Aboriginal sites, including surface artefact scatters featuring chert, silcrete, quartz, tuff, a possible scarred tree.

AECOM (2010) completed an archaeological survey as part of the Camden Gas Project Northern Expansion project in rural areas of Currans Hill, Varroville, Raby and Denham Court in the Camden and Campbelltown LGAs. The general predictive model used for the Cumberland Plain was utilised, in that the most likely Aboriginal archaeological sites to be encountered would be stone artefact scatters or isolated finds. The results of the survey generally reflected the predictive modelling, with the majority of the 28 newly identified sites (11 isolated artefact finds, 12 open campsites, 3 scarred trees) were located close to first and second order drainage lines, or on ridge and hill crests, but also in a disturbed context.

White and McDonald (2010) authored an article on lithic artefact distribution on the Cumberland Plain, centring on the north-west Rouse Hill development area. The sample of artefacts used for the study consisted of assemblages from JMCHM sites in the Camden region conducted between 1999 and 2008, with a total of 4,429 artefacts. The study took into account distance from water, landforms, geology, and distances from silcrete sources, the most common raw material for stone artefacts on the Cumberland Plain. The study concluded that landform and distance from water had an impact on site distribution, with artefacts becoming more numerous closer to creeks, and along higher order creeks. The study also found that although artefacts are found on all landforms, landform type influences artefact distribution, with the preference being for slightly elevated, well-drained areas in the lower parts of valleys.

Australian Museum Business Services (2012) conducted an assessment of the Austral and Leppington North Precincts, north-west of the study area, prior to their development. An AHIMS search of the area identified 86

previously recorded sites, including 39 artefact scatters, 37 isolated finds, eight PADs, and two scarred trees. The predictive model stated that stone artefact sites were most likely to be identified during archaeological survey of the area. The survey recorded six newly identified sites, including five isolated artefacts, and one artefact scatter and PAD. The majority of the artefacts found were made of silcrete, although chert was also present. Four of the artefacts were present on creek flats, and two were located on slopes.

Biosis (2012) undertook an Aboriginal cultural heritage assessment and archaeological survey for a large area in the Campbelltown and Camden areas as part of the Camden Gas Project. The predictive model prepared for the archaeological survey was based on site distribution in relation to landscape descriptions, consideration of site type, raw material types and site densities likely to be present within the site, findings of ethnohistorical research on the potential for material traces to be present, potential use of natural resources available or previously available within the project area, and consideration of the temporal and spatial relationships of sites within the site and surrounding region. The model proposed there was high potential for flakes stone artefact scatters and isolate artefacts and PADs, but low potential for other Aboriginal site types, such as grinding grooves, scarred trees and Aboriginal places. The survey consisted of 69 transects, which resulted in the identification of 39 Aboriginal sites and two PADs, of which there were five newly identified sites. The majority of sites were open lithic scatters and isolated artefact finds, with several scarred trees also identified. Almost all of the sites were considered to be situated within a disturbed context.

Niche Environment and Heritage (Niche) (2013) conducted an ADDA for a proposed residential and business zone development at Maryfields Estate, Campbelltown, NSW located approximately 950 metres to the south west of the current study area. The study area was found to have been subject to high levels of previous disturbance, however one area of PAD (Maryfields PAD1) was recorded along an undisturbed creekline, while one isolated artefact consisting of a broken ground edged axe fragment (Maryfields AS1) was identified in association with the area of PAD. The area of PAD measures 50 by 100 metres on the northern side of a creek terrace. The northern side of the creek was considered less likely to have been impacted on by inundation events and contained areas of remnant native vegetation. The area of PAD is located within the Blacktown soil landscape, a residual soil landscape. Residual soil landscapes have reasonable potential to contain archaeological deposits in an open context, such as stone artefacts derived from occupation sites. The portion of the study area within the Luddenham soil landscape was found to be highly disturbed and assessed as having a low potential for intact soil deposits due to the high erosion potential of the soils present. Niche recommended that further works in the form of an ACHA and AHIP would be required if the proposed works could not avoid Maryfields AS1 and Maryfields PAD1.

Biosis (2017) was commissioned by Mott MacDonald on behalf of Crownland Leppington Pty Ltd to undertake an ADDA for a proposed subdivision and residential development at 1432 Camden Valley Way, Leppington NSW located approximately 10 kilometres to the north of the current study area. A review of previous assessments in the local area identified a high potential for subsurface deposits to be present in close proximity to higher order creeklines locally, and further identified flats and alluvial terraces as landforms with the potential to contain subsurface deposits of artefacts. An archaeological survey of the study area was completed however dense grass coverage limited the surveyors potential to identify surface artefacts which may have been present within the study area. Further desktop assessment including a review of historical aerial imagery identified that the entire study area had been subject to previous ground disturbances. The archaeological assessment therefore did not identify and Aboriginal sites or areas of archaeological potential.

Biosis (2018a) was commissioned by Netcorp to undertake an archaeological investigation in advance of proposed geotechnical works for the Macarthur Memorial Park, Varroville, NSW located approximately 5 kilometres to the north of the current study area. A total of 28 AHIMS sites were recorded within the study area. Archaeological test excavations were therefore required prior to geotechnical testing being undertaken in order to determine if the proposed works would require an AHIP to proceed. A total of 10 Aboriginal artefacts were identified across 88 test pits which were excavated across all landforms present within the

study area. Previous archaeological test excavations conducted by Artefact Heritage (2018) in the study area found 184 stone artefacts across 155 test pits situated on level plains, wide crests, raised terraces, mid-slopes and spur crests. Spur crests, raised terrace and mid slope landforms produced the majority of artefacts identified at similar numbers (64, 53, and 54 respectively), with the majority of artefacts identified at a depth of 100-200 millimetres across the entire study area. Artefacts were not recovered from test areas located on upper slopes with steep gradients. The results of the Biosis (2018a) and Artefact Heritage (2018) test excavations indicate that the entire study area was utilized to some degree by Aboriginal people with activities concentrated on Spur crests, raised terraces and gently inclined slopes.

Biosis (2018b) was commissioned by Root Partnerships to undertake an Aboriginal cultural heritage assessment for the proposed Stage 2 of the Campbelltown Hospital Redevelopment, Campbelltown, NSW located approximately 3 Kilometres to the south east of the current study area. No Aboriginal sites registered on the AHIMS database were identified in or within 1 kilometre of the study area. An archaeological survey was conducted with no Aboriginal sites or objects identified. The background research and field survey identified that the significant disturbances that have occurred within the study area over a long period of time have impacted upon the preservation and integrity of any cultural materials that may have been present. This is consistent with two previous Aboriginal heritage assessments undertaken of the study area by GML (2011) and Austral Archaeology (2012) who both concluded that there was low archaeological potential for Aboriginal sites to be located within an intact subsurface context and the likelihood of impacting any sites during works would be low.

Biosis (2018c) was commissioned by TSA Management to undertake an Aboriginal cultural heritage assessment, including a field investigation, for the proposed Leppington Public School development at Lot 9001 DP 1206596, Commissioners Drive, Denham Court, NSW located approximately 8 kilometres to the north west of the study area. Two previously recorded AHIMS sites were located within the study area while a further 102 AHIMS sites were identified within a 5 kilometre radius of the study area. A review of available background information and previous reports for the area found that isolated artefacts and artefact scatter sites were the most likely site type to be identified within the study area. Alluvial terraces within close proximity to permanent water sources were identified as having the highest likelihood of containing large Aboriginal archaeological site complexes, while ridge lines and slopes, and lower order creek lines were generally found to have been utilised by Aboriginal people only intermittently. A previous AHIP had been obtained for the study area and a site inspection conducted by Biosis confirmed that the AHIMS sites present had been destroyed by the development activities permitted by the AHIP.

Biosis (2018) was commissioned by Mott MacDonald to undertake an Aboriginal cultural heritage assessment for a proposed residential subdivision at 49 – 57 Kelly Street, Austral, located approximately 11 kilometres to the north of the current study area. The assessment determined that the western portion of the study area was considered to be of high archaeological potential due to its location on a broad gentle slope and close association to Kemps Creek. The remainder of the study area was determined to have been highly disturbed therefore possessed low potential for Aboriginal sites to be located within the study area. A total of 40 test pits were excavated, resulting in the identification of five stone artefacts, including one complete flake and five angular fragments.

3.3.1 Identified Aboriginal archaeological sites

An extensive search of the AHIMS database was conducted on 9 January 2019 (Client service ID: 391417). The search identified 113 Aboriginal archaeological sites within a 7.8 kilometre search area, centred on the proposed study area (Table 2 and Appendix 1). None of these registered sites are located *within* the study area (Figure 8). The mapping coordinates recorded for these sites were checked for consistency with their descriptions and location on maps from Aboriginal heritage reports where available. These descriptions and maps were relied where notable discrepancies occurred.

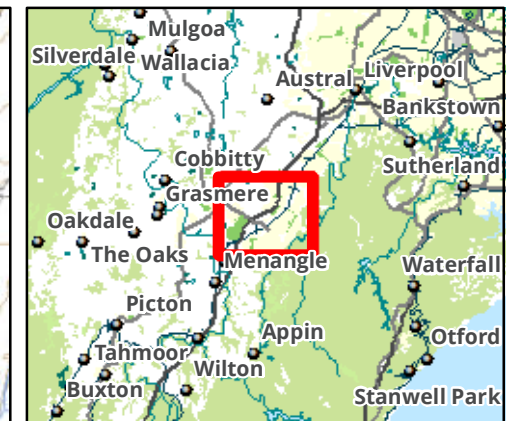
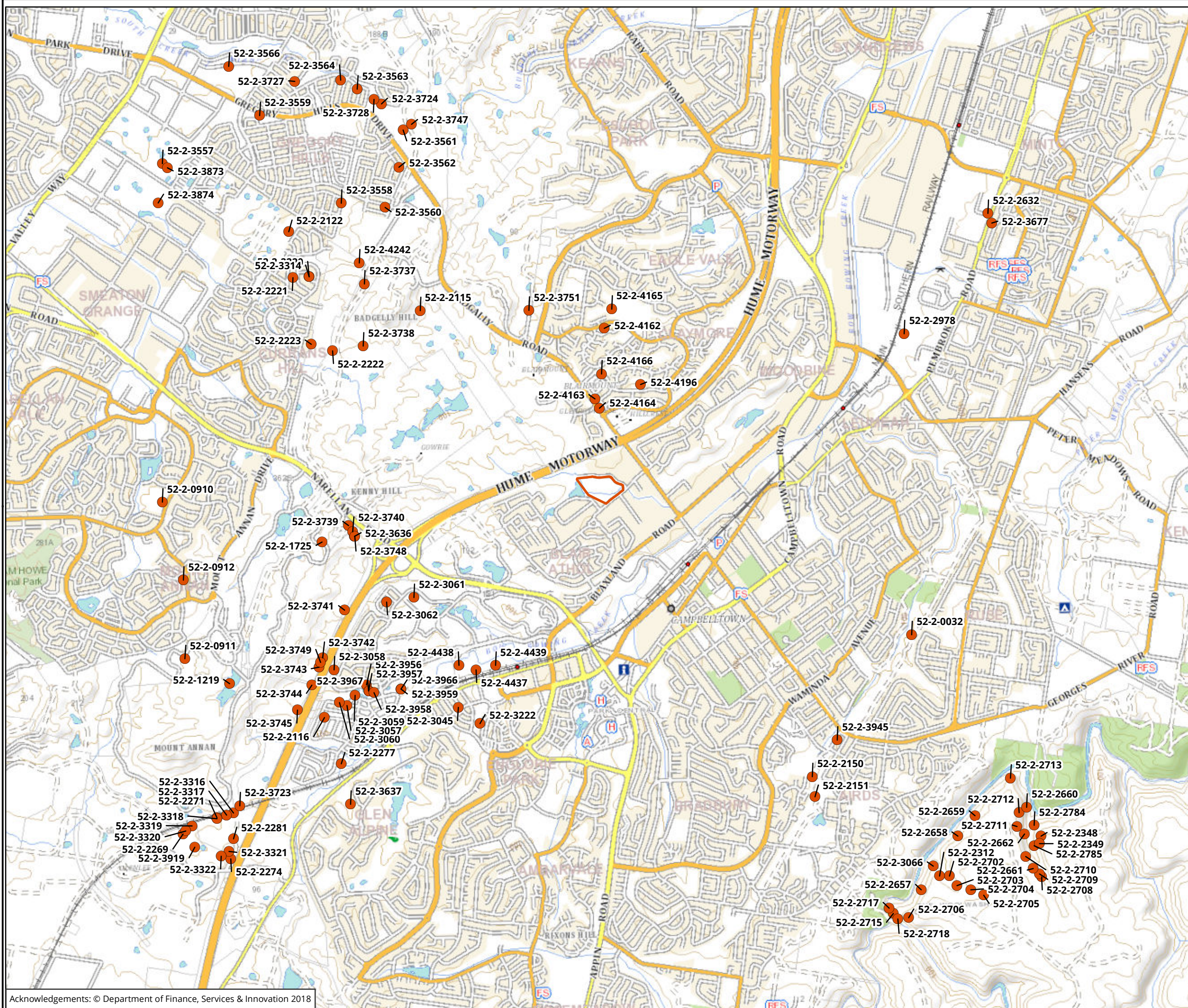
It should be noted that the AHIMS database reflects Aboriginal sites that have been officially recorded and included on the list. Large areas of NSW have not been subject to systematic, archaeological survey; hence AHIMS listings may reflect previous survey patterns and should not be considered a complete list of Aboriginal sites within a given area.

Table 2 AHIMS sites within the study area

Site type	Occurrences	Frequency (%)
Artefact(s)	82	70
PAD	27	23
Modified tree (carved or scarred)	6	5
Shelter with art – art (pigment or engraved)	1	1
Art (pigment or engraved)	1	1
Total	117	100

A simple analysis of the Aboriginal cultural heritage sites registered within a 5 kilometre radius of the study area indicates that artefact sites (both artefact scatters and isolated artefacts) are the dominant site type within the Campbelltown region representing 70% (n=82), followed by PAD sites at 23% (n=27). Modified trees (5% n=6), shelters with art (1%, n=1), and art sites (1%, n=1), have also been recorded in the Campbelltown area, however at much lower frequencies.

All the sites were located within close proximity to the reliable sources of water, were either exposed by the land clearing works (artefact scatters), in the areas with remnant native vegetation (scarred trees) or within areas of sandstone outcrops for overhang development (shelters with art/deposit).



Legend

- Study area
- AHIMS Record

Figure 8: AHIMS records near the Project Area

NOT TO BE MADE PUBLIC

0 330 660 990 1,320 1,650

Metres

Scale: 1:33,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Ballarat, Brisbane, Canberra, Melbourne,
Sydney, Wangaratta & Wollongong

Matter:
Date: 10 January 2019,
Checked by: amurray, Generated by: amurray
Location: \\bio-data-01\matters\128900s\28930\Mapping\28930_F8_AHIMS.mxd

3.4 Predictive statements

A series of statements have been formulated to broadly predict the type and character of Aboriginal cultural heritage sites likely to exist throughout the study area and where they are more likely to be located.

These statements are based on:

- Local and regional site distribution in relation to landform features identified within the study area
- Consideration of site type, raw material types and site densities likely to be present within the study area
- Findings of the ethnohistorical research on the potential for material traces to present within the study area
- Potential Aboriginal use of natural resources present or once present within the study area
- Consideration of the temporal and spatial relationships of sites within the study area and surrounding region.

Table 3 below outlines the site types most likely to be encountered during the survey across the present study area. The definition of each site type is described firstly, followed by the predicted likelihood of this site type occurring within the study area.

Table 3 Aboriginal site prediction statements

Site type	Site description	Potential
Flaked stone artefact scatters and isolated artefacts	Artefact scatter sites can range from high-density concentrations of flaked stone and ground stone artefacts to sparse, low-density 'background' scatters and isolated finds.	Moderate: Stone artefact sites have been previously recorded in the region on level, well-drained topographies in close proximity to reliable sources of fresh water. Biriwiri Creek and an unnamed tributary transect the study area indicating that the study area was likely used by Aboriginal people in the past. However, the level of previous ground disturbance which has occurred within the study area indicates that any Aboriginal sites present within the study are likely to have been heavily disturbed or destroyed. The potential for artefacts to be present within the study area is therefore assessed as moderate.
Potential Archaeological Deposits (PADs)	Potential sub surface deposits of cultural material.	Low: PADs have been previously recorded in the region across a wide range of landforms. PADs are likely to be present within areas adjacent to water courses or on high points in undisturbed landforms. The level of previous ground disturbance and frequent inundation events which have occurred in the study area indicate that the likelihood PAD occurring in the study area is low.

Site type	Site description	Potential
Modified trees	Trees with cultural modifications	Low: Historical aerial imagery indicates that the entire study area, with the exception of a small cluster of trees in the western portion of the study area has been subject to vegetation clearance. There is therefore low potential for scarred trees to occur in the study area.
Grinding grooves	Grooves created in stone platforms through ground stone tool manufacture.	Low: Grinding groove sites are unlikely to occur in the study area due to the absence of suitable rock outcrops.
Burials	Aboriginal burial sites.	Low: Aboriginal burial sites are generally situated within deep, soft sediments, caves or hollow trees. Areas of deep sandy deposits will have the potential for Aboriginal burials. The soil profiles associated with the study area are not commonly associated with burials.
Rock shelters with art and / or deposit	Rock shelter sites include rock overhangs, shelters or caves, and generally occur on, or next to, moderate to steeply sloping ground characterised by cliff lines and escarpments. These naturally formed features may contain rock art, stone artefacts or midden deposits and may also be associated with grinding grooves.	Low: Shelter sites are unlikely to occur in the study area due to the absence of suitable sandstone exposures or overhangs.
Aboriginal Ceremony and Dreaming sites	Such sites are often intangible places and features and are identified through oral histories, ethnohistoric data, or Aboriginal informants.	Low: There are currently no recorded mythological stories for the study area.
Quarries	Raw stone material procurement sites.	Low: There is no record of any quarries being within or surrounding the study area.
Post-contact sites	These are sites relating to the shared history of Aboriginal and non-Aboriginal people of an area and may include places such as missions, massacre sites, post-contact camp sites and buildings associated with post-contact Aboriginal use.	Low: There are no post-contact sites previously recorded in the study area and historical sources do not identify one.

Site type	Site description	Potential
Aboriginal places	Aboriginal places may not contain any 'archaeological' indicators of a site, but are nonetheless important to Aboriginal people. They may be places of cultural, spiritual or historic significance. Often they are places tied to community history and may include natural features (such as swimming and fishing holes), places where Aboriginal political events commenced or particular buildings.	Low: There are currently no recorded Aboriginal historical associations for the study area.

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4 Archaeological investigation

An archaeological investigation of the study area was undertaken on 14 January 2019. The survey sampling strategy, methodology and a discussion of results are provided below.

4.1 Archaeological survey aims

The principle aims of the survey were to:

- Undertake a systematic survey of the study area targeting areas with the potential for Aboriginal heritage
- Identify and record Aboriginal archaeological sites visible on the ground surface
- Identify and record areas of Aboriginal archaeological and cultural sensitivity.

4.2 Survey methods

The survey was conducted on foot and followed the random meander technique. Recording during the survey followed the archaeological survey requirements of the code and industry best practice methodology. Information that recorded during the survey included:

- Aboriginal objects or sites present in the study area during the survey
- Survey coverage
- Any resources that may have potentially have been exploited by Aboriginal people
- Landform elements, distinguishable areas of land approximately 40m across or with a 20m radius (CSIRO 2009)
- Photographs of the site indicating landform
- Ground surface visibility (GSV) and areas of exposure
- Observable past or present disturbances to the landscape from human or animal activities
- Aboriginal artefacts, culturally modified trees or any other Aboriginal sites.

Where possible, the identification of natural soil deposits within the study area was undertaken. Photographs and recording techniques were incorporated into the survey including representative photographs of survey units, landform, vegetation coverage, GSV and the recording of soil information for each survey unit were possible. Any potential Aboriginal objects observed during the survey were documented and photographed. The location of Aboriginal cultural heritage and points marking the boundary of the landform elements were recorded using a hand-held Global Positioning System and the Map Grid of Australia (94) coordinate system.

4.3 Constraints to the survey

With any archaeological survey there are several factors that influence the effectiveness (the likelihood of finding sites) of the survey. The factor that contributed most to the effectiveness of the survey within the study area was low ground surface visibility (GSV).

4.4 Visibility

In most archaeological reports and guidelines visibility refers to GSV, and is usually a percentage estimate of the ground surface that is visible and allowing for the detection of (usually stone) artefacts that may be present on the ground surface (DECCW 2010b). GSV across the study area was generally low (5%). The entire study area is heavily vegetated with thick grasses and weeds which limited the surveyors ability to see the ground surface (Plate 2). Large concentrations of blackberry thickets were also present along the drainage lines and in the western portion of the study area (Plate 3). Household rubbish located along the northern edge of the study area and in the western portion of the study area also impacted on the level of GSV. Areas of higher visibility (20%) were observed in the centre of the site along the modified creekline which transects the study area (Plate 4), and in areas of erosion in the western portion of the study area.



Plate 2 Study area facing west showing low levels of GSV



Plate 3 Study area facing south west showing blackberry thickets and dumped rubbish pile



Plate 4 GSV across the centre of the study area showing small area of moderate GSV

4.5 Exposure

Exposure refers to the geomorphic conditions of the local landform being surveyed, and attempts to describe the relationship between those conditions and the likelihood the prevailing conditions provide for the exposure of (buried) archaeological materials. Whilst also usually expressed as a percentage estimate, exposure is different to visibility in that it is in part a summation of geomorphic processes, rather than a simple observation of the ground surface (Burke & Smith 2004, p.79, DECCW 2010b). Overall, the study area displayed low levels of exposure (5%). These were concentrated in the centre of the study area along the modified creekline and in areas of erosion observed on the rise located in the western portion of the study area (Plate 5, Plate 6).



Plate 5 Area of exposure in western portion of the study area



Plate 6 Area of exposure in centre of the study area

4.6 Disturbances

Disturbance in the study area is associated with natural and human agents. Natural agents generally affect small areas and include the burrowing and scratching in soil by animals, such as wombats, foxes, rabbits and wallabies, and sometimes exposure from slumping or scouring. Disturbances associated with recent human action are prevalent in the study area and cover large sections of the land surface. The agents include residential development such as landscaping and construction of residential buildings; farming practices, such as initial vegetation clearance for creation of paddocks, fencing and stock grazing; agricultural practices

such as fruit orchards; light industrial practices such as nursery and creation of artificial dams throughout the entire study area.

The archaeological survey found that the entire study area has been subject to high levels of previous ground disturbance (Figure 9). Historical aerial imagery indicates that levelling and bulk earthwork activities occurred in the western and southern portions of the study area between 1963 and 1979 (Figure 5, Figure 6). The field investigation also observed that the creek lines present within the study area had been heavily modified by the installation of large causeways at the north western, and south eastern edges of the study area, and a cement drainage channel which transects the study area (Plate 7, Plate 8). The southern, eastern, and northern portions of the study area have been heavily disturbed by the installation of large artificial slopes or embankments which form an artificial basin type depression in the centre of the study area (Plate 8, Plate 9). The depression at the centre of the study area is likely impacted on by frequent inundation events as a result of the modification of the drainage channels and installation of artificial embankments. The western portion of the study area consisted of a crest landform, this area contained moderately dense regrowth vegetation and a large portion of the landform is currently utilised by squatters (Plate 2, Plate 3). A large amount of household rubbish was also observed in this area. The crest landform displayed evidence of sheet erosion. The observations made in the field supported the evidence from the background research that this area had been stripped of vegetation and top soils historically. The level of disturbance observed during the survey and found during the background research indicates that any Aboriginal sites which may have existed in the study area have been destroyed.



Plate 7 Modified drainage line facing south east



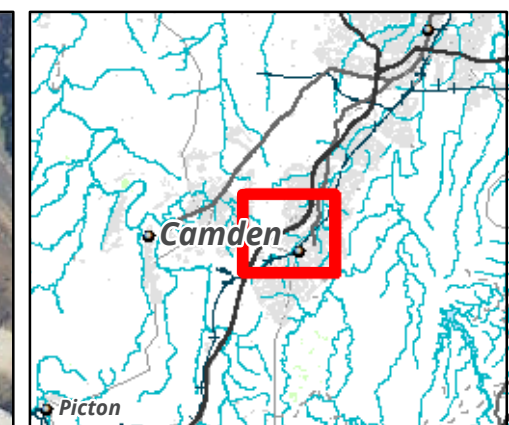
Plate 8 Causeway and modified drainage line facing north



Plate 9 Study area facing south east, note manmade embankment in foreground and background creating an artificial basin in the centre of the study area



Plate 10 Study area facing south east, note manmade embankment in foreground and background creating an artificial basin in the centre of the study area



Legend

 Study area

Type

-  Heavily disturbed from historical earth works
-  Heavily disturbed from land modification works and frequent inundation
-  Heavily disturbed - man made embankments, drainage channels and causeways

Figure 9: Areas of disturbance

0 20 40 60 80 100
Metres

Scale: 1:2,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



Albury, Ballarat, Melbourne,
Sydney, Newcastle, Wangaratta & Wollongong

Matter: 28930,
Date: 16 January 2019,
Checked by: CA, Drawn by: DK, Last edited by: amurray
Location: \\bio-data-01\matters\28900s\28930\Mapping\28930_F9_Disturbance.mxd

4.7 Investigation results

The archaeological investigation was conducted on 14 January 2019 by Biosis archaeologists Taryn Gooley and Ashleigh Keevers-Eastman. The survey sampled all landforms present within the study area and targeted areas of higher GVS and exposure. No Aboriginal sites, objects or areas of archaeological potential were identified during the archaeological survey. As noted above, the study area was found to have been subject to high levels of previous ground disturbance as a result of the installation of manmade embankments along the northern, eastern and southern boundaries of the site, along with historical tree clearing activities and bulk earth works in the western portion of the study area. The creation of an artificial basin like depression in the centre of the study area along with the modification of the creek lines within the study area has also resulted in high levels of ground disturbances. The disturbances noted throughout the study area have likely resulted in the destruction of any Aboriginal sites or objects that may once have been present in the study area.

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5 Discussion and recommendations

5.1 Discussion and conclusions

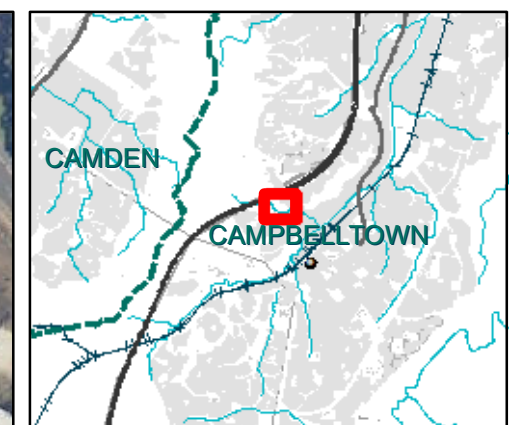
The background research conducted as part of this assessment has identified that artefact sites (both open sites and isolated finds) are the most commonly recorded site type both within the wider Cumberland Plain region and the local Campbelltown area. Aboriginal sites are frequently located within close proximity to a water source both perennial and non perennial, however larger artefact sites are commonly located within close proximity to higher order creek lines (third order and above) (AECOM 2010, Jo McDonald Cultural Heritage Management 2000a, AMBS 1997, Jo McDonald Cultural Heritage Management Pty Ltd 1996). Artefact sites located within close proximity to lower order water ways (first and second order creek lines) generally consist of isolated artefacts or low density scatters indicative of intermittent or transitory land use by Aboriginal people. Modified trees can occur throughout the Cumberland plain region however due to wide spread tree clearing activities, they are restricted to areas of remnant native vegetation. Previous archaeological assessments in the local area indicate that Aboriginal occupation was concentrated on upper or raised creek terraces, spur crests, and gently inclined slopes in close proximity to water (Biosis 2018a, Artefact Heritage 2018, Niche 2013).

The study area consists of a crest landform, and mid and lower slope in the western portion of the study area, a man made basin like depression in the centre of the study area, and a man made embankment which runs along the northern, eastern and southern boundary of the study area. Biriwiri Creek (fourth order) and an unnamed tributary (third order) transect the study area. However based on a review of historical aerial imagery and observations made in the field, both creeklines have been heavily modified by historical land clearing, bulk earth works, and the installation of cause ways and dams from 1963 to the present day. These activities have modified the course of the creeklines, and have likely stripped away soil deposits within the study area. The installation of embankments along the northern, eastern and southern boundaries of the site have resulted in heavy disturbance to the study area both from the initial construction of the features and the increased flooding events which have occurred in the study area as a result of their installation.

The vegetation clearing activities, levelling and dam construction activities which have occurred in the western portion of the study area have resulted in heavy impacts to the crest and associated slope landforms present in the study area. Any Aboriginal sites, object or deposits which may have once existed in this landform have likely been destroyed as a result.

While the study area is located within the Blacktown Soil Landscape, a residual soil landscape known to contain the potential to preserve Aboriginal archaeological deposits, the high levels of previous disturbance within the study area have destroyed the natural soil profiles within the study area.

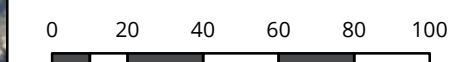
Based on the results of the desktop assessment and archaeological survey the study area has been assessed as having low Aboriginal archaeological potential (Figure 10). The proposed works are there unlikely to impact on any Aboriginal archaeological values.



Legend

- Study area
- Low archaeological potential

Figure 10: Survey results



Metres
Scale: 1:2,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56



5.2 Recommendations

The following management recommendations have been developed relevant to the study area and influenced by:

- predicted impacts to Aboriginal cultural heritage
- the planning approvals framework
- current best conservation practise, widely considered to include:
 - ethos of the Australia ICOMOS Burra Charter (2013)
 - the code.

Prior to any impacts occurring within the study area, the following is recommended:

Recommendation 1: No further archaeological assessment is required

No further archaeological work is required in the study area due to the entire study area assessed as having low archaeological potential.

Recommendation 2: Discovery of Unanticipated Aboriginal Objects or Aboriginal Ancestral Remains

All Aboriginal objects and Places are protected under the NPW Act. It is an offence to knowingly disturb an Aboriginal site without a consent permit issued by the OEH. Should any Aboriginal objects be encountered during works associated with this proposal, works must cease in the vicinity and the find should not be moved until assessed by a qualified archaeologist. If the find is determined to be an Aboriginal object the archaeologist will provide further recommendations. These may include notifying the OEH and Aboriginal stakeholders.

Aboriginal ancestral remains may be found in a variety of landscapes in NSW, including middens and sandy or soft sedimentary soils. If any suspected human remains are discovered during any activity you must:

1. Immediately cease all work at that location and not further move or disturb the remains.
2. Notify the NSW Police and OEH's Environmental Line on 131 555 as soon as practicable and provide details of the remains and their location.
3. Not recommence work at that location unless authorised in writing by OEH.

References

- AECOM 2010, Camden Gas project Northern Expansion. Environmental Assessment. Main Report. Prepared for AGL Energy Limited.
- AHMS 2015, Greater Macarthur Aboriginal and Historic Cultural Heritage - Gap Analysis and Future Direction, Department of Planning and Environment.
- Allen, J & O'Connell, J 2003, 'The long and the short of it: archaeological approaches to determining when humans first colonised Australia and New Guinea.', *Australian Archaeology*, vol. 57, pp. 5–19.
- AMBS 1997, Cumberland Plain Aboriginal Cultural Heritage Assessment. Report prepared for National Parks and Wildlife (NPW).
- Artefact Heritage 2018, Macarthur Memorial Park, Varroville. Archaeological Test Excavation Report., Catholic Metropolitan Cemeteries Trust.
- Atlas of Living Australia n.d., Explore your Area, Atlas of Living Australia, viewed 27 September 2018, <https://biocache.ala.org.au/explore/your-area#-34.1102251|150.6736012|12|ALL_SPECIES>.
- Attenbrow, V 2002, *Sydney's Aboriginal Past: Investigating the archaeological and historical records*, University of New South Wales Press Ltd, Sydney.
- Austral Archaeology 2012, Campbelltown Hospital Stage 1 Redevelopment: Aboriginal Archaeological and Cultural Heritage Assessment., NSW Health Infrastructure.
- Australian Museum Business Services 1997, Cumberland Plain Regional Archaeological Study: Stage 1, Report to the National Parks and Wildlife Services.
- Australian Museum Business Services 2012, Indigenous Heritage Assessment Project: Austral & Leppington North Precincts, South West Growth Centres. Report for NSW Department of Planning and Infrastructure.
- Bannerman, SM & Hazelton, PA 1990a, Soil Landscapes of the Wollongong and Port Hacking 1:100,000 Map Sheet, Soil Conservation Service of NSW, Sydney.
- Bannerman, SM & Hazelton, PA 1990b, Soil Landscapes of the Penrith 1:100,000 Map Sheet, Soil Conservation Service of NSW, Sydney.
- Biosis 2017, 1432 Camden Valley Way Aboriginal Cultural Heritage Due Diligence Assessment, Mott MacDonald.
- Biosis 2018a, Macarthur Memorial Park Geotechnical Investigations: Addendum Archaeological Report, Nettcorp.
- Biosis 2018b, Campbelltown Hospital Redevelopment (Stage 2): Archaeological survey report, Root Partnerships.
- Biosis 2018c, Leppington Public School: Archaeological Survey Report, TSA Management.

Biosis Pty Ltd 2012, Camden Gas Project Amended Northern Expansion: Aboriginal Cultural Heritage Assessment Report. Camden Council and Campbelltown City Council LGAs. Report for AGL Upstream Investments Pty. Ltd.

Biosis Pty Ltd 2018, 49-57 Kelly Street, Austral, Archaeological Report. Report for Mott Macdonald on behalf of Crownland Kelly Street No. 2 Pty Ltd.

Burke, H & Smith, C 2004, The Archaeologist's Field Handbook, Allen and Unwin, Crows Nest.

Crew Archaeological Consultants 1998, An archaeological survey of a proposed subdivision of Lot 204 Mt. Annan, near Campbelltown, NSW. A report to D.P. Hayes, Land Consultant for George Wimpey Australia Pty. Ltd.

CSIRO 2009, Australian soil and land survey field handbook, 3rd edn, CSIRO Publishing & National Committee on Soil and Terrain, Collingwood, Victoria.

Dallas, M 1982, 'An Archaeological Survey at Riverstone, Schofields and Quakers Hill, NSW. Prepared for the Land Commission of NSW.'

DECCW 2010a, Due diligence code of practice for the protection of Aboriginal objects in New South Wales, Department of Environment and Climate Change, Sydney NSW.

DECCW 2010b, Code of practice for archaeological investigation of Aboriginal objects in New South Wales, Department of Environment and Climate Change, Sydney NSW.

Dibden, J 2003, Camden Gas Project Stage 2 - Camden New South Wales: Archaeological and Heritage Assessment. NA unpublished report to Sydney Gas Operations Pty Ltd.

Dunn, I & Sahukar, R 2003, The Bioregions of New South Wales: their biodiversity, conservation and history NSW National Parks and Wildlife Service., National Parks and Wildlife Service, Hurstville, NSW.

GML 2011, Campbelltown Hospital Stage 1 Redevelopment: Heritage Assessment., Capital Insight Pty Ltd.

Haglund, L 1989, Department of Housing Project 144 Residential Estate – Narellan. Preliminary Archaeological Investigation of archaeological sites 2 and 5, A report to Benjamin M. T. Chow & Associates on behalf of the Department of Housing.

Jo McDonald Cultural Heritage Management 2000a, Archaeological Survey for Aboriginal Sites: Proposed Light Industrial Subdivision, 'Austral Site', Mamre Road, Erskine Park, NSW. Report to Gunninah Environmental Consultants for Austral Brick Company.

Jo McDonald Cultural Heritage Management 2000b, Archaeological survey for Aboriginal sites, proposed rezoning for "Manooka Valley" Rural/Residential subdivision Currans Hill, NSW. A report prepared for Landcon (NSW) Pty Ltd.

Jo McDonald Cultural Heritage Management Pty Ltd 1996, Camden Bush Corridor Management Plan: Archaeological Study, Report to EDAW on behalf of Camden Shire Council.

Jo McDonald Cultural Heritage Management Pty Ltd 2005a, Archaeological Salvage Excavation of Site CG1 (NPWS #45-5-2648), at the corner of Charles and George Streets, Parramatta, NSW, Report to Meriton Apartments Pty Ltd.

Jo McDonald Cultural Heritage Management Pty Ltd 2005b, Archaeological Salvage Excavation of Site RTA-G1 109-113 George Street Parramatta, NSW, Report to Landcom.

Koettig, M 1985, Archaeological investigations of sites HCA 11, 13 and 14 near Berrima. Unpublished report to the Department of Main Roads.

Liston, D 1988, 'The Dharawal and Gandangara in Colonial Campbelltown, New South Wales, 1788-1830', *Aboriginal History*, vol. 12, no. 1, pp. 48-62.

Mitchell, P 2002, NSW (Mitchell) Landscapes, Department of Environment and Climate Change NSW, Hurstville NSW.

New South Wales Archaeology 2003, Camden Gas Project Stage 2 – Camden, New South Wales: Archaeological and Heritage Assessment, Report to Sydney Gas Operations Pty Ltd.

Niche 2013, Aboriginal Heritage Due Diligence Assessment – Maryfields Estate, Campbelltown, Association of Franciscan Order of Friars Minor.

Strahler, A 1964, 'Quantitative geomorphology of drainage basins and channel networks', in V Chow (ed.), *Handbook of Applied Hydrology*, McGraw-Hill, New York.

White, B & McDonald, J 2010, 'Lithic Artefact Distribution in the Rouse Hill Development Area', *Australian Archaeology*, vol. 70, pp. 29-38.

DRAFT

Appendix 1 AHIMS search results

This Appendix is not to be made public.

DRAFT

AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-0032	Campbelltown;	AGD	56	300269	6227777	Closed site	Valid	Art (Pigment or Engraved) : -	Shelter with Art	1976
	<u>Contact</u>							<u>Permits</u>		
52-2-1725	IF 2;	AGD	56	294780	6228640	Open site	Valid	Artefact : -	Isolated Find	
	<u>Contact</u>							<u>Permits</u>	743	
52-2-0910	Curran's Hill;	AGD	56	293293	6229012	Open site	Valid	Artefact : -	Open Camp Site	393,1194
	<u>Contact</u>							<u>Permits</u>		
52-2-0911	Glenlee 1;Mount Annan;	AGD	56	293505	6227553	Open site	Valid	Artefact : -	Open Camp Site	393,1193,1677
	<u>Contact</u>							<u>Permits</u>	2	
52-2-0912	Glenlee 2;Mount Annan;Cluthas;	AGD	56	293490	6228285	Open site	Valid	Artefact : -	Open Camp Site	393,401,1193,1677,3687,9826,7,102726
	<u>Contact</u>							<u>Permits</u>	934,985,1993	
52-2-2115	TLC3	AGD	56	295694	6230793	Open site	Valid	Artefact : 1	Isolated Find	
	<u>Contact</u>							<u>Permits</u>		
52-2-2150	AIRDS-01	GDA	56	299449	6226643	Open site	Valid	Modified Tree (Carved or Scarred) : -		102726
	<u>Contact</u>							<u>Permits</u>		
52-2-2657	H377	AGD	56	300360	6225400	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2784	Site H901	AGD	56	301410	6226000	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2785	Site H902	AGD	56	301410	6225810	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2348	H338	AGD	56	301475	6225900	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2349	H339	AGD	56	301460	6225830	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		

Report generated by AHIMS Web Service on 09/01/2019 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 293358 - 301610, Northings : 6225288 - 6233323 with a Buffer of 0 meters. Additional Info : Due diligence assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-2632	H402	AGD	56	300980	6231700	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2702	Site H761	AGD	56	300620	6225530	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2703	Site H762	AGD	56	300690	6225440	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2704	Site H763	AGD	56	300820	6225400	Open site	Valid	Artefact : 5		
	Contact									Permits
52-2-2705	Site H764	AGD	56	300940	6225350	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2706	Site H765	AGD	56	300240	6225140	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2708	Site H767	AGD	56	301480	6225520	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2709	Site H768	AGD	56	301460	6225550	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2710	Site H769	AGD	56	301330	6225710	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits
52-2-2711	Site H770	AGD	56	301250	6225990	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	Contact									Permits

Report generated by AHIMS Web Service on 09/01/2019 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 293358 - 301610, Northings : 6225288 - 6233323 with a Buffer of 0 meters. Additional Info : Due diligence assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-2658	H376	AGD	56	300700	6225900	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2712	Site H771	AGD	56	301270	6226120	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2713	Site H772	AGD	56	301190	6226440	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2659	H375	AGD	56	300860	6226090	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2660	H374	AGD	56	301340	6226170	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2661	H372	AGD	56	301401	6225600	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2715	Site H774	AGD	56	300100	6225180	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2717	Site H775	AGD	56	300060	6225230	Open site	Valid	Modified Tree (Carved or Scarred) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2718	Site H776	AGD	56	300140	6225130	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-2978	Pembroke Road IF1	AGD	56	300200	6230580	Open site	Valid	Artefact : -		
	<u>Contact</u>							<u>Permits</u>	1899,1948	

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Extensive search - Site list report

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Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-2662	H373	AGD	56	301320	6225920	Open site	Valid	Potential Archaeological Deposit (PAD) : -		
	<u>Contact</u>							<u>Permits</u>		
52-2-3561	TR-5	AGD	56	295536	6232477	Open site	Valid	Artefact : 3		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	2792,3112	
52-2-3562	TR-6	AGD	56	295497	6232129	Open site	Valid	Artefact : 5		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	3112	
52-2-3563	TR-7	AGD	56	295109	6232857	Open site	Valid	Artefact : 257		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	3112	
52-2-3564	TR-8	AGD	56	294955	6232941	Open site	Valid	Modified Tree (Carved or Scarred) : 1		102190
	<u>Contact</u>	T Russell						<u>Permits</u>		
52-2-3566	TR-10	AGD	56	293913	6233068	Open site	Destroyed	Artefact : 18		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	3111	
52-2-3557	TR-1	AGD	56	293294	6232162	Open site	Valid	Artefact : 12		102190
	<u>Contact</u>	T Russell						<u>Permits</u>		
52-2-3558	TR-2	AGD	56	294960	6231794	Open site	Valid	Artefact : 17		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	3112	
52-2-3559	TR-3	AGD	56	294201	6232610	Open site	Valid	Modified Tree (Carved or Scarred) : 1		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	3112	
52-2-3560	TR-4	AGD	56	295368	6231755	Open site	Valid	Artefact : 1		102190
	<u>Contact</u>	T Russell						<u>Permits</u>	3112	
52-2-2223	MV4 -MANOOKA VALLEY 4	AGD	56	294680	6230480	Open site	Valid	Artefact : -		97349
	<u>Contact</u>							<u>Permits</u>	2576,2838	
52-2-2220	BRINGELLY SHALE (RWB)	AGD	56	294660	6231110	Open site	Valid	Artefact : -		102190
	<u>Contact</u>							<u>Permits</u>	2576,2838	
52-2-3873	GHSN	GDA	56	293445	6232313	Open site	Valid	Artefact : 16		102351
	<u>Contact</u>							<u>Permits</u>	3426	
52-2-3874	GHSS	GDA	56	293360	6231986	Open site	Valid	Artefact : 3		102351
	<u>Contact</u>							<u>Permits</u>	3426	
52-2-4242	Kenny Ck Artefact Scatter 1	AGD	56	295128	6231239	Open site	Valid	Artefact : -		
	<u>Contact</u>							<u>Permits</u>		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
52-2-2116	TLC4	AGD	56	294802	6227005	Open site	Not a Site	Artefact : 6	Open Camp Site	
	Contact	Recorders	Annie Nicholson,Mr.David Marcus							
52-2-1219	MT.Annan Tunnel.	AGD	56	293920	6227320	Open site	Valid	Artefact : -	Open Camp Site	32
	Contact	Recorders	Ms.Laila Haglund							
52-2-2151	AIRDS-02	GDA	56	299473	6226456	Open site	Valid	Artefact : -		
	Contact	Recorders	Huw Barton,GML Heritage Pty Ltd + Context - Surry Hills,Doctor.Tim Owen							
52-2-3066	H10/K036	AGD	56	300470	6225620	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	Contact	Recorders	Mr.Kelvin Officer							
52-2-3045	Macarthur Square Campsite 1	AGD	56	296050	6227100	Open site	Destroyed	Artefact : 2		
	Contact	Recorders	Dominic Steele Archaeological Consulting,Mr.Paul Irish							
52-2-3636	MA 1 & PAD MA1 (Campbelltown)	GDA	56	295187	6228881	Open site	Valid	Potential Archaeological Deposit (PAD) : 4, Artefact : 4		101160
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
52-2-3637	MA2 (Campbelltown)	GDA	56	295150	6226387	Open site	Valid	Artefact : 5		101160
	Contact	Recorders	Navin Officer Heritage Consultants Pty Ltd							
52-2-3677	Rose Park	GDA	56	301120	6231800	Open site	Valid	Artefact : -		
	Contact	Recorders	Michael Guider							
52-2-3966	UWS TP40 IF	GDA	56	295619	6227461	Open site	Deleted	Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Mr.Marcus Leslie							
52-2-3967	UWS TP20 IF	GDA	56	295320	6227442	Open site	Deleted	Artefact : -		
	Contact	Recorders	Mr.Marcus Leslie							
52-2-3945	AB12 ARTEFACT SCATTER	GDA	56	299681	6226984	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Alan Williams							
52-2-3956	UWS_TP19_AS	GDA	56	295298	6227500	Open site	Valid	Artefact : 1		
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.David Marcus							
52-2-3957	UWS_TP20_IF	GDA	56	295320	6227442	Open site	Valid	Artefact : 1		
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.David Marcus							
52-2-3958	UWS_TP25_IF	GDA	56	295369	6227426	Open site	Valid	Artefact : 1		
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.David Marcus							
52-2-3959	UWS_TP40_IF	GDA	56	295619	6227461	Open site	Valid	Artefact : 1		

Report generated by AHIMS Web Service on 09/01/2019 for Samantha Keats for the following area at Datum :GDA, Zone : 56, Eastings : 293358 - 301610, Northings : 6225288 - 6233323 with a Buffer of 0 meters. Additional Info : Due diligence assessment. Number of Aboriginal sites and Aboriginal objects found is 113

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Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.David Marcus					Permits		
52-2-3919	MPRP 12 Menangle Park Rezoning Project 12	GDA	56	293700	6225988	Open site	Valid	Artefact : 1		
	Contact	Recorders	Kelleher Nightingale Consulting Pty Ltd,AECOM Australia Pty Ltd (previously HLA-					Permits		
52-2-4162	Claymore 1	GDA	56	297512	6230819	Open site	Valid	Artefact : -, Potential Archaeological Deposit (PAD) : -		
	Contact	Recorders	Ms.Fenella Atkinson					Permits	4126	
52-2-4163	Claymore Park IF 3	GDA	56	297425	6230161	Open site	Valid	Artefact : -		
	Contact	Recorders	Ms.Fenella Atkinson					Permits	3832	
52-2-4164	Claymore Park IF1	GDA	56	297468	6230075	Open site	Valid	Artefact : -		
	Contact	Recorders	Ms.Fenella Atkinson					Permits	3832	
52-2-4165	Brady Park IF 8	GDA	56	297581	6230999	Open site	Valid	Artefact : -		
	Contact	Recorders	Ms.Fenella Atkinson					Permits		
52-2-4166	Badgally Reserve IF 4	GDA	56	297488	6230394	Open site	Valid	Artefact : -		
	Contact	Recorders	Ms.Fenella Atkinson					Permits	3832	
52-2-4196	Dimeny Park	GDA	56	297850	6230296	Closed site	Valid	Art (Pigment or Engraved) : -		
	Contact	Recorders	Mr.Alan Williams					Permits		
52-2-4437	Macarthur AS1	GDA	56	296320	6227640	Open site	Valid	Artefact : 1		
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.James McGuinness					Permits		
52-2-4438	Macarthur IF1	GDA	56	296160	6227680	Open site	Valid	Artefact : 1		
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.James McGuinness					Permits		
52-2-4439	Macarthur IF2	GDA	56	296500	6227680	Open site	Valid	Artefact : 1		
	Contact	Recorders	Austral Archaeology Pty Ltd,Mr.James McGuinness					Permits		
52-2-2221	MV1 - "MANOOKA VALLEY 1"	AGD	56	294510	6231100	Open site	Valid	Artefact : -		97349
	Contact	Recorders	Stephanie Garling,Mr.Mark Rawson					Permits	2576,2838	
52-2-2222	MV3 - MANOOKA VALLEY 3	AGD	56	294880	6230420	Open site	Valid	Artefact : -		97349
	Contact	Recorders	Stephanie Garling,Mr.Mark Rawson					Permits		
52-2-2122	MV5 - " Manooka Valley 5"	AGD	56	294470	6231530	Open site	Valid	Artefact : -		97826,102190
	Contact	Recorders	Stephanie Garling,Doctor.Jodie Benton					Permits	2576,2838	
52-2-2281	GL16	AGD	56	293956	6225876	Open site	Valid	Artefact : 1		
	Contact	Recorders	Doctor.Julie Dibden,Heritage Concepts					Permits		
52-2-2269	GL14	GDA	56	293591	6226111	Open site	Valid	Artefact : 2		
	Contact	Recorders	Doctor.Julie Dibden,Kelleher Nightingale Consulting Pty Ltd,Miss.Kristen Taylor					Permits		
52-2-2271	GL 16-14	AGD	56	293803	6226072	Open site	Valid	Artefact : 1		

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports	
	<u>Contact</u>	<u>Recorders</u>	Doctor.Julie Dibden					<u>Permits</u>			
52-2-2274	GL15	AGD	56	293932	6225688	Open site	Valid	Artefact : 1			
	<u>Contact</u>	<u>Recorders</u>	Doctor.Julie Dibden					<u>Permits</u>			
52-2-2277	GL18	AGD	56	294961	6226573	Open site	Valid	Artefact : 4			
	<u>Contact</u>	<u>Recorders</u>	Doctor.Julie Dibden					<u>Permits</u>	4322		
52-2-2312	H299	AGD	56	300530	6225530	Open site	Valid	Artefact : -			
	<u>Contact</u>	<u>Recorders</u>	Navin Officer Heritage Consultants Pty Ltd					<u>Permits</u>			
52-2-3222	Macarthur Square IF3	AGD	56	296250	6226950	Open site	Valid	Potential Archaeological Deposit (PAD) : -, Artefact : 1			
	<u>Contact</u>	T Russell	<u>Recorders</u>	Mr.Paul Irish					<u>Permits</u>	2416	
52-2-3057	IF 6	AGD	56	295014	6227116	Open site	Valid	Artefact : 5			
	<u>Contact</u>	Searle	<u>Recorders</u>	Matthew Kelleher					<u>Permits</u>		
52-2-3058	IF 7	AGD	56	294893	6227450	Open site	Valid	Artefact : 1			
	<u>Contact</u>	Searle	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)					<u>Permits</u>		
52-2-3059	UWS 2	AGD	56	295089	6227211	Open site	Valid	Artefact : 3			
	<u>Contact</u>	Searle	<u>Recorders</u>	Matthew Kelleher					<u>Permits</u>		
52-2-3060	UWS 3	AGD	56	294944	6227145	Open site	Valid	Artefact : 2			
	<u>Contact</u>	Searle	<u>Recorders</u>	Australian Museum Consulting (AM Consulting)					<u>Permits</u>		
52-2-3061	UWS 4	AGD	56	295636	6228123	Open site	Valid	Artefact : 2			
	<u>Contact</u>	Searle	<u>Recorders</u>	Matthew Kelleher					<u>Permits</u>		
52-2-3062	UWS 5	AGD	56	295383	6228081	Open site	Not a Site	Artefact : 5			
	<u>Contact</u>	Searle	<u>Recorders</u>	Matthew Kelleher,Mr.David Marcus					<u>Permits</u>		
52-2-3314	MV2 - Manooka Valley 2	AGD	56	294660	6231110	Open site	Valid	Artefact : -		97349,102190	
	<u>Contact</u>		<u>Recorders</u>	Doctor.Jo McDonald					<u>Permits</u>		
52-2-3316	Mt Annan, Macarthur Sub Station Site - 1	GDA	56	294062	6226305	Open site	Valid	Artefact : 1			
	<u>Contact</u>	Searle	<u>Recorders</u>	Heritage Concepts					<u>Permits</u>	4303	
52-2-3317	Mt Annan, Macarthur Sub Station Site - 2	GDA	56	293998	6226286	Open site	Valid	Artefact : 1			
	<u>Contact</u>	Searle	<u>Recorders</u>	Heritage Concepts					<u>Permits</u>		
52-2-3318	Mt Annan Macarthur Sub Station Site 3	GDA	56	293907	6226252	Open site	Valid	Artefact : 1			
	<u>Contact</u>	Searle	<u>Recorders</u>	Niche Environment and Heritage,Heritage Concepts,Ms.Clare Anderson					<u>Permits</u>		
52-2-3319	Mt Annan Macarthur Sub Station 4	GDA	56	293676	6226185	Open site	Valid	Artefact : 1			
	<u>Contact</u>	Searle	<u>Recorders</u>	Niche Environment and Heritage,Heritage Concepts,Ms.Clare Anderson					<u>Permits</u>		
52-2-3320	Mt Annan Macarthur Sub Station 5	GDA	56	293616	6226137	Open site	Valid	Artefact : 1			

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AHIMS Web Services (AWS)

Extensive search - Site list report

Your Ref/PO Number : 28930 - CLA

Client Service ID : 391417

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
	Contact Searle	Recorders	Niche Environment and Heritage,Heritage Concepts,Ms.Clare Anderson						Permits	
52-2-3321	Mt Annan Macarthur Sub Station Site 6	GDA	56	294020	6225949	Open site	Valid	Artefact : 1		
	Contact Searle	Recorders	Niche Environment and Heritage,Heritage Concepts,Ms.Clare Anderson						Permits	
52-2-3322	Mt Annan, Macarthur Sub Station - 7	GDA	56	293946	6225904	Open site	Valid	Modified Tree (Carved or Scarred) : 1		
	Contact Searle	Recorders	Heritage Concepts						Permits	
52-2-3723	CG-IA-16	GDA	56	294120	6226374	Open site	Valid	Artefact : 1		
	Contact	Recorders	Ms.Renee Regal						Permits	
52-2-3724	TR1 (Campbelltown)	GDA	56	295440	6232910	Open site	Valid	Artefact : 171		
	Contact	Recorders	AECOM Australia Pty Ltd (previously HLA-Envirosciences)						Permits	
52-2-3727	TR Transect G	GDA	56	294630	6233120	Open site	Valid	Artefact : 1		
	Contact	Recorders	AECOM Australia Pty Ltd (previously HLA-Envirosciences)						Permits	
52-2-3728	TR Transect H	GDA	56	295370	6232950	Open site	Valid	Artefact : 1		
	Contact	Recorders	AECOM Australia Pty Ltd (previously HLA-Envirosciences)						Permits	
52-2-3737	CG-IA-04	GDA	56	295280	6231233	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3738	CG-IA-05	GDA	56	295268	6230653	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3739	CG-IA-06	GDA	56	295132	6228982	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3740	CG-IA-07	GDA	56	295170	6228923	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3741	CG-IA-08	GDA	56	295094	6228196	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3742	CG-IA-09	GDA	56	294892	6227751	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3743	CG-IA-10	GDA	56	294858	6227665	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3744	CG-IA-11	GDA	56	294790	6227496	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3745	CG-IA-12	GDA	56	294656	6227263	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	
52-2-3747	CG-OCS-08	GDA	56	295719	6232719	Open site	Valid	Artefact : 1		
	Contact	Recorders	Miss.Melanie (Duplicate of #6086) Thomson						Permits	4303

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AHIMS Web Services (AWS)

Extensive search - Site list report

<u>SiteID</u>	<u>SiteName</u>	<u>Datum</u>	<u>Zone</u>	<u>Easting</u>	<u>Northing</u>	<u>Context</u>	<u>Site Status</u>	<u>SiteFeatures</u>	<u>SiteTypes</u>	<u>Reports</u>
52-2-3748	CG-OCS-10	GDA	56	295189	6228881	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Miss.Melanie (Duplicate of #6086) Thomson							<u>Permits</u>
52-2-3749	CG-OCS-11	GDA	56	294871	6227709	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Miss.Melanie (Duplicate of #6086) Thomson							<u>Permits</u>
52-2-3751	CG-TRE-04	GDA	56	296811	6230987	Open site	Valid	Artefact : 1		
	<u>Contact</u>	<u>Recorders</u>	Miss.Melanie (Duplicate of #6086) Thomson							<u>Permits</u>

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Appendix E

CONTAMINATION ASSESSMENT

PHASE 1 PRELIMINARY SITE INVESTIGATION

PROPOSED COMMUNITY RECYCLING FACILITY

HEPHER ROAD, CAMPBELLTOWN

LOT 104 DP 1056782



Premise

PREPARED FOR:

CAMPBELLTOWN CITY COUNCIL

MARCH 2019



Report Title:	<i>Phase 1 Preliminary Site Investigation</i>
Project:	<i>Proposed Community Recycling Facility – Hephher Road, Cambelltown</i>
Client:	<i>Campbelltown City Council</i>
Report Ref.:	<i>218439_REP_001B.docx</i>
Status:	<i>Final</i>
Issued:	<i>15 March 2019</i>

Premise (NSW) Pty Ltd (Premise) and the authors responsible for the preparation and compilation of this report declare that we do not have, nor expect to have a beneficial interest in the study area of this project and will not benefit from any of the recommendations outlined in this report.

The preparation of this report has been in accordance with the project brief provided by the client and has relied upon the information, data and results provided or collected from the sources and under the conditions outlined in the report.

All information contained within this report is prepared for the exclusive use of Campbelltown City Council to accompany this report for the land described herein and are not to be used for any other purpose or by any other person or entity. No reliance should be placed on the information contained in this report for any purposes apart from those stated therein.

Premise accepts no responsibility for any loss, damage suffered or inconveniences arising from, any person or entity using the plans or information in this study for purposes other than those stated above.

TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
INTRODUCTION	1
1.1 BACKGROUND	1
1.2 SCOPE OF WORK.....	2
SITE DESCRIPTION	3
2.1 SITE DEFINITION	3
2.2 SITE SETTING.....	4
2.2.1 REGIONAL SETTING.....	4
2.2.2 LOCAL SETTING.....	4
2.3 TOPOGRAPHY.....	4
2.4 SURFACE WATER RECEPTORS.....	5
2.5 REGIONAL AND SITE GEOLOGY	5
2.6 REGIONAL HYDROGEOLOGY	6
SITE HISTORICAL REVIEW.....	6
3.1 NSW EPA RECORDS	6
3.1.1 SCHEDULED ACTIVITIES AND/OR ENVIRONMENTAL NOTICES.....	6
3.1.2 CONTAMINATED SITES REGISTER	6
3.2 PREVIOUS TITLE INFORMATION	7
3.3 HISTORICAL AERIAL PHOTOGRAPHY SURVEY	8
3.4 SUMMARY OF SITE HISTORY INFORMATION	9
SITE RECONNAISSANCE.....	10
4.1 WASTE MANAGEMENT.....	10
4.2 STORMWATER.....	10
4.3 CHEMICAL AND FUEL STORAGE / SPILLS	10
4.4 ASBESTOS.....	10
4.5 LANDFILLING	10
ENVIRONMENTAL INVESTIGATION	11
5.1 CHEMICALS OF POTENTIAL CONCERN.....	11
5.2 INVESTIGATION CRITERIA	11
5.3 METHODOLOGY	12
5.4 SCHEDULE OF SAMPLE ANALYSIS	12
RESULTS	12
6.1 SOIL INVESTIGATION	12
6.1.1 SUMMARY OF WORKS.....	12
6.1.2 ANALYTICAL RESULTS	13
CONCLUSIONS	13

TABLES

Table 2.1 – Summary of Property Description Details	3
Table 2.2 – Adjacent Properties Descriptions.....	4
Table 3.1 – Title History, Lot 104 DP 1056782	7
Table 3.2 – Summary of Aerial Photo Information.....	8
Table 5.1 – Analytical Schedule.....	12

PLATES

Plate 1: General Site Layout – Lot 104 DP 1056782	1
Plate 2: General Site Layout – Lot 104 DP 1056782.	1
Plate 3: Stockpile 1 / Sample 1 – Lot 104 DP 1056782.	2
Plate 4: Stockpiles 2, 3 & 4 / Samples 2, 3 & 4 – Lot 104 DP 1056782.....	2

DRAWINGS

Drawing 1 – Site Locality
Drawing 2 – Site Reconnaissance Findings

APPENDICES

APPENDIX A

Registered Groundwater Bore Records

APPENDIX B

Previous Title Records

APPENDIX C

Historic Aerial Photography

APPENDIX D

Laboratory Analytical Results and Chain of Custody Documents

Executive Summary

Premise was engaged by Campbelltown City Council (Council) to conduct a Phase 1 Preliminary Site Investigation (P1 PSI) for a property located in Campbelltown NSW 2560 in support of a development application for construction of a community recycling facility at the site.

This P1 PSI is recommended by the *Managing Land Contamination – Planning Guidelines* 1998 under the NSW State *Environmental Planning Policy (SEPP) No 55 – Remediation of Land* 1998.

This report has been prepared in general accordance with the NSW EPA publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (EPA, November 1997). The overall objective was to identify the potential for land contamination to have occurred at the site from past activities.

The host lot on which the development site is located has an area of approximately 6,900 m² to the north of Hepher Road, and 67,000 m² south of Hepher Road. The site largely consists of stormwater drainage and diversion infrastructure.

Conclusions regarding the potential for land contamination at the site are summarised below:

- The area of the site appears to have predominantly been historically utilised for rural / agricultural purposes including passive livestock grazing. In the 1980s the alignment of Biriwiri Creek and its unnamed tributary were altered to modify the site to its current layout, incorporating a large detention basin and levee bank.
- No structures are present on the site, or have been identified as ever being present on the site.
- Potential exists for runoff and sediments containing contaminants from off-site sources to pass across the site, however this would be largely limited to within drainage channels.
- Soil stockpiles resulting from illegal dumping are present on the site.
- Four (4) stockpile samples were collected from observed stockpiles across the site. All soil samples met the investigation criteria for the respective analytes.

No significant routes for exposure by receptors (current or future) to potential contamination sources have been identified, due to negligible impacts being recorded.

Based on the findings of this P1 PSI report, Premise considers the suitability of the site to be consistent with the proposed land use, identified as a community recycling facility, within the requirements of the NSW *State Environmental Planning Policy No 55 – Remediation of Land* (1998).

INTRODUCTION

1.1 BACKGROUND

Premise was engaged by Campbelltown City Council (Council) to conduct a Phase 1 Preliminary Site Investigation (P1 PSI) for a property located in Campbelltown NSW 2560 in support of a development application for construction of a community recycling facility (CRC) at the site.

This P1 PSI is recommended by the *Managing Land Contamination – Planning Guidelines* 1998 under the NSW State *Environmental Planning Policy (SEPP) No 55 – Remediation of Land* 1998.

Clause 7 of SEPP 55 requires that a consent authority must consider contamination and remediation in determining a development application and must not grant consent unless:

- (a) it has considered whether the land is contaminated, and
- (b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development is proposed to be carried out, and
- (c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.

The subject site is owned by Campbelltown City Council and is unoccupied. The site is identified as lot 104 in deposited plan (DP) 1056782.

This report has been prepared in general accordance with the NSW EPA publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (EPA, November 1997). The overall objective is to identify the potential for land contamination to have occurred at the site from past activities.

Lot 104 has an area of approximately 6,900 m² to the north of Hopher Road, and 67,000 m² south of Hopher Road. The site largely consists of stormwater drainage and diversion infrastructure. The area of the site on which the proposed CRC is to be located is in the north-western corner of the lot and has an area of approximately 3,000 square metres.

The site area is presented below on **Figure 1**.

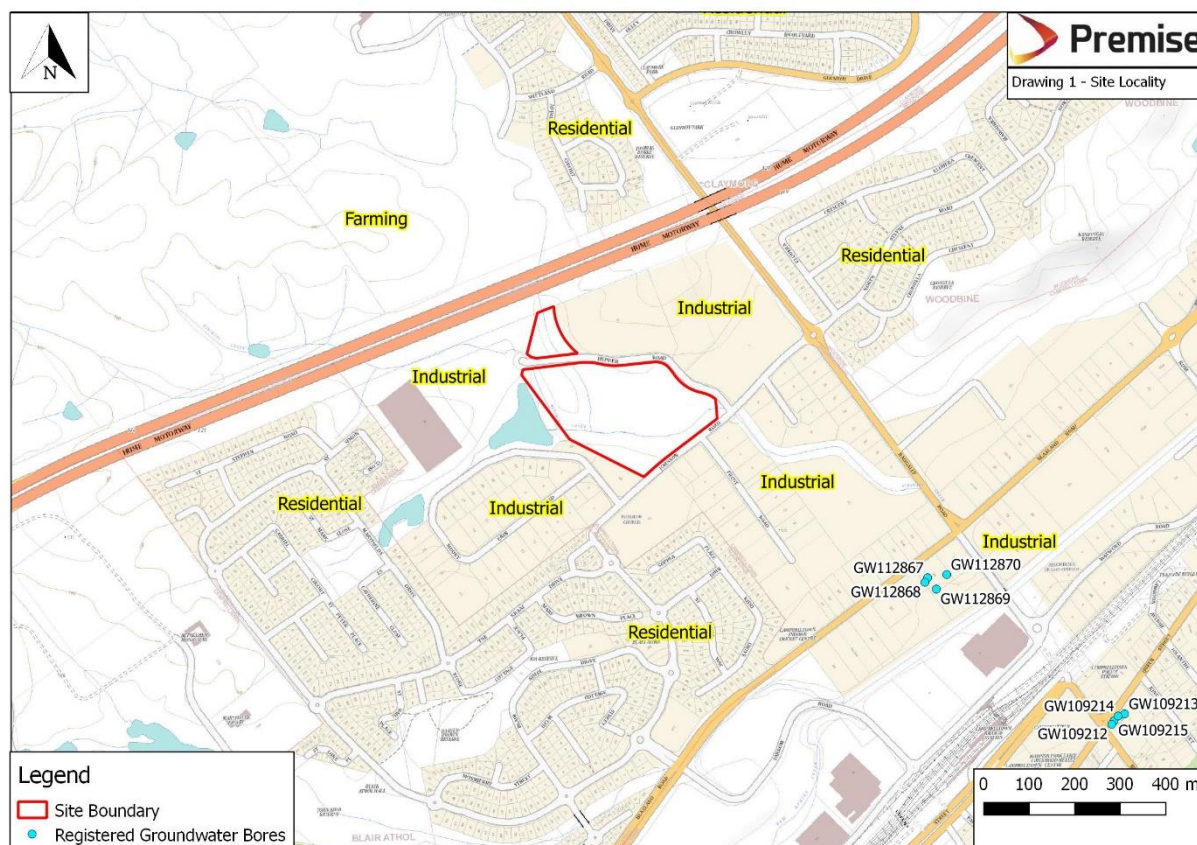


Figure 1: Site Locality

1.2 SCOPE OF WORK

The scope of work for this assessment consisted of the following components:

- Review of the following third party documents:
 - Published topographical, geological and soil maps of the area;
 - Details of groundwater bores located within 500 m of the site and registered on the groundwater bore database, maintained by the NSW Office of Water (<http://allwaterdata.water.nsw.gov.au/water.stm>);
 - The public register managed by the NSW EPA for information on scheduled activities and penalty notices issued under the Protection of the Environment Operations Act;
 - The database managed by the NSW Environment Protection Authority (EPA) for information on notices issued under the Contaminated Land Management Act 1997;
 - Aerial photographs – selected historical aerial photographs of the site available for review to provide evidence of the history of development of the site and indications of potential sources of contamination;
 - Review title folio documentation to provide details of historic ownership and land use(s) for nominated properties;
 - Review of site records, where available.
- Site inspection – A site inspection by Premise personnel of the site and surrounding areas was undertaken to provide further information, via visual inspection, of potential sources and areas of significant environmental liability. The site inspection focused on the following:

- Areas of operational processes including waste management, water management, the condition of the site surfaces and buildings, and the presence of electrical transformers on site.
- Areas of potential landfilling.
- Potential impacts of neighbouring land uses.
- Sensitivity of the receiving environment.
- Other relevant information which could be provided by the site operator.
- Collection of soil samples from waste stockpiles identified to have originated from off-site, and laboratory analysis for chemicals of potential concern (COPC).
- Preparation of this factual report detailing the assessment findings in accordance with the NSW EPA publication *Contaminated Sites: Guidelines for Consultants Reporting on Contaminated Sites* (EPA, November 1997).

An overview of neighbouring properties was also conducted to identify the presence and proximity of sensitive receptors which could be significantly impacted upon by the site, and off-site operations which could have a significant impact on land contamination at the site.

The assessment did not include sampling and analysis of site soil (excluding waste stockpiles), groundwater, sediment or surface water, and the findings of this investigation do not conclusively verify the existence (or otherwise) of contamination across the entirety of the site.

SITE DESCRIPTION

2.1 SITE DEFINITION

Table 2.1 – Summary of Property Description Details

Feature	Details
Facility Address¹	Hepher Road, Campbelltown NSW 2560
Title Identification Details¹	Lot 104 in DP 1056782
Current Ownership	Campbelltown City Council
Current Site Use and Zoning²	Land Use: Stormwater Drainage and Diversion Zoning: Infrastructure (SP2) – Drainage
Proposed Future Site Use	Community / Commercial
Previous Reports	• Nil
Site Area¹	73,900 m ²
Development area	Approximately 3,000 m ²
Sources: 1: SIX Maps Website developed by NSW Government, Land and Property Information. http://maps.six.nsw.gov.au/ (accessed March 2019). 2: Campbelltown Local Environmental Plan, 2015, under the Environmental Planning and Assessment Act 1979.	

2.2 SITE SETTING

2.2.1 REGIONAL SETTING

The site is located on Hepher Road, Campbelltown NSW. The site is approximately 1 km north-west of Campbelltown railway station. Industrial land-uses largely surround the site, with a church facility located to the south of the site opposite Johnson Road.

The following sensitive receptors are located in the proximal area of the site:

- Residential areas are located within 500 m to the north, east and west, and 300 m to the south;
- Biriwiri Creek and unnamed tributary traverse the site from north-west to south-east;
- A childcare centre is located on Mount Erin road and borders the site to the south-west; and
- Groundwater present in aquifer(s) underlying the site.

2.2.2 LOCAL SETTING

No structures are currently located on the site. Biriwiri Creek traverses the site from north-west to south-east, and an unnamed tributary joins the creek from the west. Underground stormwater drainage infrastructure is present.

Land uses and properties adjacent to the site, including those across adjacent roads were obtained from the site inspection conducted by Premise personnel in February 2019. The local area surrounding the site is displayed in **Figure 1**. Identified adjacent land uses are summarised in **Table 2.2**:

Table 2.2 – Adjacent Properties Descriptions

Direction From Site	Site Use (Nature of Activity)
North	Industrial premises with frontage on Hepher Road with Hume Motorway and residential dwellings (Blairmount) beyond
South	Childcare centre with frontage on Mount Erin Road, church facility with frontage on Johnson Road, and industrial premises with frontage on Frost Road. Residential dwellings (Blair Athol) beyond
East	Industrial premises with frontage on Hepher Road, Johnson Road and Nursery Road with residential dwellings (Woodbine) beyond
West	Industrial premises with frontage on Hepher Road and Mount Erin Road with residential dwellings (Blair Athol) beyond

A detailed presentation of the surrounding area is attached as **Drawing 1**.

2.3 TOPOGRAPHY

Topographical site information was obtained from the:

- Campbelltown 9029-1N, 1:25,000 Scale, Topographic Map, Third Edition (New South Wales Land and Property Information, 2001); and
- Site visit in February 2019.

The site is undulating by virtue of the stormwater drainage and diversion infrastructure. A raised levee bank exists on the southern and eastern boundaries, with the majority of the site utilised as a stormwater detention basin. A raised portion of the site of approximately 10,000 m² exists in the western extent of the site.

The elevation of the site ranges from approximately 70 mAHD at the site's west and levee bank to 64 mAHD at the base of the detention basin.

2.4 SURFACE WATER RECEPTORS

Transient drainage features identified as Biriwiri Creek and an unnamed tributary transect the site, and did not contain flowing water at the time of the site inspection. A less transient water body is present neighbouring the site to the west. Surface water exists as sheet flow towards these drainage lines then flows to the south-east via an underground drainage channel from the base of the stormwater detention basin.

The catchment of surface waters at the site includes portions of properties to the north and west of the site's boundaries. Some flow originating from these properties is anticipated.

2.5 REGIONAL AND SITE GEOLOGY

Mapped soil landscapes around the site are shown on **Figure 2**. The site lies on the 'Blacktown' soil landscape.

The Blacktown soil landscape consists of "*hardsetting mottled texture contrast soils, red and brown podzolic soils (Dr3.21, Dr3.31, Db2.11, Db2.21) on crests grading to yellow podzolic soils (Dy2.11, Dy3.11) on lower slopes and in drainage lines*".

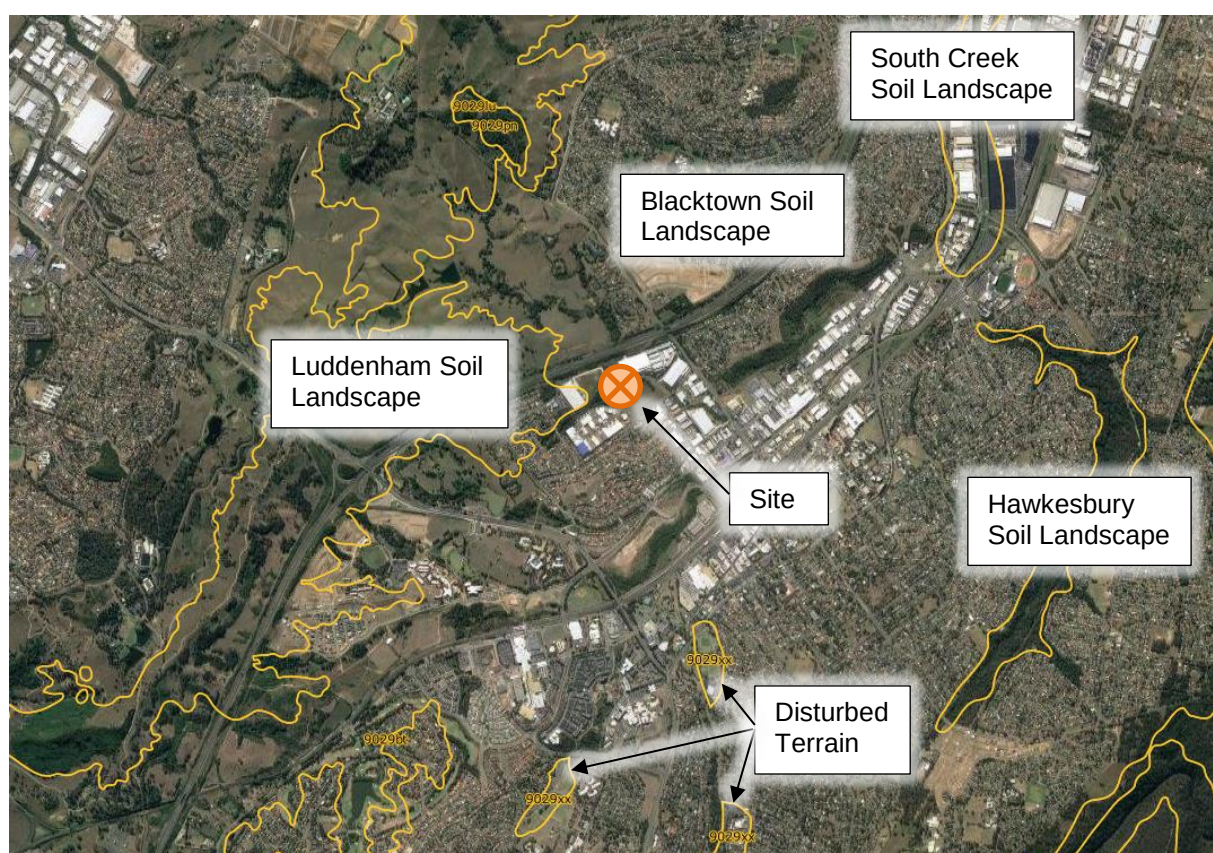


Figure 2: Soil Landscape Group Distribution

The Wollongong-Port Hacking 9029-9129 Geological 1 : 100,000 Series Sheet (Geological Survey of NSW, 1985) indicates the underlying geology comprises Quaternary era quartz and lithic fluvial sand, silt and clay, overlying late-Triassic era fine to medium grained lithic sandstone of the Minchinbury unit.

The *Australian Soil Resource Information System* (ASRIS) on-line database, maintained by CSIRO Land and Water, indicates there is an extremely low probability of occurrence of acid sulphate soils in the area of the site (compiled 2010, accessed March 2019).

The NSW Heads of Asbestos Coordination Authorities (HACA) *Mapping of Naturally Occurring Asbestos in NSW* (2015) has assessed the area surrounding the site as having the lowest potential for naturally occurring asbestos (NOA) to be encountered within approximately 10 metres of the natural surface. No NOA indicator minerals such as serpentinite, tremolite or antigorite, have been identified as being associated with the known geology of the site.

2.6 REGIONAL HYDROGEOLOGY

A search for registered groundwater users located within a 500 m radius of the site was undertaken using the NSW Office of Water on-line database (<http://realtimedata.water.nsw.gov.au/water.stm>), in March 2019. The results indicated that there are no groundwater bores registered at the site, or within 500 m of the site, as shown on **Drawing 1**.

The closest registered groundwater bore to the site, reference GW112867 and registered for monitoring purposes, is located approximately 650 m south-east of the site and was installed to a depth of 6.5 metres below ground level.

Registration details of the above groundwater bore is included in **Appendix A**.

Premise has considered the surrounding agricultural land uses and notes the potential for unregistered bores for irrigation purposes proximal to the site.

SITE HISTORICAL REVIEW

A review of the site history was undertaken to assess historical use of the site, and in particular to identify activities with the potential to contaminate soil and/or groundwater at the site.

3.1 NSW EPA RECORDS

3.1.1 SCHEDULED ACTIVITIES AND/OR ENVIRONMENTAL NOTICES

A search of the NSW EPA on-line register (<http://www.epa.nsw.gov.au/prpoeoapp/>) was undertaken in March 2019 for environment protection licenses and/or penalty notices issued under the Protection of the Environment Operations Act (POEO) 1997. The search indicated that no licenses have been issued for any of the titles comprising the site or properties located within 500 m of the site.

No clean-up notices relating to the site or surrounding properties have been issued by the NSW EPA.

3.1.2 CONTAMINATED SITES REGISTER

A search of the NSW EPA on-line register (<http://www.environment.nsw.gov.au/prclmapp/>) was undertaken in March 2019 for contaminated land notices issued or regulated under the Contaminated

Land Management Act 1997. The search indicated that the NSW EPA holds no contaminated land records relating to the site and properties within 500 m of the site.

3.2 PREVIOUS TITLE INFORMATION

Historic title information was sought for Lot 104 DP 1056782.

Previous title ownership for these titles is attached in **Appendix B** and summarised in **Table 3.2**.

Table 3.1 – Title History, Lot 104 DP 1056782

Date Range	Ownership	
1816 – 1911	Parish St. Peter Portion 137 Thomas Burke, 100 Acres, Grant Serial 8 Page 114 Parish St. Peter Portion 140 Neil McLeod, 30 Acres, Grant Serial 8 Page 112 Parish St. Peter Portion 144 Benjamin Vause, 30 Acres, Grant Serial 8 Page 186 Parish St. Peter Portion 145 Stephen Blake, 35 Acres, Grant Serial 8 Page 185	
1911 – 1916		Part Portions 137, 140, 144 & 145 Parish St. Peter Vol 2148 Fol 163 Mary Bourke, spinster
1916 – 1921	Part Portions 137, 144 & 145 Parish St. Peter Vol 3243 Fol 80 John David Bourke, leased to Thomas Frost	
1921 – 1921	John David Bourke, retired school teacher	
1921 – 1922	John Edmund Bourke, gentleman Alice Mary Bourke, widow Mary Gertrude Bourke, spinster Clive Wynter Ducat, farmer Clarence Alwyn Ducat, farmer Victor Alan Ducat, farmer	
1922 – 1934	William Phillips, gentleman Lease to Percy Baxter, farmer of part	
1934 – 1935		
1935 – 1937		
1937 – 1940	Florence Phillips, widow George Alfred Kaves, solicitor	
1940 – 1946	Charles Swan, farmer	
1946 – 1949	Andrew Edward Campbell, accountant	
1949 – 1949	Title reference amended to Vol 5939 Fol 230 Gladys Ellen Campbell, widow Jane Lindsay, spinster	
1949 – 1961	Charles Ernest Mc Clelland, farmer	
1961 – 1966	Minnie Beatrice Mc Clelland, widow Allan Charles Mc Clelland, school teacher Elwyn Miller, married woman	
1966 – 1967	Lubo Medich, theatre proprietor	Catherine Teresa Keihone, widow
1967 – 1974		
1974 – 1976		
1976 – 1977	Title reference amended to Vol 13103 Fol 109 (Lot 2 DP 542996) Lubo Medich, theatre proprietor	Mary Ellen Harrington, wife of Patrick Francis Harrington, dairyman
1977 – 1978	Titles combined to Vol 13396 Fol 209, (Lot 2 DP 590605) Johnson & Johnson Pty. Limited Lubo Medich, theatre proprietor	

Table 3.1 – Title History, Lot 104 DP 1056782

Date Range	Ownership
1816 – 1911	Parish St. Peter Portion 137 Thomas Burke, 100 Acres, Grant Serial 8 Page 114 Parish St. Peter Portion 140 Neil McLeod, 30 Acres, Grant Serial 8 Page 112 Parish St. Peter Portion 144 Benjamin Vause, 30 Acres, Grant Serial 8 Page 186 Parish St. Peter Portion 145 Stephen Blake, 35 Acres, Grant Serial 8 Page 185
1978 – 1979	Title reference amended to Vol 13869 Fol 135, (Lot 6 DP 601056) Johnson & Johnson Pty. Limited
1988 – 1998	Title reference amended to Lot 6 DP 601056 Johnson & Johnson Pty. Limited
1998 – 1999	The Uniting Church (NSW) Trust Association
1999 – 2003	Title reference amended to Lot 99 DP 883218 The Uniting Church (NSW) Trust Association
2003 – present	Title reference amended to Lot 104 DP 1056782 Campbelltown City Council

3.3 HISTORICAL AERIAL PHOTOGRAPHY SURVEY

An historical aerial photography survey was undertaken for the site, with a total of ten (10) photographs identified and reviewed. The historical aerial photographs that were reviewed spanned a period of approximately 62 years, with the most recent from 2018, to the earliest in 1956. Aerial photographs, as attached in **Appendix C**, were reviewed to track changes in use of the site and surrounding properties over time. Key observations made during the review of aerial photos are summarised in **Table 3.3** as follows:

Table 3.2 – Summary of Aerial Photo Information

Date	Site Activity	Surrounding Land Use
1956	The site is generally utilised for agricultural purposes. Biriwiri Creek and its unnamed tributary intersect the site, which is cleared of remnant vegetation with the exception of the land between the two drainage channels. An access roadway transects the south-eastern extent of the site where it crosses Biriwiri Creek.	The unnamed tributary of Biriwiri Creek is dammed to the immediate west of the site. A dwelling and associated structures is present to the south-west of the site. The land surrounding the site is generally utilised for agricultural purposes (presumed to be grazing pasture).
1963	The area encompassing the site is generally unchanged.	Land uses of the surrounding area do not appear to have been significantly altered.
1972	The area encompassing the site is generally unchanged.	Construction activities have commenced to the north of the site for the Hume Motorway. Other land uses of the surrounding area do not appear to have been significantly altered.
1979	The access road and creek crossing have been removed. The area encompassing the remainder of the site is generally unchanged.	Construction activities of the Hume Motorway to the north of the site are completed. Johnson Road has been constructed, bordering the southern boundary of the site. The dwelling to the south-west of the site is no longer present, and the Johnson & Johnson plant has been constructed. The holding capacity of the dam on the unnamed tributary of Biriwiri Creek has been expanded. Industrial premises and operations are present to the south-east of the site.

Table 3.2 – Summary of Aerial Photo Information

Date	Site Activity	Surrounding Land Use
1983	The area encompassing the site is generally unchanged.	Expansion of the Johnson & Johnson plant to the south-west of the site has occurred. Significant residential development has occurred on properties within Woodbine, to the north-east of the site. Other land uses of the surrounding area do not appear to have been significantly altered.
1990	The detention basin and levee bank at the site have been constructed	Further expansion of the Johnson & Johnson plant to the south-west of the site has occurred. Other land uses of the surrounding area do not appear to have been significantly altered.
2002	The area encompassing the site is generally unchanged.	Hepher Road has been constructed. A warehouse to the east of the site has been constructed. Industrial premises and operations are present on Frost Road and the southern side on Johnson Road, to the south-east of the site. A church facility is undergoing construction to the south of the site. Significant residential development has occurred on properties within Woodbine, to the north-east of the site.
2009	The area encompassing the site is generally unchanged.	Additional warehousing facilities have been constructed to the north-east of the site. The Johnson & Johnson plant is no longer present. Two smaller industrial premises are present on the newly constructed Mount Erin Road. The cul-de-sac of Nursery Road has been constructed and former structures in this area have been cleared.
2013	The area encompassing the site is generally unchanged.	Additional industrial premises and operations are present on Nursery Road and Mount Erin Road (including the childcare facility).
2018	The area encompassing the site is generally unchanged.	Additional industrial premises and operations are present on Nursery Road, Mount Erin Road, and at the end of Hepher Road.

3.4 SUMMARY OF SITE HISTORY INFORMATION

Crown grants incorporating the site commenced in 1816, which has been subject to private ownership until acquisition by Campbelltown City Council in 2003. Based on historical aerial photographs, no developments with the exception of stormwater infrastructure have occurred on the area of the site. The surrounds have predominantly been utilised for rural/ agricultural purposes, until industrial developments commenced in the 1970s.

Historic agricultural land uses are considered to be predominantly passive and unlikely to have resulted in burial of wastes at the site.

SITE RECONNAISSANCE

Observations from the site inspection are presented on **Drawing 2**, attached. Refer to **Plate 1** and **Plate 2** for photography of the general site layout.

4.1 WASTE MANAGEMENT

No septic wastewater systems were identified at the site.

Soil stockpiles and other wastes were observed at the site. Refer to **Plates 11 to 13** and **Drawing 3**. The specific source(s) of this material was not established, however was considered to be consistent with illegal dumping.

4.2 STORMWATER

Site stormwater would consist of surface flows would drain to existing drainage infrastructure generally aligned north-west to south-east.

Potential exists for runoff and sediments containing contaminants from off-site sources to pass across the site, however this would be largely limited to within drainage channels.

4.3 CHEMICAL AND FUEL STORAGE / SPILLS

No evidence of fuel, oils or other chemical storage was observed at the site:

No findings of the historic aerial photography review (refer to **Section 3.4**) indicate the presence (historic or otherwise) of bulk chemical storage infrastructure at the site.

No sheep dips or cattle dips were observed at the site. No evidence of stressed vegetation, which may be indicative of soil and/or groundwater contamination, was observed during the site inspection.

4.4 ASBESTOS

Premise did not conduct an asbestos survey during the site inspection. Premise notes that waste stockpiles observed on the site, as described in **Section 4.1**, may potentially include asbestos containing materials.

No structures have been identified as previously being present at the site.

4.5 LANDFILLING

No landfilling currently occurs on the site. The levee bank at the site's eastern and southern boundaries is considered to have been constructed from material sourced on-site during construction of the detention basin (i.e. as 'cut-and-fill' civil works).

ENVIRONMENTAL INVESTIGATION

5.1 CHEMICALS OF POTENTIAL CONCERN

Based on the historic and predominantly passive uses of the site, impacts that are considered to have the potential to adversely impact the underlying soil and groundwater environments are limited to waste from illegal dumping. Chemicals of potential concern (COPC) associated with such impacts are understandably diverse, and may include:

- Heavy metals, (including arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc);
- Organochlorine pesticides (OCPs);
- Total recoverable / petroleum hydrocarbons (TRH/TPH);
- Benzene, toluene, ethylbenzene, xylene and naphthalene (BTEXN);
- Polycyclic aromatic hydrocarbons (PAHs);
- Phenolic compounds;
- Polychlorinated biphenyls (PCBs); and
- Asbestos.

5.2 INVESTIGATION CRITERIA

Adopted investigation criteria is summarised in **Table 1** (attached).

Health Investigation Levels

The National Environment Protection Council (NEPC) National Environment Protection (Assessment of Site Contamination) Measure, 1999 (*Amended ASC NEPM* – amended 2013) provides Health Investigation Levels (HILs) for assessing human health risk via all relevant pathways of exposure. Based on the current land use and zoning for the area of the site, commercial / industrial ‘HIL D’ land use HILs have been adopted as assessment criteria.

Health Screening Levels

The *Amended ASC NEPM* (NEPC, 2013) presents health screening levels (HSLs) for petroleum compounds. HSLs are relevant to various land use settings for residential, recreational open space, and commercial / industrial land use and reflect the risk posed by vapour.

Based on the current land uses and zonings for the site, concentrations of contaminants in soil are to be compared against the commercial / industrial ‘HSL D’ land use HSLs. Where screening levels are non-limiting, Premise has adopted the maximum – or saturation¹ – concentration as the soil investigation level.

Management Limits

The *Amended ASC NEPM* (NEPC, 2013) Management Limits for TRH reflect the nature and properties of petroleum hydrocarbons. Management Limits are specified for coarse and fine soil types and land uses. Compliance with the Management Limits is intended to avoid or minimise the potential effects of the following:

¹ Soil saturation concentration at which the porewater phase cannot dissolve any more of an individual chemical, adopted from NEPM 1999 (2013) Health screening levels for petroleum hydrocarbons in soil and groundwater

- Formation of observable light non-aqueous phase liquid (LNAPL);
- Fire and explosive hazards;
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons; and
- Aesthetics.

Based on the current and future land uses for the site and surrounding area, concentrations of contaminants in the soil have been compared against the 'Commercial and Industrial' management limits.

5.3 METHODOLOGY

The methodology for the investigations undertaken at the site is detailed as follows.

Soil was sampled from the inner material comprising the stockpiles by grab-sampling whilst wearing disposable nitrile gloves, and placed into acid-washed glass jars with sealed lids provided by the laboratory.

Samples were chilled on ice during transit to the laboratory.

The sampling locations are shown on **Drawing 2**.

5.4 SCHEDULE OF SAMPLE ANALYSIS

The adopted analytical schedule for COPC at each investigation area is presented below.

Table 5.1 – Analytical Schedule

Area	No. Samples	COPC				
		Heavy Metals	TRH / TPH / BTEXN	PAH / Phenolics	OCP / PCBs	Asbestos
Stockpile 1	1	✓	✓	✓	✓	✓
Stockpile 2	1	✓	✓	✓	✓	✓
Stockpile 3	1	✓	✓	✓	✓	✓
Stockpile 4	1	✓	✓	✓	✓	✓

RESULTS

6.1 SOIL INVESTIGATION

6.1.1 SUMMARY OF WORKS

Four (4) stockpile samples were collected from observed stockpiles across the site.

No indicators of potential significant impact were observed (e.g. staining, odour, ash), however stockpiles were noted to contain vegetation. All samples were scheduled for analysis as summarised below:

6.1.2 ANALYTICAL RESULTS

Analytical results of collected soil samples are presented in **Table 1**, attached. Laboratory analytical results and chain of custody (COC) documentation are provided in **Appendix D**.

All soil samples met the investigation criteria for the respective analytes (refer to **Section 5.2**).

Samples analysed for heavy metals, TPH/TRH, BTEXN, Total PAHs, phenolics, OCPs and PCBs did not record concentrations of these analytes above the adopted human health criteria.

No respirable asbestos fibres were detected in any soil sample.

CONCLUSIONS

Premise make the following conclusions regarding the potential for land contamination at the site, based on a desktop review of available information, a review of historical records, and a site walkover reconnaissance.

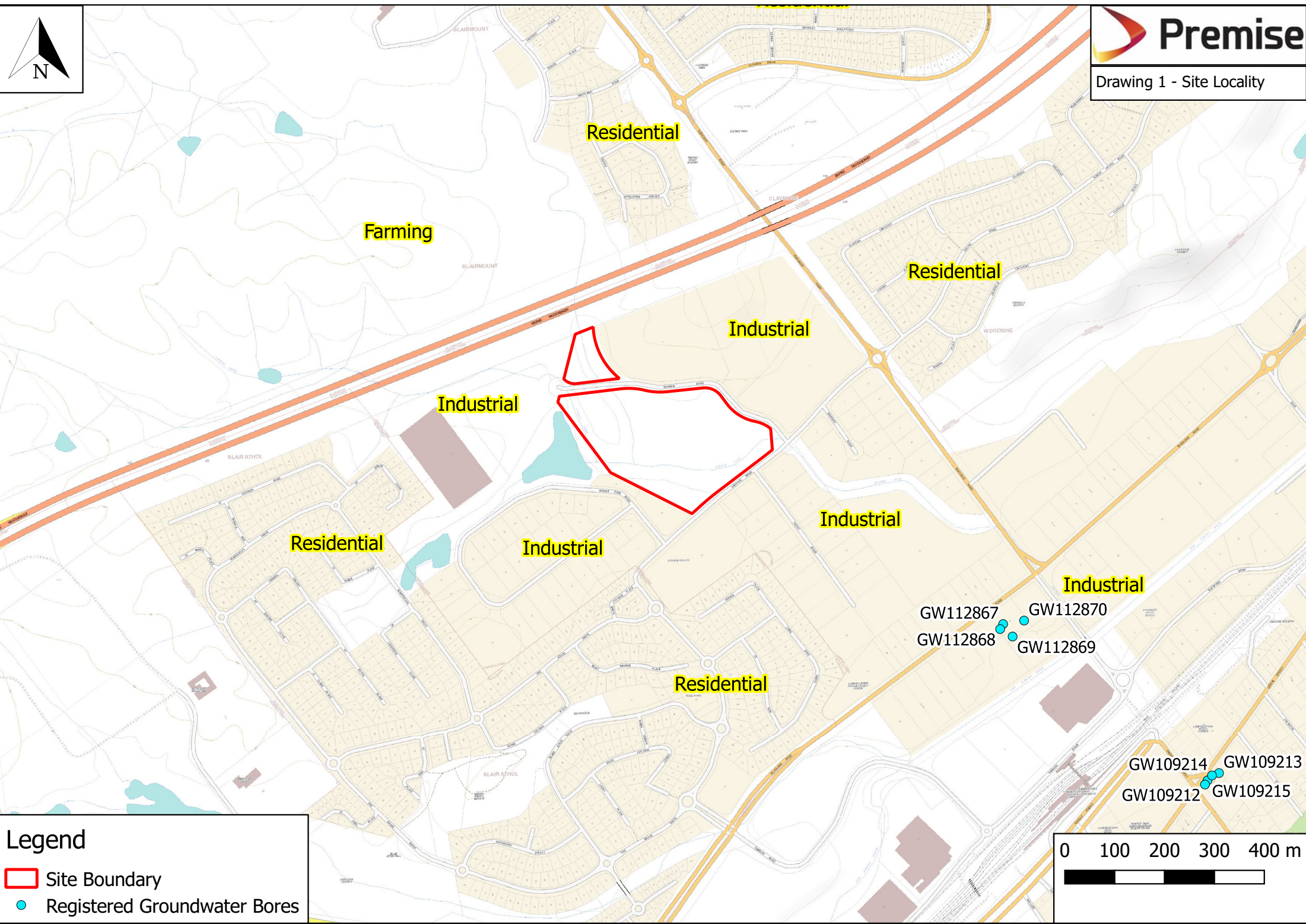
- The area of the site appears to have predominantly been historically utilised for rural / agricultural purposes including passive livestock grazing. In the 1980s the alignment of Biriwiri Creek and its unnamed tributary were altered to modify the site to its current layout, incorporating a large detention basin and levee bank.
- No structures are present on the site, or have been identified as ever being present on the site.
- Potential exists for runoff and sediments containing contaminants from off-site sources to pass across the site, however this would be largely limited to within drainage channels.
- Soil stockpiles resulting from illegal dumping are present on the site.
- Four (4) stockpile samples were collected from observed stockpiles across the site. All soil samples met the investigation criteria for the respective analytes.

No significant routes for exposure by receptors (current or future) to potential contamination sources have been identified, due to negligible impacts being recorded.

Having assessed the site against the investigation criteria documented in **Section 5.2** of this P1 PSI report, and with respect to identified historic land uses, Premise considers the suitability of the site to be consistent with the proposed land use, identified as a community recycling facility, within the requirements of the NSW State Environmental Planning Policy No 55 – Remediation of Land (1998).

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Drawings

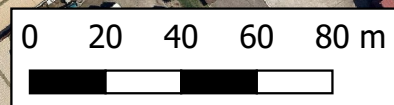




Legend

 Site Boundary

 Site Features



Tables

TABLE 1: Hephher Road - Stockpile Sampling Results
FEBRUARY 2019



Group	Analyte	LOR	Units	Sample ID	Sample 1	Sample 2	Sample 3	Sample 4
				Sample Date	26/02/2019	26/02/2019	26/02/2019	26/02/2019
				Criteria	PS	PS	PS	PS
Physical Parameters	Moisture	0.1	%	-	2.8	8.7	12	4.1
Trace Metals	Lead (Pb)	1	mg/kg	1500	7	19	24	22
	Chromium (Cr)	1	mg/kg	3600	6	13	15	11
	Arsenic (As)	4	mg/kg	3000	< 4	6	8	8
	Cadmium (Cd)	0.4	mg/kg	900	< 0.4	< 0.4	< 0.4	< 0.4
	Copper (Cu)	1	mg/kg	240000	2	21	53	45
	Nickel (Ni)	1	mg/kg	6000	< 1	8	14	13
	Zinc (Zn)	1	mg/kg	400000	5	34	280	160
	Mercury (Hg)	0.1	mg/kg	730	< 0.1	< 0.1	< 0.1	< 0.1
Total Recoverable Hydrocarbons	TRH C6-C10	25	mg/kg	700	< 25	< 25	< 25	< 25
	TRH C6-C10 less BTEX (F1)	25	mg/kg	260	< 25	< 25	< 25	< 25
	TRH >C10-C16	50	mg/kg	1000	< 50	< 50	< 50	< 50
	TRH >C10-C16 less Naphthalene (F2)	50	mg/kg	560	< 50	< 50	< 50	< 50
	TRH >C16-C34 (F3)	100	mg/kg	2500	< 100	< 100	180	< 100
	TRH >C34-C40 (F4)	100	mg/kg	10000	< 100	120	160	100
	TRH C10-C40	50	mg/kg	-	< 50	120	340	100
Total Petroleum Hydrocarbons	TPH C6-C9	25	mg/kg	-	< 25	< 25	< 25	< 25
	TPH C10-C14	50	mg/kg	-	< 50	< 50	< 50	< 50
	TPH C15-C28	100	mg/kg	-	< 100	< 100	< 100	< 100
	TPH C29-C36	100	mg/kg	-	< 100	110	200	100
BTEXN Analytes	Benzene	0.2	mg/kg	3	< 0.2	< 0.2	< 0.2	< 0.2
	Toluene	0.5	mg/kg	560	< 0.5	< 0.5	< 0.5	< 0.5
	Ethylbenzene	1	mg/kg	64	< 1	< 1	< 1	< 1
	meta- & para-Xylene	2	mg/kg	-	< 2	< 2	< 2	< 2
	ortho-Xylene	1	mg/kg	-	< 1	< 1	< 1	< 1
	Naphthalene	1	mg/kg	9	< 1	< 1	< 1	< 1
	Total Xylenes	1	mg/kg	300	< 1	< 1	< 1	< 1
Polynuclear Aromatic Hydrocarbons	Acenaphthylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1
	Acenaphthene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1
	Fluorene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1
	Phenanthrene	0.1	mg/kg	-	< 0.1	< 0.1	0.1	0.3
	Anthracene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1
	Fluoranthene	0.1	mg/kg	-	< 0.1	< 0.1	0.1	0.4
	Pyrene	0.1	mg/kg	-	< 0.1	< 0.1	0.1	0.4
	Benzo(a)anthracene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	0.2
	Chrysene	0.1	mg/kg	-	< 0.1	< 0.1	0.1	0.2
	Benzo(a)pyrene	0.05	mg/kg	-	< 0.05	< 0.05	0.07	0.1
	Indeno(1,2,3-cd)pyrene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1
	Dibenzo(ah)anthracene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1
	Benzo(ghi)perylene	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	0.1
	Benzo(b,j,k)fluoranthene	0.2	mg/kg	-	< 0.2	< 0.2	< 0.2	0.3
	Naphthalene	0.1	mg/kg	9	< 0.1	< 0.1	< 0.1	< 0.1
	Total +ve PAH's	0.05	mg/kg	4000	< 0.05	< 0.05	0.56	2
	Benzo(a)pyrene TEQ (zero)	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (LOR)	0.5	mg/kg	-	< 0.5	< 0.5	< 0.5	< 0.5
	Benzo(a)pyrene TEQ (half LOR)	0.5	mg/kg	40	< 0.5	< 0.5	< 0.5	< 0.5

TABLE 1: Hephher Road - Stockpile Sampling Results
FEBRUARY 2019



					Sample ID	Sample 1	Sample 2	Sample 3	Sample 4
					Sample Date	26/02/2019	26/02/2019	26/02/2019	26/02/2019
Group	Analyte	LOR	Units	Criteria	PS	PS	PS	PS	
OC Pesticides	Hexachlorobenzene (HCB)	0.1	mg/kg	80	< 0.1	< 0.1	< 0.1	< 0.1	
	Aldrin	0.1	mg/kg	22.5	< 0.1	< 0.1	< 0.1	< 0.1	
	Dieldrin	0.1	mg/kg	22.5	< 0.1	< 0.1	< 0.1	< 0.1	
	Alpha BHC	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Beta BHC	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Lindane (gamma BHC)	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Delta BHC	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Heptachlor	0.1	mg/kg	25	< 0.1	< 0.1	< 0.1	< 0.1	
	Heptachlor epoxide	0.1	mg/kg	25	< 0.1	< 0.1	< 0.1	< 0.1	
	Alpha Chlordane	0.1	mg/kg	265	< 0.1	< 0.1	< 0.1	< 0.1	
	trans-Chlordane	0.1	mg/kg	265	< 0.1	< 0.1	< 0.1	< 0.1	
	Endrin	0.1	mg/kg	50	< 0.1	< 0.1	< 0.1	< 0.1	
	Endrin aldehyde	0.1	mg/kg	50	< 0.1	< 0.1	< 0.1	< 0.1	
	p,p'-DDD	0.1	mg/kg	1200	< 0.1	< 0.1	< 0.1	< 0.1	
	p,p'-DDE	0.1	mg/kg	1200	< 0.1	< 0.1	< 0.1	< 0.1	
	p,p'-DDT	0.1	mg/kg	1200	< 0.1	< 0.1	< 0.1	< 0.1	
	Sum of DDD + DDE + DDT	0.1	mg/kg	3600	< 0.1	< 0.1	< 0.1	< 0.1	
	Alpha Endosulfan	0.1	mg/kg	667	< 0.1	< 0.1	< 0.1	< 0.1	
	Beta Endosulfan	0.1	mg/kg	667	< 0.1	< 0.1	< 0.1	< 0.1	
	Endosulfan sulphate	0.1	mg/kg	667	< 0.1	< 0.1	< 0.1	< 0.1	
	Methoxychlor	0.1	mg/kg	2500	< 0.1	< 0.1	< 0.1	< 0.1	
Polychlorinated Biphenyls	Arochlor 1016	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Arochlor 1221	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Arochlor 1232	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Arochlor 1242	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Arochlor 1248	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Arochlor 1254	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Arochlor 1260	0.1	mg/kg	-	< 0.1	< 0.1	< 0.1	< 0.1	
	Total Polychlorinated biphenyls	0.1	mg/kg	7	< 0.1	< 0.1	< 0.1	< 0.1	
Phenolics	Total Phenols	5	mg/kg	240000	< 5	< 5	< 5	< 5	
Asbestos In Soil	Asbestos Detected	0	-	-	< 0	< 0	< 0	< 0	

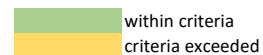
mg/kg milligrams per kilogram

LOR limit of reporting

PS primary sample

Criteria Criteria adopted from National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPC 2013)

Notes



Plates



Plate 1: General Site Layout – Lot 104 DP 1056782

(February 2019)



Plate 2: General Site Layout – Lot 104 DP 1056782.

(February 2019)



Plate 3: Stockpile 1 / Sample 1 – Lot 104 DP 1056782.

(February 2019)

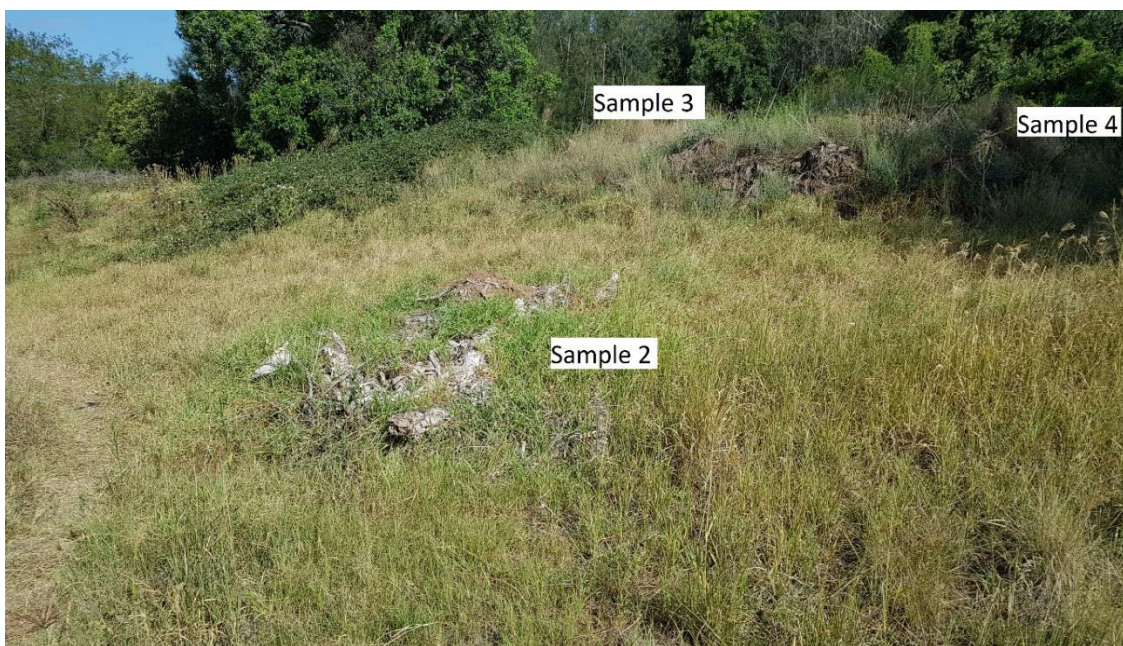


Plate 4: Stockpiles 2, 3 & 4 / Samples 2, 3 & 4 – Lot 104 DP 1056782.

(February 2019)

Appendix A

REGISTERED GROUNDWATER BORE RECORDS

WaterNSW

Work Summary

GW112867

Licence:		Licence Status:	
		Authorised Purpose(s):	
		Intended Purpose(s): MONITORING BORE	
Work Type: Bore			
Work Status: Equipped			
Construct.Method:			
Owner Type: Private			
Commenced Date:		Final Depth: 6.50 m	
Completion Date: 07/03/2011		Drilled Depth: 6.50 m	
Contractor Name: EPOCA ENVIRONMENTAL			
Driller: Daniel Giles Fox			
Assistant Driller:			
Property:		Standing Water Level (m): 4.500	
GWMA:		Salinity Description:	
GW Zone:		Yield (L/s):	

Site Details

Site Chosen By:			
		County	Parish
		Form A: CUMBERLAND	ST PETER
		Licensed:	Cadastre
			1//518952
Region: 10 - Sydney South Coast		CMA Map:	
River Basin: - Unknown		Grid Zone:	Scale:
Area/District:			
Elevation: 0.00 m (A.H.D.)		Northing: 6228964.000	Latitude: 34°03'38.2"S
Elevation Source: Unknown		Easting: 298152.000	Longitude: 150°48'46.5"E
GS Map: -		MGA Zone: 56	Coordinate Source: Unknown

Remarks

23/07/2014: Nat Carling, 23-July-2014; Added status, drill method & depth, updated work type.

*** End of GW112867 ***

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

Appendix B

PREVIOUS TITLE RECORDS



	Status	Surv/Comp	Purpose
DP601056			
Lot(s): 7			
 DP1011339	REGISTERED	SURVEY	SUBDIVISION
 DP1033262	REGISTERED	COMPILATION	EASEMENT
DP1056782			
Lot(s): 102			
 DP1063949	REGISTERED	SURVEY	EASEMENT
Lot(s): 102, 104			
 DP883218	HISTORICAL	SURVEY	SUBDIVISION
DP1090151			
Lot(s): 3, 4			
 DP1234412	REGISTERED	SURVEY	EASEMENT
Lot(s): 1, 2, 3, 4			
 DP1126785	REGISTERED	SURVEY	SUBDIVISION
Lot(s): 1, 6, 9			
 DP858363	HISTORICAL	SURVEY	SUBDIVISION
Lot(s): 1, 2, 3, 4, 6, 7, 9, 10			
 DP752062	HISTORICAL	COMPILATION	CROWN ADMIN NO.
DP1113810			
Lot(s): 1, 2, 3, 4, 5, 6, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 37, 38			
 DP883218	HISTORICAL	SURVEY	SUBDIVISION
DP1126785			
Lot(s): 12, 13, 14, 15, 16			
 DP752062	HISTORICAL	COMPILATION	CROWN ADMIN NO.
 DP858363	HISTORICAL	SURVEY	SUBDIVISION
 DP1090151	HISTORICAL	SURVEY	SUBDIVISION
DP1190825			
Lot(s): 2			
 DP1237853	REGISTERED	SURVEY	EASEMENT
Lot(s): 1, 2			
 DP883218	HISTORICAL	SURVEY	SUBDIVISION
 DP1056782	HISTORICAL	SURVEY	SUBDIVISION
DP1233624			
Lot(s): 2			
 DP869045	HISTORICAL	SURVEY	SUBDIVISION
 DP1042471	HISTORICAL	SURVEY	SUBDIVISION
DP1244923			
Lot(s): 21, 22			
 DP858363	HISTORICAL	SURVEY	SUBDIVISION
SP71479			
 DP802911	HISTORICAL	SURVEY	SUBDIVISION
SP73869			
 DP802911	HISTORICAL	SURVEY	SUBDIVISION
SP77021			
 DP802911	HISTORICAL	SURVEY	SUBDIVISION
SP79031			
 DP883218	HISTORICAL	SURVEY	SUBDIVISION
 DP1056782	HISTORICAL	SURVEY	SUBDIVISION
 DP1064899	HISTORICAL	SURVEY	SUBDIVISION
 SP93548	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN
SP80392			
 DP883218	HISTORICAL	SURVEY	SUBDIVISION
 DP1056782	HISTORICAL	SURVEY	SUBDIVISION
 DP1064899	HISTORICAL	SURVEY	SUBDIVISION
 SP89726	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN
 SP89844	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN
 SP91446	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN
 SP92580	REGISTERED	COMPILATION	STRATA SUBDIVISION PLAN

Caution: This information is provided as a searching aid only. Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL**

ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps.

Plan	Surv/Comp	Purpose
DP259077	SURVEY	SUBDIVISION
DP601056	SURVEY	SUBDIVISION
DP802911	SURVEY	SUBDIVISION
DP858363	SURVEY	SUBDIVISION
DP883218	SURVEY	SUBDIVISION
DP1056782	SURVEY	SUBDIVISION
DP1090151	SURVEY	SUBDIVISION
DP1113810	SURVEY	SUBDIVISION
DP1126785	SURVEY	SUBDIVISION
DP1190825	SURVEY	SUBDIVISION
DP1190825	UNRESEARCHED	SUBDIVISION
DP1233624	SURVEY	SUBDIVISION
DP1233624	UNRESEARCHED	SUBDIVISION
DP1244923	SURVEY	SUBDIVISION
SP71479	COMPILATION	STRATA PLAN
SP73869	COMPILATION	STRATA PLAN
SP77021	COMPILATION	STRATA PLAN
SP79031	COMPILATION	STRATA PLAN
SP80392	COMPILATION	STRATA PLAN

Caution: This information is provided as a searching aid only. Whilst every endeavour is made to ensure that current map, plan and titling information is accurately reflected, the Registrar General cannot guarantee the information provided. For **ALL**

ACTIVITY PRIOR TO SEPTEMBER 2002 you must refer to the RGs Charting and Reference Maps.

[illegible]

1000

PROPERTY ACT, 1900

Vol. **12348** Fol. **147**

Edition issued 11-2-1974.

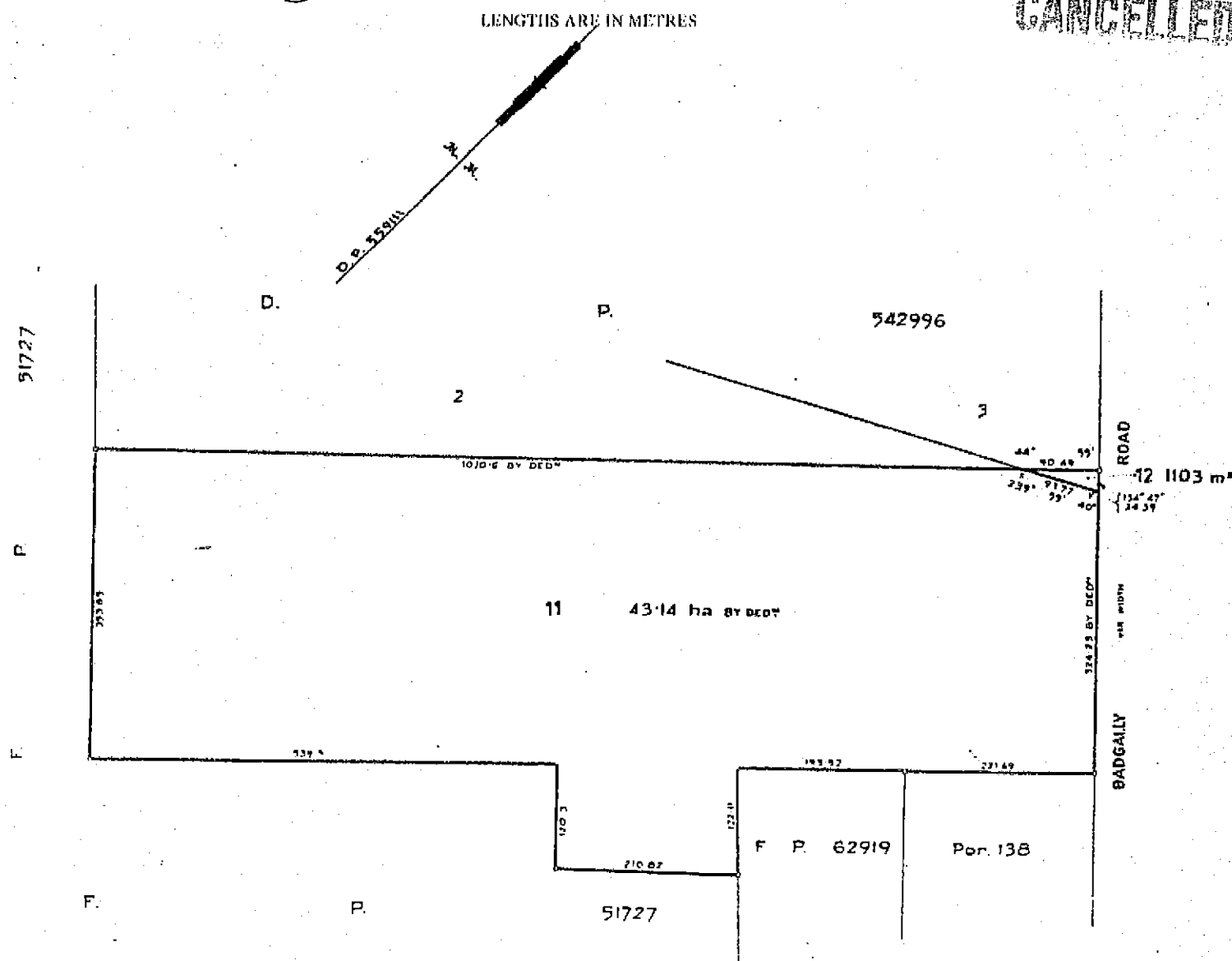


Lawton
Registrar General.



LENGTHS ARE IN METRES

CANCELLED



LOT 12 DELINEATED HEREON IS TO BE ACQUIRED BY THE COMMISSIONER FOR MAIN ROADS AND WILL ULTIMATELY FORM PART OF A MOTORWAY UNDER PART V² OF THE MAIN ROADS ACT, 1924.

ACCESS ACROSS THE BOUNDARY MARKED "A" BY

Estate in Fee Simple in Lot 11 in Deposited Plan 559111 at Campbelltown in the City of Campbelltown Parish of St. Peter and County of Cumberland being part of Portion 140 granted to Neil McLeod on 20-6-1816, part of Portion 137 granted to Thomas Burke on 20-6-1816, part of Portion 145 granted to Stephen Blake on 8-10-1816 and part of Portion 144 granted to Benjamin Vaux on 8-10-1816.

JOHNSON & JOHNSON PTY. LIMITED.

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. Covenant created by Transfer No.N515635.

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

Page 1) Vol. 12388 Fol. 141

REMARKS: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE

CERTIFICATE OF TITLE



13103109

NEW SOUTH WALES

PROPERTY ACT, 1900

Appln No. 21778

Prior Title Vol. 5939 Fol. 230

Vol. **13103** Fol. **109**



CANCELLED

EDITION ISSUED

18 8 1976

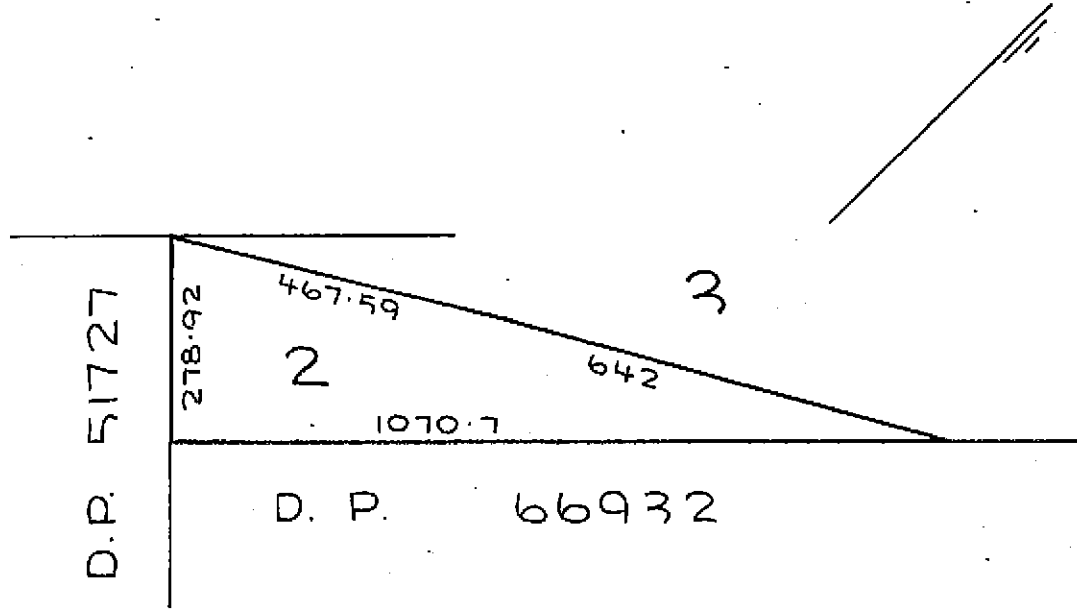
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Jawatson
Registrar General.



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



P 747018 mw

AREA : 15.25 ha
REDUCTION RATIO 1:10,000

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 542996 at Campbelltown in the City of Campbelltown Parish of St. Peter and County of Cumberland being part of Portion 137 granted to Thomas Bourke on 20-6-1816 and part of Portions 144 and 145 granted to Benjamin Vaux and Stephen Blake respectively on 8-10-1816.

FIRST SCHEDULE

LUBO MEDICH of Cabramatta, Theatre Proprietor.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.

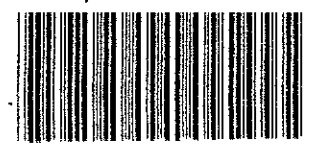
WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON



CERTIFICATE OF TITLE

PROPERTY ACT, 1900



13396 208

NEW SOUTH WALES

Appln. No.16933

Prior Title Vol.12348 Fol.147

Vol. 13396 Fol. 208

EDITION ISSUED

10 8 1977



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.

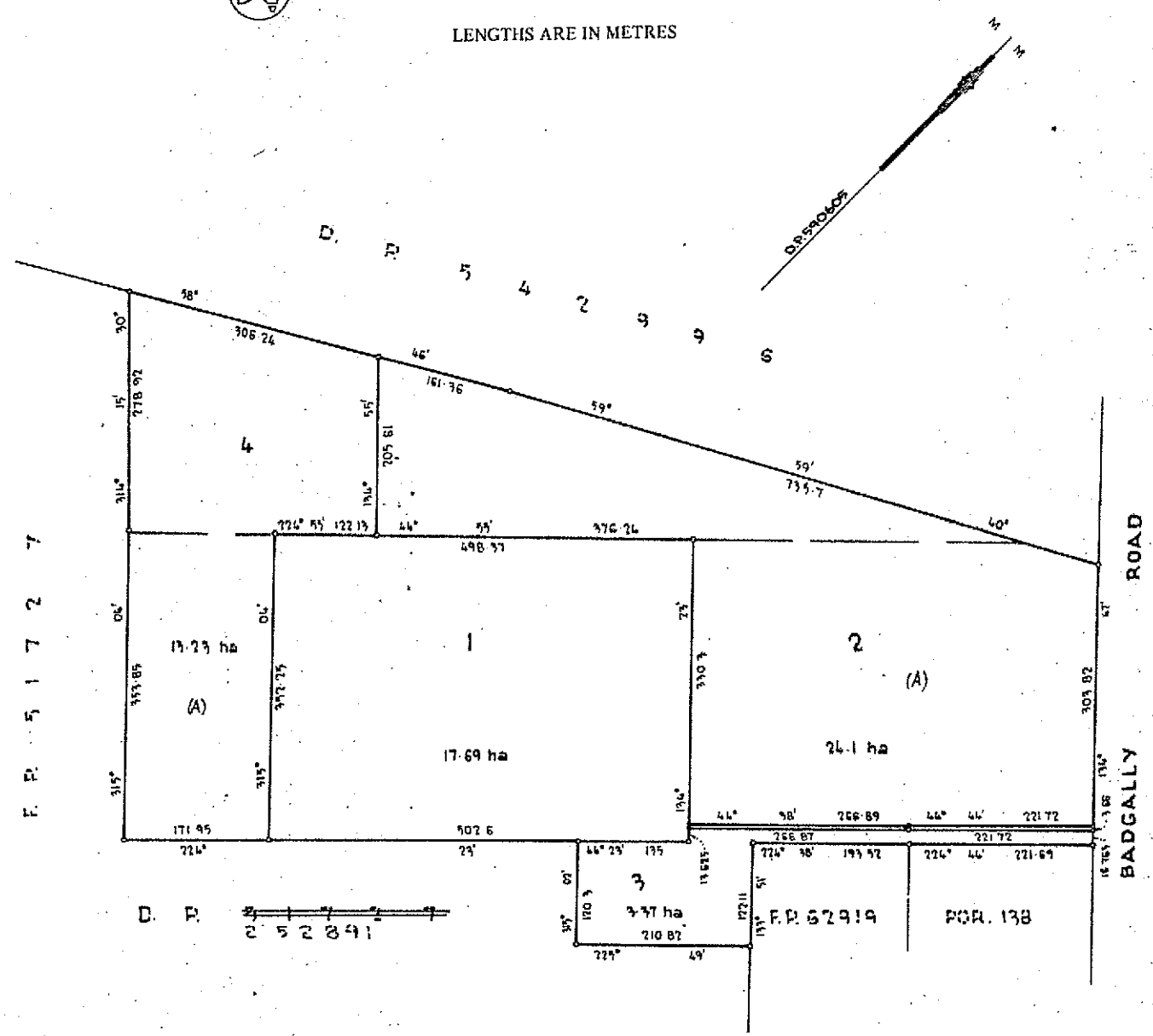
[Signature]

Registrar General.



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



(A) COVT N515635

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 1 in Deposited Plan 590605 in the City of Campbelltown Parish of St. Peter and County of Cumberland being part of Portion 137 granted to Thomas Bourke on 20-6-1816, part of Portion 145 granted to Stephen Blake on 8-10-1816 and part of Portion 144 granted to Benjamin Vaux on 8-10-1816.

FIRST SCHEDULE

[Signature] JOHNSON & JOHNSON PTY. LIMITED
JOHNSON & JOHNSON PTY. LIMITED.

SECOND SCHEDULE

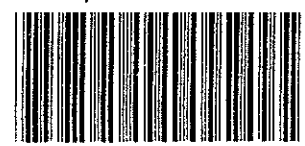
1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. N515635 Covenant.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TILES OFFICE.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

13396 209
(Page 1) Vol. Fol.



13396 209

NEW SOUTH WALES

CERTIFICATE OF TITLE
PROPERTY ACT, 1900

Appln. Nos.16933 & 21778
Prior Titles Vol.12348 Fol.147
Vol.13103 Fol.109

Vol. **13396** Fol. **209**
CANCELLED ☒ EDITION ISSUED
10 8 1977



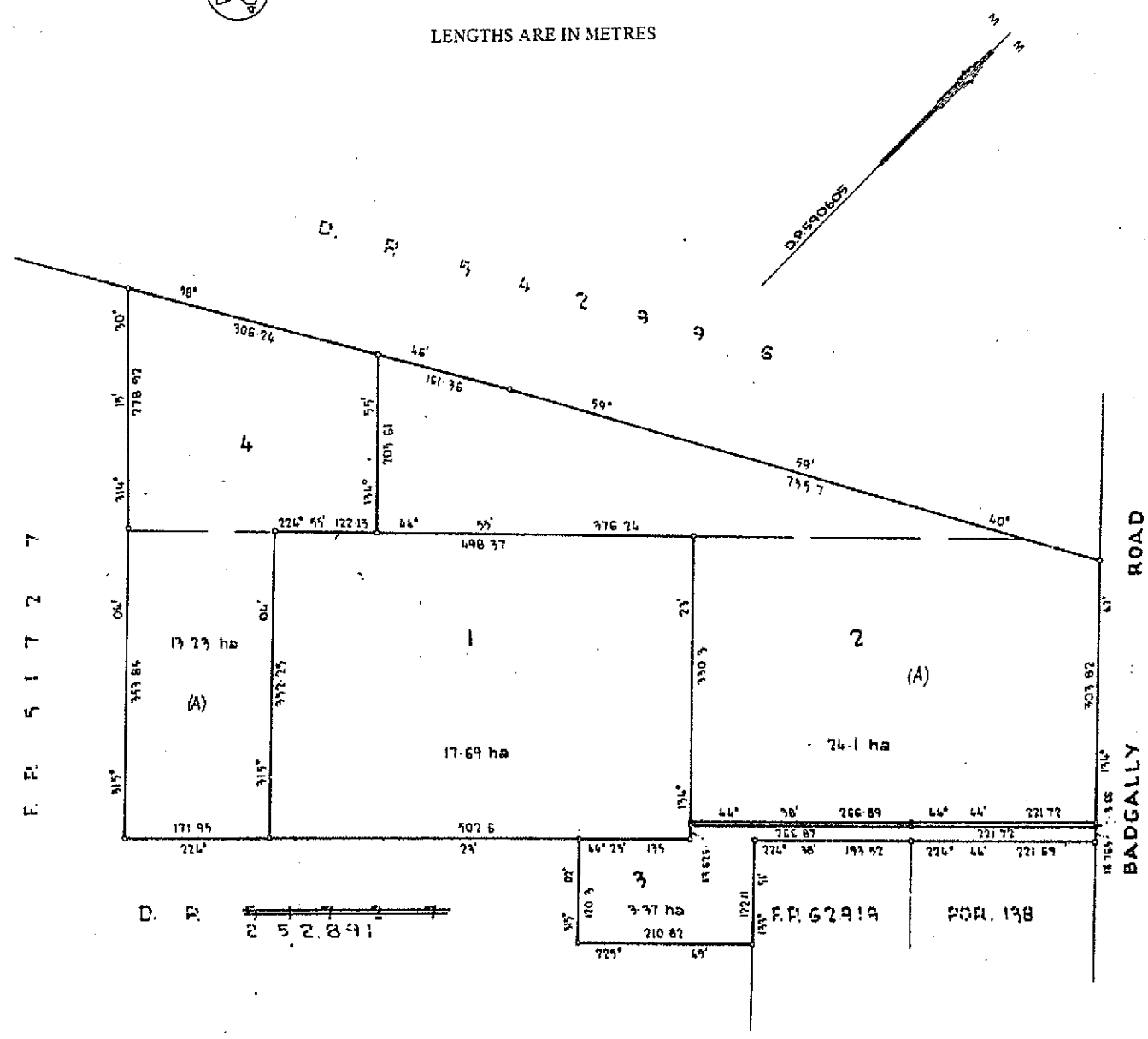
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

[Signature]
Registrar General.



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



(A) COVT N515635

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 2 in Deposited Plan 590605 in the City of Campbelltown Parish of St. Peter and County of Cumberland being part of Portion 137 granted to Thomas Bourke on 20-6-1816 and part of Portion 145 granted to Stephen Blake on 8-10-1816.

FIRST SCHEDULE

~~JOHNSON & JOHNSON PTY. LIMITED as to the part of the land above described formerly comprised in Certificate of Title Volume 12348 Folio 147 and LUBO MEDICH of Cabramatta, Theatre Proprietor to the part of the land formerly comprised in Certificate of Title Volume 13103 Folio 109.~~

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. N515635 Covenant affecting the part of the land above described designated (A) in plan hereon.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED.

WARNING: THIS DOCUMENT MUST NOT BE REMOVED FROM THE LAND TITLES OFFICE.

PERSONS ARE CAUTIONED AGAINST ALTERING OR ADDING TO THIS CERTIFICATE OR ANY NOTIFICATION HEREON

holentile
Filed in
Q67410 T
Cov
DR60155
no 25/7

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR

Johnson & Johnson Pty. Limited

This deed is cancelled as to the whole in said
New Certificates of Title have issued on 29.5.1979
for lots in deposited Plan No. 661056 as follows:-
lots 5 to 8 - Vol 13869 Fol 1346137 respectively.

The residue of land in this lot -
112 and.

New Certificates of Title have Issued on 29.5.1979
for lots In deposited Plan No. 601056 as follows:-
lots 5 to 8 - Vol 13869 Fol 1346 B7 respectively:-

7

REGISTRAR GENERAL

ANY CERTIFICATE(S) OF TITLE ISSUING ON 0601056
NO DEALING TO BE REGISTERED WITHOUT REFERENCE TO
SURVEY DRAFTING BRANCH

REGISTRAR GENERAL

SECOND SCHEDULE (continued)

[illegible]

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED



13869134

NEW SOUTH WALES

CERTIFICATE OF TITLE

PROPERTY ACT, 1900

Appln. No. 16933

Vol. 13869 Fol. 134

Prior Titles Vol.13396 Fol.208
Vol.13396 Fol.210



N

EDITION ISSUED
30 5 1979

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.

CANCELLED

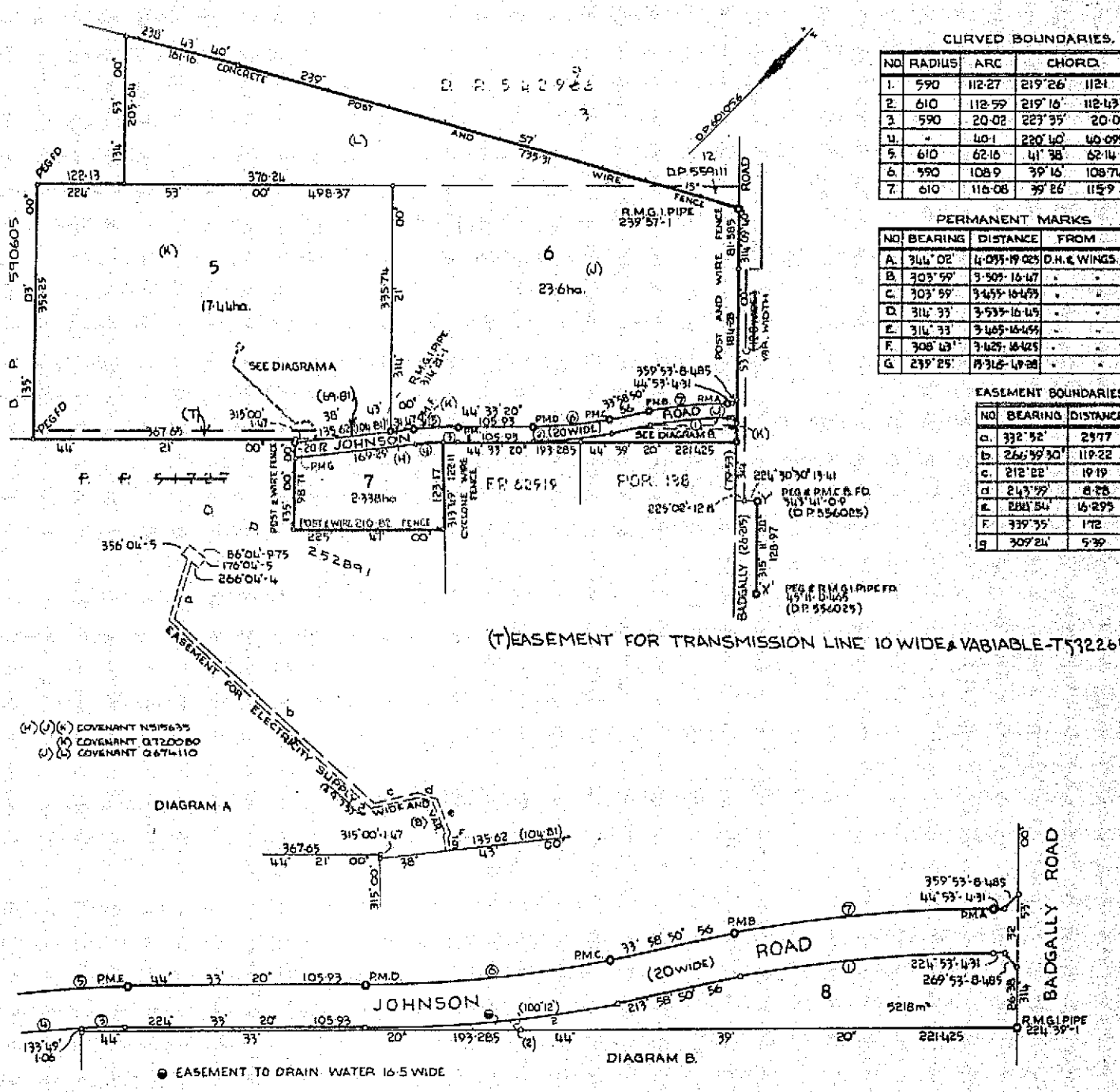


Registrar General.

SEE AUTO FOLIO

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 5 in Deposited Plan 601056 at Campbelltown in the City of Campbelltown Parish of St. Peter County of Cumberland being part of Portion 137 granted to Thomas Bourke on 20-6-1816, part of Portion 144 granted to Benjamin Vaux on 8-10-1816, part of Portion 145 granted to Stephen Blake on 8-10-1816 and part of Portion 140 granted to Neil McLeod on 20-6-1816.

FIRST SCHEDULE

JOHNSON & JOHNSON PTY. LIMITED.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. N515635 Covenant affecting the part of the land above described shown so burdened in Deposited Plan 601056.
3. Q720080 Covenant affecting the part of the land above described shown so burdened in Deposited Plan 601056.
4. DP601056 Easement for electricity supply affecting the land shown so burdened in Deposited Plan 601056.
5. DP601056 Easement to drain water appurtenant to the land above described.

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 REGISTRAR GENERAL'S OFFICE.

REGISTERED PROPRIETOR

SEE AUTO FOLD

CANCELLED

S491711 PLY
 DR. 628411 610
 C.W.
 10/24/82
 C.T. 21.4.83
 T532261 To G.R.
 X73468WIX
 8/6/83-29 Rm

SECOND SCHEDULE (continued)

ED

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

NEW SOUTH WALES

CERTIFICATE OF TITLE

PROPERTY ACT, 1900

Appln. Nos. 16933 & 21778

Prior Titles Vol.13396 Fol.208
Vol.13396 Fol.209

Vol.13869 Fol.135



EDITION ISSUED
CANCELLED
30 5 1979

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.

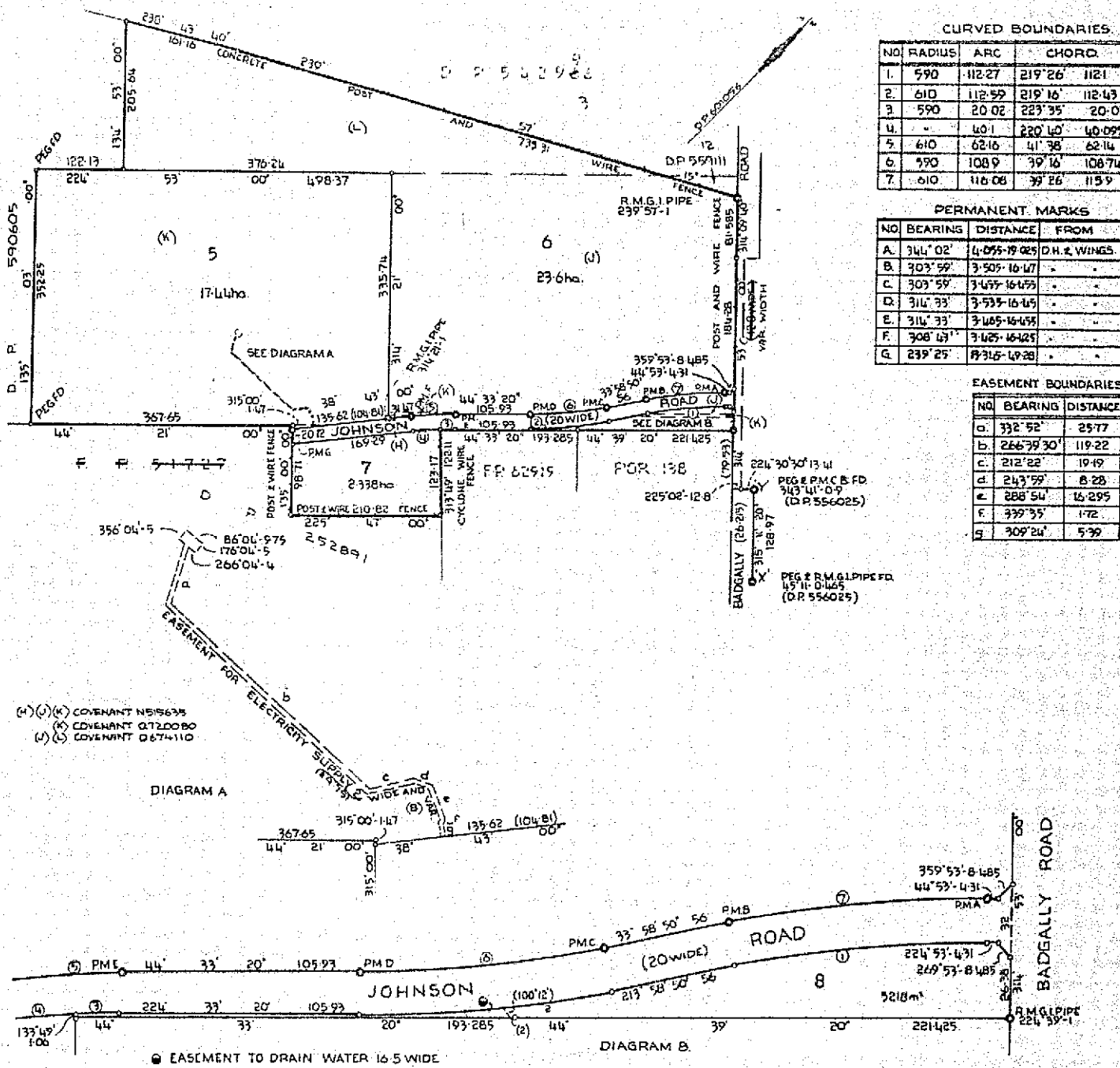
SEE AUTO FOLIO

Registrar General.



PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 6 in Deposited Plan 601056 at Campbelltown in the City of Campbelltown Parish of St. Peter County of Cumberland being part of Portion 137 granted to Thomas Bourke on 20-6-1816 and part of Portion 145 granted to Stephen Blake on 8-10-1816.

FIRST SCHEDULE

JOHNSON & JOHNSON PTY. LIMITED.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. N515635^p Covenant affecting the part of the land above described shown so burdened in Deposited Plan 601056.
3. Q674110^p Covenant affecting the part of the land above described shown so burdened in Deposited Plan 601056.
4. Q720080^p Covenant affecting the part of the land above described shown so burdened in Deposited Plan 601056.
5. DP601056^f Easement to drain water appurtenant to the land above described.

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

DP 64032

FIRST SCHEDULE (continued)

[illegible]

100

STANDARD FORM NO. 64

SECOND SCHEDULE (continued)

[illegible]

NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Form: 97-01T
Licence: AUS/0634/96

4

TRANSFER

New South Wales

34344030



00*26 ALTC 4 Real Property Act 1900

Instructions for filling out
this form are available
from the Land Titles Office

Office of State Revenue use only

- (A) **LAND TRANSFERRED**
If appropriate, specify the
share or part transferred.

Folio Identifiers 5/601056, 6/601056, 7/601056
3/858363

- (B) **LODGED BY**

LTO Box
605M

Name, Address or DX and Telephone
LEGALITIES PTY LIMITED
DX 725 SYDNEY

Reference (15 character maximum): **SLADE:RAM/24158**

- (C) **TRANSFEROR** **JOHNSON & JOHNSON PTY LIMITED ACN 000 023 709**

- (D) acknowledges receipt of the consideration of **\$16,300,000.00**
and as regards the land specified above transfers to the transferee an estate in fee simple.

- (E) Encumbrances (if applicable): 1. 2. 3.

- (F) **TRANSFEE**

T
TS
(s/13 LGA)

THE UNITING CHURCH (NSW) TRUST ASSOCIATION
ACN 000 022 480

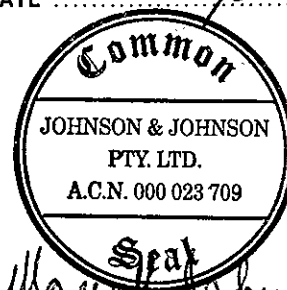
- (G)

TW
(Sheriff)

TENANCY:

- (H) We certify this dealing correct for the purposes of the Real Property Act 1900. DATE **28 September 1998**

~~Signed in my presence by the transferor who is personally known to me.~~
THE COMMON SEAL of JOHNSON & JOHNSON PTY)
LIMITED was hereunto affixed by the)
authority of the board of directors and)
in the ~~Signature of Witness~~ presence of:)



~~Name of Witness (BLOCK LETTERS)~~

Secretary Address of Witness

Director 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

Solicitor for Signature of Transferee
R A Manwaring

If signed on the transferee's behalf by a solicitor or licensed
conveyancer, show the signatory's full name in block letters.

278

SIGNATURE AND SEALS ONLY

Plan Drawing only to appear in this space

DP1056782

Registered: 7.8.2003

CA: SEE CERTIFICATE

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: U 7322-3, U7330-9

U8230-73, U8222-11

Last Plan: DP883218

PLAN OF SUBDIVISION OF
LOT 99 IN DP 883218

Lengths are in metres. Reduction Ratio 1:3000

LGA: CAMPBELLTOWN

Locality: CAMPBELLTOWN

Parish: ST. PETER

County: CUMBERLAND

This is sheet 1 of 1 plan in
(Delete if inapplicable) sheets.

Surveyors (Practice) Regulation 1996

STEPHEN J. ABBOTT

LEAN LACKENDY & HAYWARD LPOK

of 2003. Notwithstanding the Surveyors Act 1996, the Surveyors

that the survey represented in this plan is accurate, has been made in

in accordance with the Surveyors (Practice) Regulation 1996 and was

completed on 10th 10th 2003

The survey relates to lots 101, 102, 103 & 104

(The survey is not a preliminary survey or sketch and is shown in

the plan that is not the subject of the survey)

Datum: Line "A" - "B"

(Signature) Stephen J. Abbott

Surveyor registered under

the Surveyors Act 1996

Plans used in preparation of survey: Campbelltown

DP's 883218, 601056, 640329

590605

PANEL FOR USE ONLY for statements of intention

to dedicate public roads, to create public reserves,

drainage reserves, easements, restrictions on the

use of land or positive covenants.

PURSUANT TO SECTION 80B OF THE

CONVEYANCING ACT 1919 AS AMENDED

IT IS INTENDED TO CREATE:

1. EASEMENT TO DRAIN WATER

3 WIDE

2. EASEMENT FOR UNDERGROUND

CABLES 1 WIDE & VARIABLE

3. RESTRICTION ON THE USE OF LAND

4. RESTRICTION ON THE USE OF LAND

5. RESTRICTION ON THE USE OF LAND

6. RIGHT OF CARRIAGEWAY

7. VARIABLE WIDTH

17. RESTRICTION ON THE USE OF LAND

IT IS INTENDED TO DEDICATE

HEPHER ROAD 21 WIDE & VARIABLE

TO THE PUBLIC AS ROAD SUBJECT

TO EASEMENT FOR DRAINAGE

VARIABLE WIDTH (DP 640329) &

EASEMENT TO DRAIN WATER 15

WIDE (DP 883218)

IT IS INTENDED TO CREATE LOT 104

AS DRAINAGE RESERVE

SURVEY PRACTICE REG. 1996 CL. 32 (2)			
MARK	ISC CO-ORDINATES	EASTING	NORTHING
TS 914	281 591.591	1229 330.340	561
TS 4988	283 091.102	1226 045.861	561
SSM 31356	281 584.158	1229 321.186	561
SOURCE: ISC CO-ORDINATES ADOPTED FROM LIC AT 18th APRIL 2000			
COMBINED SCALE FACTOR 0.999994			

- (T) (R) - COVENANT 06/74110
(U) - COVENANT 07/20080
(S) (T) (V) - COVENANT NS15635

- ① EASEMENT TO DRAIN WATER 15 WIDE (DP 883218)
② EASEMENT TO DRAIN WATER 3 WIDE (DP 883218)
③ EASEMENT FOR PASSIVE RECREATION VARIABLE WIDTH (DP 883218)
④ EASEMENT TO DRAIN WATER 3 WIDE
⑤ EASEMENT FOR UNDERGROUND CABLES 1 WIDE & VARIABLE
⑥ EASEMENT FOR DRAINAGE VARIABLE WIDTH (DP 640329)
⑦ RIGHT OF CARRIAGEWAY VARIABLE WIDTH

MOTORWAY

PR104
(681m)

F5

CONCRETE

POST

WIRE

RESERVE

DRAINAGE

OCCUPATION

FOUND

PECS

PECS

PECS

PECS

PECS

PECS

PECS

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SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

SSM 56191 TO PM 52487 231° 45' 50" 211.268

SSM 52487 TO SSM 121010 85° 33' 55" 244.135

SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

SSM 56191 TO PM 52487 231° 45' 50" 211.268

SSM 52487 TO SSM 121010 85° 33' 55" 244.135

SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

SSM 56191 TO PM 52487 231° 45' 50" 211.268

SSM 52487 TO SSM 121010 85° 33' 55" 244.135

SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

SSM 56191 TO PM 52487 231° 45' 50" 211.268

SSM 52487 TO SSM 121010 85° 33' 55" 244.135

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SSM 52487 TO SSM 121010 85° 33' 55" 244.135

SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

SSM 56191 TO PM 52487 231° 45' 50" 211.268

SSM 52487 TO SSM 121010 85° 33' 55" 244.135

SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

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SSM 121011 TO SSM 56191 150° 45' 40" 215.925

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SSM 121010 TO SSM 121011 85° 33' 55" 244.135

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SSM 121010 TO SSM 121011 85° 33' 55" 244.135

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SSM 52487 TO SSM 121010 85° 33' 55" 244.135

SSM 121010 TO SSM 121011 85° 33' 55" 244.135

SSM 121011 TO SSM 56191 150° 45' 40" 215.925

SSM 56191 TO PM 52487 231° 45' 50" 211.268

SSM 52487 TO SSM 121010 85° 33' 55" 244.135

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SSM 56191 TO PM 52487 231° 45' 50" 211.268

SS

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

7/2/2019 8:38PM

FOLIO: 6/601056

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 13869 FOL 135

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
31/8/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
15/9/1998	5266801	CAVEAT	
29/12/1998	5494462	WITHDRAWAL OF CAVEAT	
29/12/1998	5494463	TRANSFER	EDITION 1
13/1/1999	5522755	DEPARTMENTAL DEALING	
5/2/1999	DP883218	DEPOSITED PLAN	FOLIO CANCELLED

*** END OF SEARCH ***

NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH
-----SEARCH DATE

7/2/2019 8:45PM

FOLIO: 99/883218
-----First Title(s): OLD SYSTEM
Prior Title(s): 5-6/601056

Recorded -----	Number -----	Type of Instrument -----	C.T. Issue -----
9/2/1999	DP883218	DEPOSITED PLAN	FOLIO CREATED EDITION 1
7/8/2003	DP1056782	DEPOSITED PLAN	FOLIO CANCELLED RESIDUE REMAINS

*** END OF SEARCH ***



NEW SOUTH WALES LAND REGISTRY SERVICES - HISTORICAL SEARCH

SEARCH DATE

7/2/2019 8:51PM

FOLIO: 104/1056782

First Title(s): OLD SYSTEM
Prior Title(s): 99/883218

Recorded	Number	Type of Instrument	C.T. Issue
7/8/2003	DP1056782	DEPOSITED PLAN	FOLIO CREATED EDITION 1

*** END OF SEARCH ***

advlegs

PRINTED ON 7/2/2019

Obtained from NSW LRS on 07 February 2019 07:51 PM AEST

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NEW SOUTH WALES LAND REGISTRY SERVICES - TITLE SEARCH

FOLIO: 104/1056782

SEARCH DATE	TIME	EDITION NO	DATE
7/2/2019	3:37 PM	1	7/8/2003

LAND

LOT 104 IN DEPOSITED PLAN 1056782
AT CAMPBELLTOWN
LOCAL GOVERNMENT AREA CAMPBELLTOWN
PARISH OF ST PETER COUNTY OF CUMBERLAND
TITLE DIAGRAM DP1056782

FIRST SCHEDULE

CAMPBELLTOWN CITY COUNCIL

SECOND SCHEDULE (7 NOTIFICATIONS)

- 1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
- 2 N515635 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 3 Q720080 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 4 Q674110 COVENANT AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM.
- 5 DP601056 EASEMENT TO DRAIN WATER APPURTENANT TO THE LAND ABOVE DESCRIBED
- 6 DP640329 EASEMENT FOR DRAINAGE VARIABLE WIDTH AFFECTING THE PART SHOWN SO BURDENED IN THE TITLE DIAGRAM
- 7 DP883218 RESTRICTION(S) ON THE USE OF LAND

NOTATIONS

NOTE: THE CERTIFICATE OF TITLE FOR THIS FOLIO OF THE REGISTER DOES NOT INCLUDE SECURITY FEATURES INCLUDED ON COMPUTERISED CERTIFICATES OF TITLE ISSUED FROM 4TH JANUARY, 2004. IT IS RECOMMENDED THAT STRINGENT PROCESSES ARE ADOPTED IN VERIFYING THE IDENTITY OF THE PERSON(S) CLAIMING A RIGHT TO DEAL WITH THE LAND COMPRISED IN THIS FOLIO.

UNREGISTERED DEALINGS: NIL

*** END OF SEARCH ***

advlegs

PRINTED ON 7/2/2019

Obtained from NSW LRS on 07 February 2019 02:36 PM AEST

* 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.

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ADVANCE LEGAL SEARCHERS PTY LTD

(ACN 147 943 842)

ABN 82 147 943 842

18/36 Osborne Road,
Manly NSW 2095

Telephone: +612 9977 6713

Mobile: 0412 169 809

Email: search@alsearchers.com.au

08th February 2019

LOTSEARCH PTY LTD

**Level 3, 68 Alfred Street,
MILSONS POINT, NSW 2061**

Attention: Rosemary Hulak,

RE:

**Hepher Road,
Campbelltown
Reference: LS005029_AS**

Current Search

Folio Identifier 104/1056782 (title attached)

DP 1056782 (plan attached)

Dated 07th February 2019

Registered Proprietor:

CAMPBELLTOWN CITY COUNCIL

Title Tree
Lot 104 DP 1056782

Folio Identifier 104/1056782

Folio Identifier 99/883218

Folio Identifier 6/601056

Certificate of Title Volume 13869 Folio 135

Certificate of Title Volume 13396 Folio 209

(a)

(b)

Certificate of Title Volume 12348 Folio 147 Certificate of Title Volume 13103 Folio 109

Certificate of Title Volume 2148 Folio 163 Certificate of Title Volume 5939 Folio 230

Certificate of Title Volume 3243 Folio 60

Land Part Portion 137 Parish St. Peter
Granted to Thomas Bourke 20th June 1816
& Part Portion 145 Parish St. Peter
Granted to Stephen Blake on 8th October 1816

Summary of proprietor(s) **Lot 104 DP 1056782**

Year	Proprietor(s)
	(Lot 104 DP 1056782)
2003 – todate	Campbelltown City Council
	(Lot 99 DP 883218)
1999 – 2003	The Uniting Church (NSW) Trust Association
	(Lot 6 DP 601056)
1998 – 1999	The Uniting Church (NSW) Trust Association
1988 – 1998	Johnson & Johnson Pty. Limited
	(Lot 6 DP 601056 – CTVol 13869 Fol 135)
1979 – 1988	Johnson & Johnson Pty. Limited
	(Lot 2 DP 590605 – CTVol 13396 Fol 209)
1978 – 1979	Johnson & Johnson Pty. Limited
1977 – 1978	Johnson & Johnson Pty. Limited Lubo Medich, theatre proprietor

See Notes (a) & (b)

Note (a)

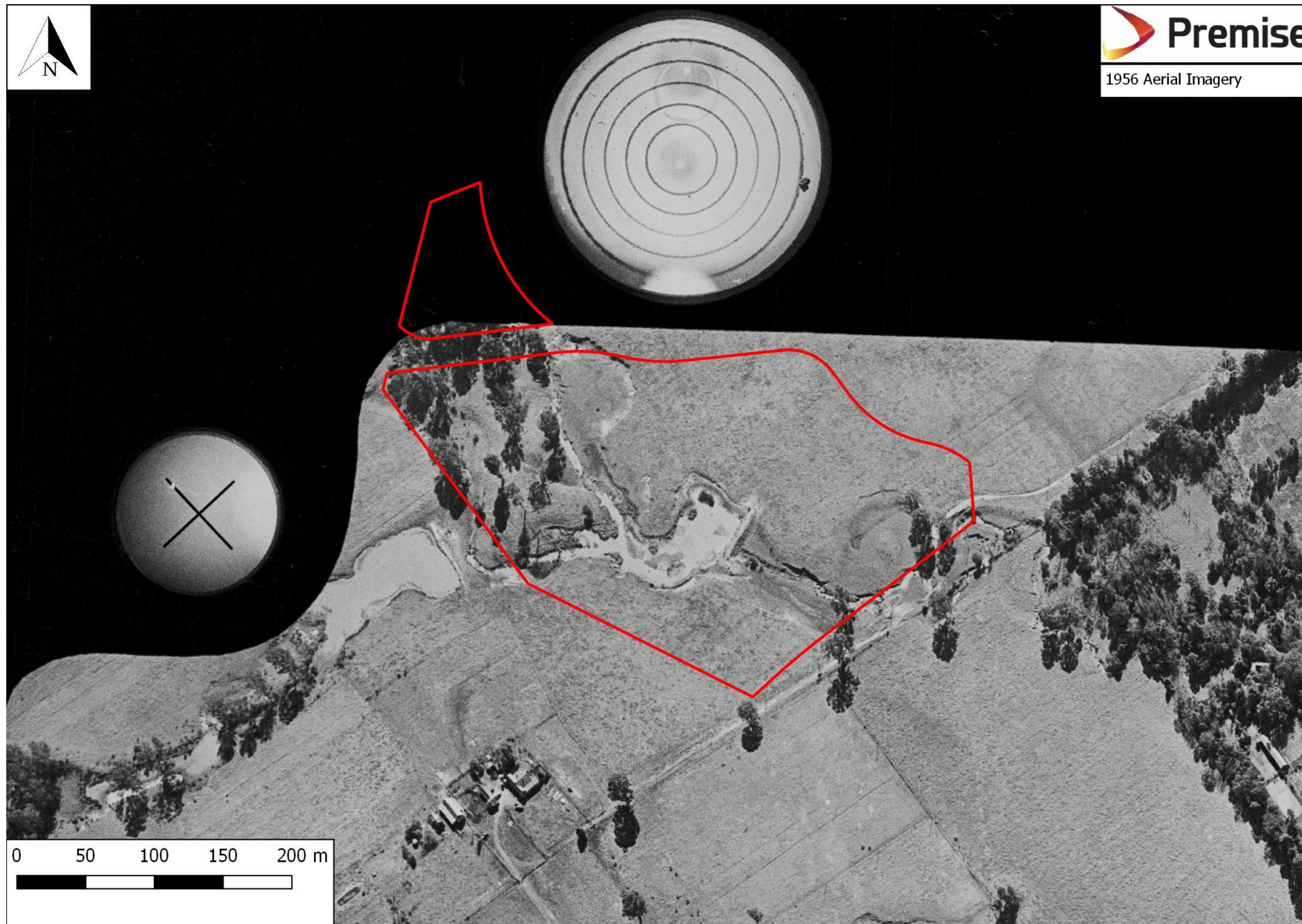
	(Lot 11 DP 559111 – CTVol 12348 Fol 147)
1974 – 1977	Johnson & Johnson Pty. Limited
	(Part Portion 140, 137, 145 & 144 Parish St. Peter – Area 106 Acres 3 Roods 20 ½ Perches – CTVol 2148 Fol 163)
1967 – 1974	Johnson & Johnson Pty. Limited
1935 – 1967	Mary Ellen Harrington, wife of Patrick Francis Harrington, dairyman
1934 – 1935	Catherine Teresa Keihone, widow
1911 – 1934	Mary Bourke, spinster

Note (b)

	(Lot 2 DP 542996 – CTVol 13103 Fol 109)
1976 – 1977	Lubo Medich, theatre proprietor
	(Part Portion 137, 145 & 144 Parish St. Peter – Area 80 Acres 1 Rood 23 Perches – CTVol 5939 Fol 230)
1966 – 1976	Lubo Medich, theatre proprietor
1961 – 1966	Minnie Beatrice Mc Clelland, widow Allan Charles Mc Clelland, school teacher Elwyn Miller, married woman
1949 – 1961	Charles Ernest Mc Clelland, farmer
1949 – 1949	Jane Lindsay, spinster
1949 – 1949	Gladys Ellen Campbell, widow
	(Part Portion 137, 145 & 144 Parish St. Peter – Area 80 Acres 1 Rood 23 Perches – CTVol 3243 Fol 80)
1946 – 1949	Andrew Edward Campbell, accountant
1940 – 1946	Charles Swan, farmer
1937 – 1940	Florence Phillips, widow George Alfred Kaves, solicitor
<i>(1922 – 1937)</i>	<i>(lease to Percy Baxter, farmer of part)</i>
1922 – 1937	William Phillips, gentleman
1922 – 1922	Clive Wynter Ducat, farmer Clarence Alwyn Ducat, farmer Victor Alan Ducat, farmer
1921 – 1922	John Edmund Bourke, gentleman Alice Mary Bourke, widow Mary Gertrude Bourke, spinster
1921 – 1921	John David Bourke, retired school teacher
<i>(1916 – 1921)</i>	<i>(lease to Thomas Frost)</i>

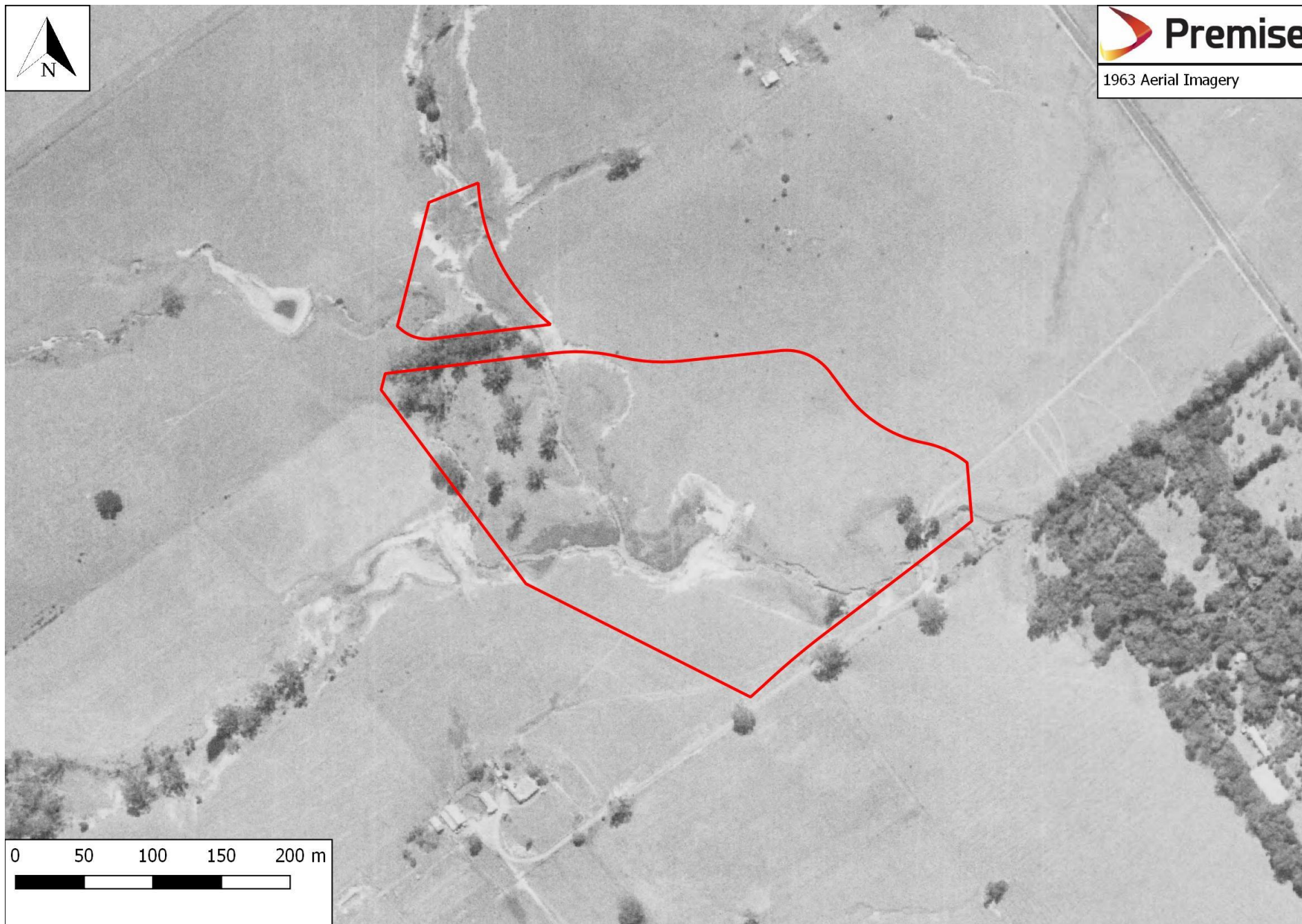
Appendix C

HISTORIC AERIAL PHOTOGRAPHY

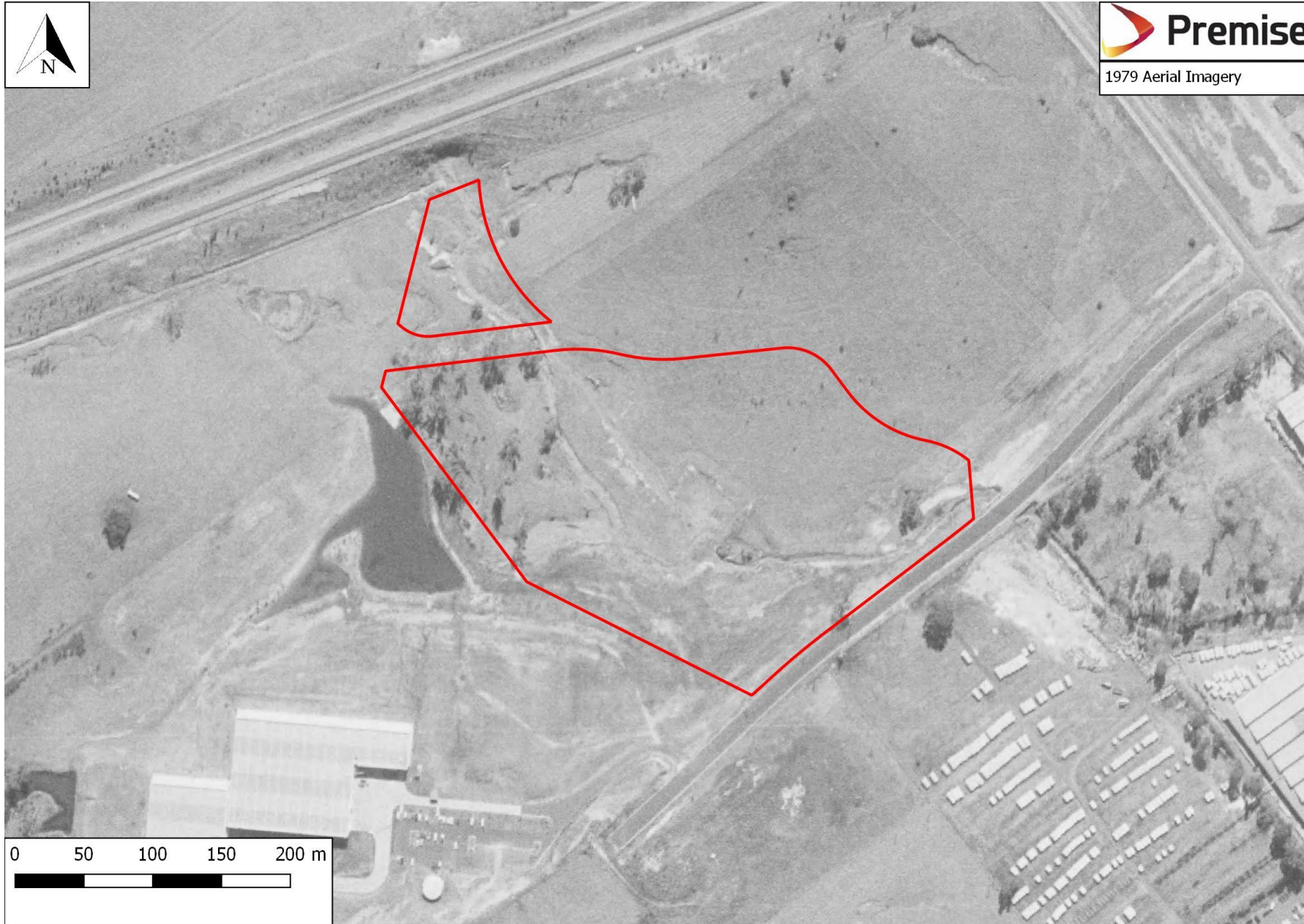


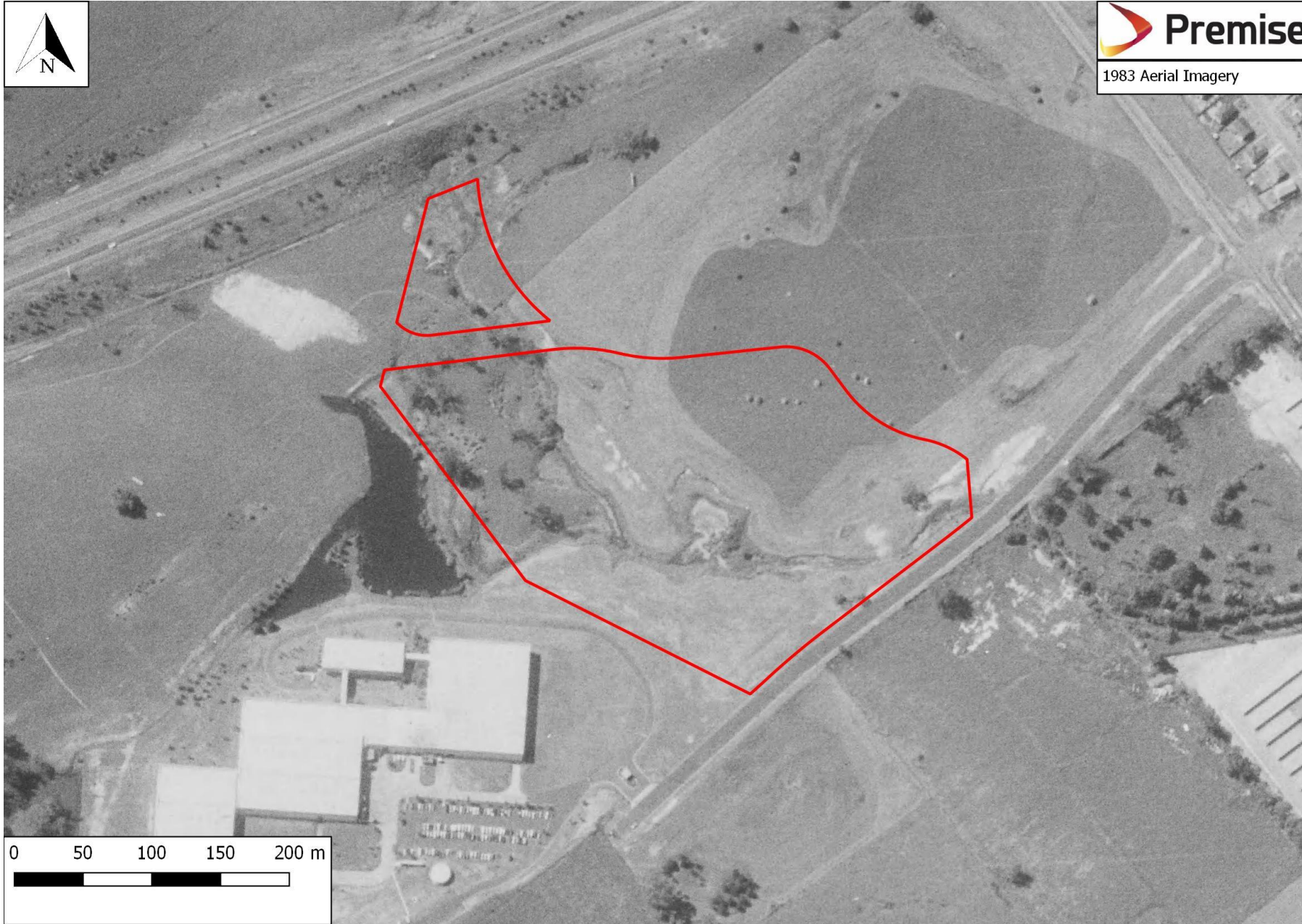
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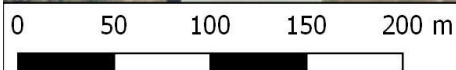
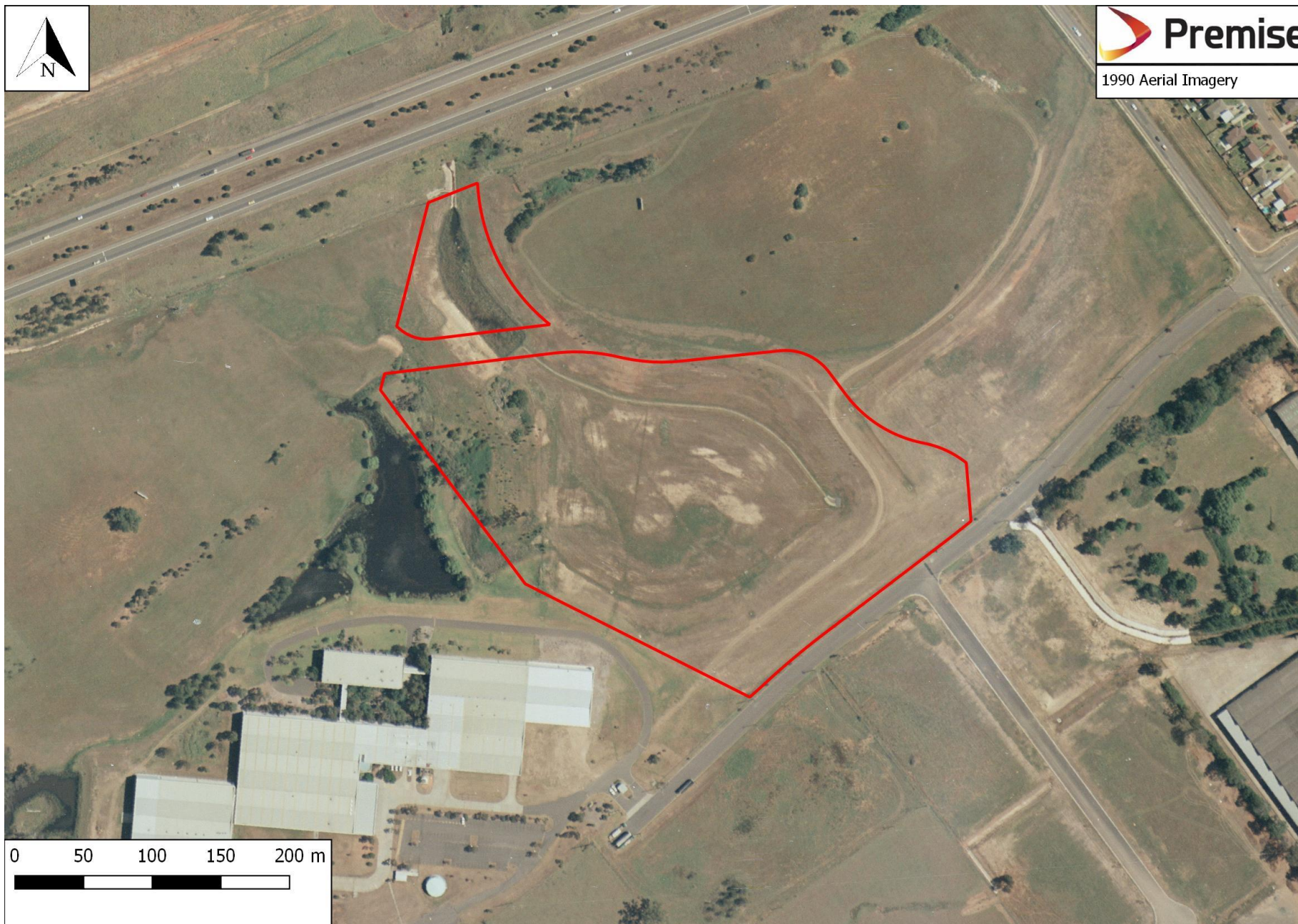








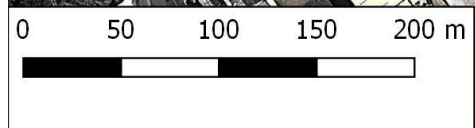








0 50 100 150 200 m





Appendix D

LABORATORY ANALYTICAL RESULTS AND CHAIN OF CUSTODY DOCUMENTS

CERTIFICATE OF ANALYSIS 212514

Client Details

Client	Geolyse Pty Ltd
Attention	Brendan Stuart
Address	PO Box 1963, 154 Peisley St, ORANGE, NSW, 2800

Sample Details

Your Reference	<u>218439, CCC</u>
Number of Samples	4 Soil
Date samples received	01/03/2019
Date completed instructions received	01/03/2019

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	08/03/2019
Date of Issue	07/03/2019
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 *	

Asbestos Approved By

Analysed by Asbestos Approved Identifier: Matt Tang
 Authorised by Asbestos Approved Signatory: Matt Tang

Results Approved By

Jeremy Faircloth, Organics Supervisor
 Ken Nguyen, Senior Chemist
 Matthew Tang, Asbestos Analyst
 Nick Sarlamis, Inorganics Supervisor
 Steven Luong, Senior Chemist

Authorised By



Jacinta Hurst, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	05/03/2019	05/03/2019	05/03/2019	05/03/2019
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	92	86	86	76

svTRH (C10-C40) in Soil					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	05/03/2019	05/03/2019	05/03/2019	05/03/2019
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	110	200	100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	180	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	120	160	100
Total +ve TRH (>C10-C40)	mg/kg	<50	120	340	100
Surrogate o-Terphenyl	%	93	93	94	95

PAHs in Soil					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	06/03/2019	06/03/2019	06/03/2019	06/03/2019
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	0.3
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	0.1	0.4
Pyrene	mg/kg	<0.1	<0.1	0.1	0.4
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	0.2
Chrysene	mg/kg	<0.1	<0.1	0.1	0.2
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	0.3
Benzo(a)pyrene	mg/kg	<0.05	<0.05	0.07	0.1
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.56	2.0
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	116	121	112	120

Organochlorine Pesticides in soil					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	99	101	100

PCBs in Soil					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCLMX	%	101	99	101	100

Acid Extractable metals in soil					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Arsenic	mg/kg	<4	6	8	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	13	15	11
Copper	mg/kg	2	21	53	45
Lead	mg/kg	7	19	24	22
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	8	14	13
Zinc	mg/kg	5	34	280	160

Misc Soil - Inorg					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5	<5

Moisture					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	04/03/2019	04/03/2019	04/03/2019	04/03/2019
Date analysed	-	05/03/2019	05/03/2019	05/03/2019	05/03/2019
Moisture	%	2.8	8.7	12	4.1

Asbestos ID - soils					
Our Reference		212514-1	212514-2	212514-3	212514-4
Your Reference	UNITS	Sample 1	Sample 2	Sample 3	Sample 4
Date Sampled		26/02/2019	26/02/2019	26/02/2019	26/02/2019
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	05/03/2019	05/03/2019	05/03/2019	05/03/2019
Sample mass tested	g	Approx. 55g	Approx. 45g	Approx. 35g	Approx. 40g
Sample Description	-	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy soil & rocks	Brown sandy 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
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected

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-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-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.

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)-BTX 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)-BTX 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-7	212514-2
Date extracted	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			05/03/2019	1	05/03/2019	05/03/2019		05/03/2019	05/03/2019
TRH C ₆ - C ₉	mg/kg	25	Org-016	<25	1	<25	<25	0	86	94
TRH C ₆ - C ₁₀	mg/kg	25	Org-016	<25	1	<25	<25	0	86	94
Benzene	mg/kg	0.2	Org-016	<0.2	1	<0.2	<0.2	0	82	90
Toluene	mg/kg	0.5	Org-016	<0.5	1	<0.5	<0.5	0	83	91
Ethylbenzene	mg/kg	1	Org-016	<1	1	<1	<1	0	89	95
m+p-xylene	mg/kg	2	Org-016	<2	1	<2	<2	0	89	96
o-Xylene	mg/kg	1	Org-016	<1	1	<1	<1	0	89	95
naphthalene	mg/kg	1	Org-014	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-016	90	1	92	91	1	83	92

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	212514-2
Date extracted	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			05/03/2019	1	05/03/2019	05/03/2019		05/03/2019	05/03/2019
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-003	<50	1	<50	<50	0	103	105
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-003	<100	1	<100	<100	0	96	99
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-003	<100	1	<100	<100	0	114	#
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-003	<50	1	<50	<50	0	103	105
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-003	<100	1	<100	<100	0	96	99
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-003	<100	1	<100	<100	0	114	#
Surrogate o-Terphenyl	%		Org-003	91	1	93	93	0	101	93

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	212514-2
Date extracted	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			06/03/2019	1	06/03/2019	06/03/2019		06/03/2019	06/03/2019
Naphthalene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	105	99
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	112	104
Phenanthrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	112	104
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	<0.1	0	106	99
Pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	108	100
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	113	105
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-012	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	1	<0.05	<0.05	0	111	104
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	1	<0.1	<0.1	0	[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	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-012	124	1	116	119	3	120	113

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	212514-2
Date extracted	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
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	94	98
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	81	84
Heptachlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	78	84
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	87	90
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	93	98
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	89	93
Dieldrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	110	114
Endrin	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	81	91
pp-DDD	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	84	89
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	71	75
Methoxychlor	mg/kg	0.1	Org-005	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-005	97	1	101	102	1	111	112

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	212514-2
Date extracted	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
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	112	114
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCLMX	%		Org-006	97	1	101	102	1	97	85

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	212514-2
Date prepared	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Arsenic	mg/kg	4	Metals-020	<4	1	<4	<4	0	112	92
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	110	86
Chromium	mg/kg	1	Metals-020	<1	1	6	6	0	111	92
Copper	mg/kg	1	Metals-020	<1	1	2	2	0	115	106
Lead	mg/kg	1	Metals-020	<1	1	7	7	0	117	96
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	107	107
Nickel	mg/kg	1	Metals-020	<1	1	<1	<1	0	110	86
Zinc	mg/kg	1	Metals-020	<1	1	5	5	0	111	85

QUALITY CONTROL: Misc Soil - Inorg						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	212514-2
Date prepared	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Date analysed	-			04/03/2019	1	04/03/2019	04/03/2019		04/03/2019	04/03/2019
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	1	<5	<5	0	105	104

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.

Report Comments

TRH Soil C10-C40 NEPM - # Percent recovery is not possible to report due to interference from analytes (other than those being tested) in sample 2.

Asbestos: A portion of the supplied samples were sub-sampled for asbestos analysis according to Envirolab procedures.

We cannot guarantee that these sub-samples are indicative of the entire sample.

Envirolab recommends supplying 40-50g of sample in its own container.

Note: Samples 212514-1 to 4 were sub-sampled from jars provided by the client.

CHAIN OF CUSTODY - Client

ENVIROLAB GROUP - National phone number 1300 424 344

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Appendix F

CONSTRUCTION WASTE MANAGEMENT PLAN

**Waste Management Plan
Demolition, Subdivision, Construction and Ongoing Use of Premises**

Privacy Statement

The information requested by Council on this form may constitute personal information under the *Privacy and Personal Information Protection Act 1998*. Council is allowed to collect the information from you to consider this matter. Supplying this information is voluntary. However if you cannot or do not wish to provide the information, we may not be able to consider the matter. If you need further details, please contact the Privacy Officer, Campbelltown City Council, cnr Queen and Broughton Streets, Campbelltown.

To facilitate waste and recycling management and waste minimisation, Campbelltown City Council requires on-site sorting and storage of waste products pending re-use or collection.

All relevant sections as outlined in the table below must be completed and submitted as an attachment with the Development Application or as required by conditions of development consent.

Development Type	Part A	Part B	Part C	Part D	Part E
Dwelling houses (incl. garden flats and domestic outbuildings)	✓	✓	✗	✗	✓
Narrow lot dwellings	✓	✓	✗	✗	✓
Multi dwellings	✓	✓	✓	✗	✗
Residential apartment buildings	✓	✓	✓	✗	✗
Mixed use development	✓	✓	✓	✓	✗
Building fit out	✓	✓	✓	✓	✗
Commercial development	✓	✓	✓	✓	✗
Industrial development	✓	✓	✓	✓	✗

Completing this document will assist in identifying the type and volume of waste generated on the subject property at different stages of the development and how these materials will be re-used, recycled or disposed. The information provided in this document (and on the plans) will be assessed against the design requirements of the Campbelltown (Sustainable City) Development Control Plan 2007.

If the space provided in this document is insufficient please provide attachments.

Outline of Proposal

Site Address: Hephher Road, Campbelltown

Applicant Details: Campbelltown City Council C/- Premise

Applicant Address: PO Box 1963, Orange, NSW, 2800

Brief Description of the Proposal: Proposed waste management facility (waste or resource transfer station) -
..... community recycling centre

The details provided in this document are the intentions for managing waste relating to this Proposal.

Signature of Applicant:

Date:

PART A

DEMOLITION/SUBDIVISION STAGE				
MATERIALS ON-SITE		DESTINATION		
		REUSE AND RECYCLING		DISPOSAL
Type of Material	Estimated Volume (m ³)	ON-SITE • Specify proposed reuse or on-site recycling method.	OFF-SITE • Specify relevant licensed facility or contractor.	• Specify contractor of licensed landfill facility.
<i>Excavation Material</i>				
<i>Green Waste</i>	500m3	Mulch and reuse onsite	Mulch and reuse excess off site	
<i>Bricks</i>	0			
<i>Concrete</i>	0			
<i>Timber</i>	0			

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DATA AND DOCUMENT CONTROL

PART A

DEMOLITION/SUBDIVISION STAGE (continued)				
MATERIALS ON-SITE		DESTINATION		
		REUSE AND RECYCLING		DISPOSAL
Type of Material	Estimated Volume (m ³)	ON-SITE • Specify proposed reuse or on-site recycling method.	OFF-SITE • Specify relevant licensed facility or contractor.	• Specify contractor of licensed landfill facility.
<i>Plasterboard</i>	0			
<i>Metals - please specify</i>	0			
<i>Hazardous Materials e.g. Asbestos - please specify</i>	0			
<i>Other - please specify</i>	0			

NOTE: Details of site area to be used for on-site separation, treatment and storage of waste, including method of weather protection shall be provided on the plans accompanying the Development Application. All demolition waste dockets must be retained on site to confirm which facility received the material for recycling or disposal.

DATA AND DOCUMENT CONTROL

PART B

CONSTRUCTION STAGE				
MATERIALS ON-SITE		DESTINATION		
		REUSE AND RECYCLING		DISPOSAL
Type of Material	Estimated Volume (m ³)	ON-SITE • Specify proposed reuse or on-site recycling method.	OFF-SITE • Specify relevant licensed facility or contractor.	• Specify contractor of licensed landfill facility.
<i>Excavation Material</i>	750m ³	Reuse topsoil on site for reseeding	Excess reused off site	
<i>Green Waste</i>	0			
<i>Bricks</i>	0			
<i>Concrete</i>	20m ³	Crush and use as driveway base	Return surplus to supplier	Waste disposed at licenced landfill
<i>Timber</i>	0			

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DATA AND DOCUMENT CONTROL

PART B

CONSTRUCTION STAGE (continued)				
MATERIALS ON-SITE		DESTINATION		
		REUSE AND RECYCLING		DISPOSAL
Type of Material	Estimated Volume (m ³)	ON-SITE • Specify proposed reuse or on-site recycling method.	OFF-SITE • Specify relevant licensed facility or contractor.	• Specify contractor of licensed landfill facility.
<i>Plasterboard</i>	0			
<i>Metals - please specify</i>	20m3		Contractor to re-use off site	Surplus to licenced facility
<i>Hazardous Materials e.g. Asbestos - please specify</i>	0			
<i>Other - please specify</i>	0			

NOTE: Details of site area to be used for on-site separation, treatment and storage of waste, including method of weather protection shall be provided on the plans accompanying the Development Application. All construction waste dockets must be retained on site to confirm which facility received the material for recycling or disposal.

DATA AND DOCUMENT CONTROL

PART C

RESIDENTIAL Waste Management Plan ONGOING – COMMUNAL WASTE STORAGE

SPACE

Number of residential units	0	Number of storeys above natural ground level	1
Estimated garbage generation (litres per week) per unit)	Waste facility - as per EIS	Estimated recycling generation (litres per week) per unit	Waste facility - as per EIS
Proposed quantity of garbage bins (240L)	0	Proposed quantity of recycle bins (240L)	0
Describe the equipment and systems used for managing garbage – including location and design of garbage room/area and type/quantities of bins, maintenance of bins areas movement of bins by staff	Facility is for receipt of problem household waste. Separate bins per waste stream as per EIS and EPA guidelines. By-catch area provided.		
	Please highlight on plans		
Describe the equipment and system used for managing recycling - including location and design of recycling room/area and type, size (volume) and quantities of bins	See attached plans		
	Please highlight on plans		
ACCESS			
Describe arrangements for access by residents to waste facilities	Garbage: Via primary one-way access system. Collections outside of hours Recycling: As above		
Describe arrangements for access by collection contractors to waste facilities	EPA and Council contractors to collect by arrangement as per EIS		

(Continued over page)

DATA AND DOCUMENT CONTROL

PART C (continued)

AMENITY	
Describe how noise associated with residents using the bins, and collection contractors emptying the bins will be minimised	Work completed during daylight hours
Describe the method of ventilation of waste storage areas	Open sided building. Generally contained and inert products
Describe facilities for washing bins and waste storage areas	Not proposed
Describe features for preventing ingress of vermin into waste storage areas	Waste collected within specific receptacles. No putrescible waste collected.
Describe measures for protecting waste equipment from theft or vandalism	Security fencing and gates. Staff on site.
Describe measures protecting the safety of residents when accessing waste storage areas	Vehicles to stand in identified locations, following pedestrian markings
Describe measures taken to ensure waste storage areas are aesthetically consistent with the rest of the development	As per landscaping plans.
MANAGEMENT	
Identify each stage of waste transfer between residents' units and loading into the collection vehicle. Who is responsible for each stage of transfer?	Residents to dispose of waste to bins. Staff to assist in sorting and directing.
Describe arrangements for ensuring that residents will be aware of how to use the waste management system	Staff on site to assist. Effective signage.

NOTE: Details of site area to be used for on-site separation, treatment and storage of waste, including method of weather protection shall be provided on the plans accompanying the Development Application

DATA AND DOCUMENT CONTROL

PART D

COMMERCIAL Waste Management Plan ONGOING – COMMUNAL WASTE STORAGE

SPACE

Number of commercial units	0	Number of storeys above natural ground level	
Estimated garbage generation (litres per week) per unit		Estimated recycling generation (litres per week) per unit	
Proposed use of commercial units			
Proposed bin configuration			
Describe the equipment and systems used for managing garbage – including location and design of garbage room/area and type/quantities of bins, maintenance of bins areas movement of bins by staff			
	Please highlight on plans		
Describe the equipment and system used for managing recycling - including location and design of recycling room/area and type, size (volume) and quantities of bins			
	Please highlight on plans		
ACCESS			
Describe arrangements for access by commercial tenants to waste facilities	Garbage: Recycling:		
Describe arrangements for access by collection contractors to waste facilities			

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DATA AND DOCUMENT CONTROL

PART D (continued)

AMENITY	
Describe how noise associated with commercial tenants using the bins, and collection contractors emptying the bins will be minimised	
Describe the method of ventilation of waste storage areas	
Describe facilities for washing bins and waste storage areas	
Describe features for preventing ingress of vermin into waste storage areas	
Describe measures for protecting waste equipment from theft or vandalism	
Describe measures protecting the safety of commercial tenants when accessing waste storage areas	
Describe measures taken to ensure waste storage areas are aesthetically consistent with the rest of the development	
MANAGEMENT	
Identify each stage of waste transfer between commercial units and loading into the collection vehicle. Who is responsible for each stage of transfer?	
Describe arrangements for ensuring that commercial tenants will be aware of how to use the waste management system	

NOTE: Details of site area to be used for on-site separation, treatment and storage of waste, including method of weather protection shall be provided on the plans accompanying the Development Application

DATA AND DOCUMENT CONTROL

PART E

RESIDENTIAL Waste Management Plan ONGOING – INDIVIDUAL WASTE STORAGE			
SPACE			
Type of development (e.g. single dwelling, town houses)		Number of dwellings in development	
Describe the area where the garbage, recycling and garden organics bins will be stored			
	Please highlight on plans		
ACCESS			
Describe where the waste bins will be placed for collection			
	Please highlight on plans		

NOTE: Details of site area to be used for on-site separation, treatment and storage of waste, including method of weather protection shall be provided on the plans accompanying the Development Application